

Cameron Ranch Development El Dorado County, CA Transportation Impact Study



Draft Report

Prepared For:
Starbuck Road 56, LLC

July 2017

Prepared By:



WOOD RODGERS

**Cameron Ranch Development
El Dorado County, CA**

TRANSPORTATION IMPACT STUDY

DRAFT REPORT

**Prepared For:
Starbuck Road 56, LLC**

Prepared By



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July 2017

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EXECUTIVE SUMMARY

This report has been prepared to present the results of a Transportation Impact Study (TIS) performed by Wood Rodgers, Inc. for the proposed Cameron Ranch Development (Project) in the census-designated place of Cameron Park in El Dorado County, CA. This analysis has been performed to determine any impacts the proposed Project may have on surrounding transportation facilities and potential mitigation measures that could be implemented to address any significant impacts. This TIS report was prepared in accordance with El Dorado County Transportation Impact Study Guidelines.

There is an existing eight-unit apartment building within the Project site. The Project proposes to redevelop the site with 41 single-family homes.

PROJECT GENERATED TRIPS

New trips generated by the proposed Project were estimated using rates from the *Institute of Transportation Engineers Trip Generation Manual, 9th Edition*. The proposed Project is anticipated to generate a total of 409 new daily trips, 32 new AM peak hour trips (9 inbound, 23 outbound), and 40 new PM peak hour trips (25 inbound, 15 outbound) under typical “annual average” traffic demand conditions.

INTERSECTION OPERATIONS, IMPACTS, AND MITIGATION MEASURES

This TIS report analyzed six (6) “study” intersections under “Existing”, “Existing plus Project”, “Near-term”, “Near-term plus Project”, “Cumulative Base”, and “Cumulative plus Project” AM and PM peak hour conditions. HCM 2010 based analysis was performed using Synchro software. CA MUTCD Peak Hour Signal Warrant 3 was also checked for all unsignalized study intersections. Level of service standards and significance criteria used in this TIS were based on El Dorado County General Plan guidelines.

The Green Valley Road / Hastings Drive-Winterhaven Drive intersection is projected to operate at unacceptable PM peak hour LOS “F” under “Existing plus Project” conditions and AM and PM peak hour LOS “F” under “Near-term”, “Near-term plus Project”, “Cumulative Base”, and “Cumulative plus Project” conditions. However, as CA MUTCD Peak Hour Signal Warrant 3 is not projected to be met under any study conditions, impacts at this intersection may be considered “**less than significant**”.

Based on the El Dorado County significance criteria used in this TIS, the Project was found to have “**less than significant**” impacts on all 6 study intersections under AM and PM peak hour conditions for all scenarios.

SITE ACCESS AND CIRCULATION

The proposed Project would gain access to the nearby roadway network via two (2) existing Project Driveways:

- **Project Driveway 1** - A new full access driveway that extends east from Hastings Drive, approximately 400 feet north of the Green Valley Road / Hastings Drive-Winterhaven Drive intersection.
- **Project Driveway 2** - A full-access driveway that extends west from Starbuck Road, approximately 320 feet north of the Green Valley Road / Starbuck Road-Cameron Park Drive intersection.

HCM 2010 queuing analysis was performed at the project driveways under all scenarios and it was found that queuing would not exceed the Project Driveway egress throat depths and therefore would not block internal circulation. Vehicles, pedestrians, and bicycles are projected to be able to navigate the internal roadway/walkway system without issue, therefore no internal roadway improvements beyond those shown in the current site plan are recommended.

TRAFFIC SAFETY

Based on data from the El Dorado County Annual Accident Location Study for 2016 (dated April 13, 2017), accident rates within the Project vicinity are lower than the County's accepted benchmark of 1.00 Acc/MEV and no actions are currently required at any Project study facilities.

PEDESTRIAN, BICYCLE, AND TRANSIT IMPACTS

Existing pedestrian, bicycle and transit facilities are not anticipated to be significantly impacted by the proposed Project.

VEHICLE QUEUING

Queuing analysis for left-turn movements with a turn pocket and overall queues at single-lane approaches at all study intersections was performed under all AM and PM peak hour scenarios. Project-generated trips are not projected to cause or worsen queuing deficiencies on any study facilities.

1. INTRODUCTION

This report has been prepared to present the results of a Transportation Impact Study (TIS) performed by Wood Rodgers, Inc. for the proposed Cameron Ranch Development (Project) in the census-designated place of Cameron Park in El Dorado County, CA. This analysis has been performed to determine any impacts the proposed Project may have on surrounding transportation facilities and potential mitigation measures that could be implemented to address any significant impacts. This TIS report was prepared in accordance with El Dorado County Transportation Impact Study Guidelines (November 2014). This introduction outlines project description, study area, analysis scenarios, analysis methods, significance criteria, and organization of the overall report.

1.1 PROJECT DESCRIPTION

The Project site is generally located on the northwest quadrant of the Green Valley Road / Starbuck Road-Cameron Park Drive intersection in the census-designated place of Cameron Park in El Dorado County, CA (County). The site is generally bound by Starbuck Road to the east, Green Valley Road to the south, Hastings Drive to the west, and five adjacent single-family homes that front Dunbar Road to the north. The Project lies within Assessor Parcel Numbers (APNs) 10211024, 10242101, and 10211014. The Project site location is shown on the map in **Figure 1**.

The Project site is currently designated for Multifamily Residential land use per *Figure LU-1: Land Use Diagram, Land Use Element* of the County General Plan and is located within Traffic Analysis Zone (TAZ) 239 of the El Dorado County Travel Demand Model (TDM). The most recent proposed Project tentative site plan (by R.E.Y. Engineers, dated July 2016) is shown in **Figure 2**. There is an existing eight-unit apartment building within the Project site. The Project proposes to demolish the existing apartment building and redevelop the site with 41 single-family homes.

Access to the proposed Project site would be provided via a new Project Driveway in the approximate location of existing Camarc Drive, which extends west from Starbuck Road into the Project site, and one new driveway extending east from Hastings Drive.

1.2 STUDY AREA

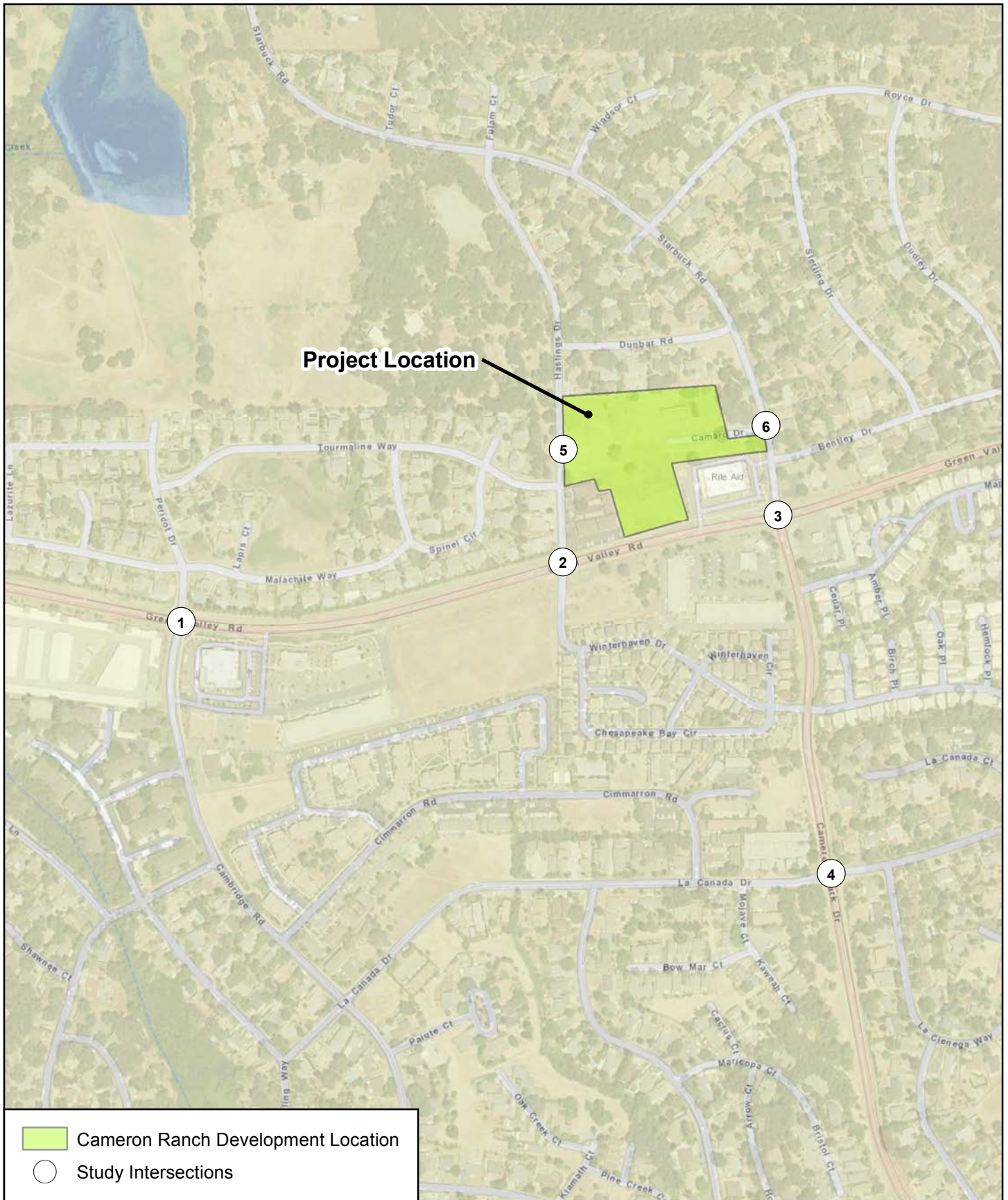
The study area generally extends along Green Valley Road between Cambridge Road-Peridot Drive and Starbuck Road-Cameron Park Drive, and along Cameron Park Drive between Green Valley Road and La Canada Drive. Study facilities include the intersections as discussed below.

1.2.1 INTERSECTIONS

Intersections were selected for analysis using *El Dorado County TIS Guidelines* criteria, engineering judgement, and coordination with County staff. Intersections that may experience impacts from the proposed Project, based on a preliminary trip generation and distribution, were included. The list of study intersections was reviewed and approved by County staff before beginning this TIS. The following six (6) study intersections were analyzed in this TIA:

1. Green Valley Road / Cambridge Road-Peridot Drive
2. Green Valley Road / Hastings Drive-Winterhaven Drive *
3. Green Valley Road / Starbuck Road-Cameron Park Drive
4. La Canada Drive / Cameron park Drive
5. Project Driveway / Hastings Road * (under “with Project” conditions only)
6. Camarc Dive (Project Driveway) / Starbuck Road *

Unsignalized study intersections are indicated with an “*” above. All other study intersections are signalized. The above study intersections are also shown on **Figure 1**.



Project Location and Vicinity Map
 Cameron Ranch Development TIS
 El Dorado County, CA
 July 2017

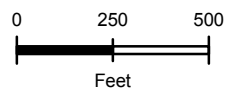


Figure 1



1.2.2 PEDESTRIAN, BICYCLE, AND TRANSIT FACILITIES

This TIS analyzes Project impacts to pedestrian, bicycle, and transit facilities within an approximately half mile radius of the Project site.

1.3 ANALYSIS SCENARIOS

The six (6) study intersections were evaluated under AM and PM peak hour conditions for the following scenarios:

- **Existing Conditions:** Existing traffic volumes from counts.
- **Existing plus Project Conditions:** Existing traffic volumes plus traffic projected to be generated by the proposed Project.
- **Near-term Conditions:** Analysis of a condition 10 years from the current year using traffic volumes calculated using straight-line interpolation between existing traffic levels and the El Dorado County Travel Demand Model (TDM) 2035 traffic projections. Trips generated by the Project are **not** included.
- **Near-term plus Project Conditions:** “Near-term” volumes plus traffic projected to be generated by the proposed Project.
- **Cumulative Base Conditions:** Analysis of a cumulative future (Year 2035) condition estimated by using County TDM forecast volumes and planned Capital Improvement Projects (CIPs) within Project vicinity assuming the proposed Project site itself remains undeveloped.
- **Cumulative plus Project Conditions:** Analysis of a condition that superimposes the proposed project-generated traffic on top of “Cumulative Base” conditions.

1.4 ANALYSIS METHODS

Traffic operations in this TIS have been quantified through the determination of "Level of Service" (LOS). Level of Service is a qualitative measure of traffic operating conditions, whereby a letter grade "A" through "F" is assigned to an intersection or roadway segment, representing progressively worsening traffic operations. LOS “A” represents free-flow conditions with little to no delays, while LOS “F” represents jammed or grid-lock conditions.

1.4.1 SIGNALIZED INTERSECTIONS

LOS has been calculated for signalized intersections using methods documented in the Transportation Research Board Publication *Highway Capacity Manual, Fourth Edition, 2010* (HCM-2010), consistent with the *El Dorado County TIS Guidelines*. For signalized intersections, the “average” intersection delay per vehicle, including all intersection movements, has been calculated and reported using Synchro 9 analysis software. The calculated signalized intersection delays correspond to the LOS designations shown in **Table 1**, which were derived from Exhibit 18-4 of HCM 2010 and are consistent with *El Dorado County TIS Guidelines*.

1.4.2 UNSIGNALIZED INTERSECTIONS

LOS has been calculated for unsignalized intersections using methods documented in the Transportation Research Board Publication *Highway Capacity Manual, Fourth Edition, 2010* (HCM-2010), consistent with the *El Dorado County TIS Guidelines*. For two-way-stop-controlled (TWSC) unsignalized intersections, the “worst case” movement delay, i.e. delay per vehicle of the intersection’s worst operating movement, has been calculated and reported using Synchro analysis software. The calculated unsignalized intersection delays correspond to the LOS designations shown

in **Table 1**, which were derived from Exhibits 19-2 and 20-2 of HCM 2010 and are consistent with *El Dorado County TIS Guidelines*.

Table 1. HCM-2010 Based Level-of-Service (LOS) Definitions and Criteria for Intersections

Level of Service	Flow Type	Operational Characteristics	Intersection Control Delay (seconds/vehicle)	
			Signal Control	Two-Way-Stop or All-Way Stop Control
"A"	Stable Flow	Free-flow conditions with negligible to minimal delays. Excellent progression with most vehicles arriving during the green phase and not having to stop at all. Nearly all drivers find freedom of operation.	≤ 10	0 – 10
"B"	Stable Flow	Good progression with slight delays. Short cycle-lengths typical. Relatively more vehicles stop than under LOS "A". Vehicle platoons are formed. Drivers begin to feel somewhat restricted within groups of vehicles.	> 10 – 20	> 10 – 15
"C"	Stable Flow	Relatively higher delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear. The number of vehicles stopping is significant, although many still pass through without stopping. Most drivers feel somewhat restricted.	> 20 – 35	> 15 – 25
"D"	Approaching Unstable Flow	Somewhat congested conditions. Longer but tolerable delays may result from unfavorable progression, long cycle lengths, and/or high volume-to-capacity ratios. Many vehicles are stopped. Individual cycle failures may be noticeable. Drivers feel restricted during short periods due to temporary back-ups.	> 35 – 55	> 25 – 35
"E"	Unstable Flow	Congested conditions. Significant delays result from poor progression, long cycle lengths, and high volume-to-capacity ratios. Individual cycle failures occur frequently. There are typically long queues of vehicles waiting upstream of the intersection. Driver maneuverability is very restricted.	> 55 – 80	> 35 – 50
"F"	Forced Flow	Jammed or grid-lock type operating conditions. Generally considered to be unacceptable for most drivers. Zero or very poor progression, with over-saturation or high volume-to-capacity ratios. Several individual cycle failures occur. Queue spillovers from other locations restrict or prevent movement.	> 80	> 50

Source: HCM-2010, Exhibits 18-4, 19-1 and 20-2.

For this TIS, calculated "Peak Hour Factors" (PHF) of 0.59-0.96, and a 2% heavy vehicle composition have been specified for each intersection movement under existing and future conditions peak hour analysis. Generally, the HCM-2010 recommended suburban traffic signal default cycle length of 100 seconds was used, with 4 seconds of "lost time" per critical signal phase.

1.5 LEVEL OF SERVICE STANDARDS AND IMPACT CRITERIA

1.5.1 INTERSECTION LEVEL OF SERVICE IMPACT CRITERIA

1.5.1.1 Signalized Intersections

El Dorado County currently utilizes LOS "E" as the minimum acceptable LOS threshold for signalized intersections in Community Regions and LOS "D" as the minimum acceptable LOS threshold for signalized intersections in Rural Centers during the AM and PM peak periods. Regarding acceptable Levels of Service during AM and PM peak periods, the *Transportation and Circulation Element of the County of El Dorado Adopted General Plan* (July 1, 2004) states the following implementing policies:

Level of Service (LOS) for County maintained roads and state highways within the unincorporated areas of the county shall not be worse than LOS E in the Community Regions or LOS D in the Rural Centers and Rural Regions except as specified in Table TC-2.

As the Project site falls within a Community Region (*Figure LU-1: Land Use Diagram, Land Use Element* of the County General Plan), this study uses LOS “E” as the minimum acceptable threshold at all signalized intersections for traffic impact purposes. Project impacts at signalized study intersections would be considered significant if one of the following criteria is met:

1. If the addition of project generated traffic to an intersection causes the AM or PM peak hour LOS of the intersection to degrade from an acceptable LOS “E” or better to an unacceptable LOS “F”, then the impact is significant.
2. If an intersection operates at an unacceptable AM or PM peak hour LOS “F” or worse without the addition of project generated traffic, and the addition of project generated traffic causes:
 - (a) A 2 percent increase in traffic during the AM or PM peak hour or daily; or
 - (b) The addition of 100 or more daily trips; or
 - (c) The addition of 10 or more trips during the AM or PM peak hour.

1.5.1.2 Unsignalized Intersections

Based on the County General Plan policies stated above, this study uses LOS “E” as the minimum acceptable threshold at all unsignalized intersections for traffic impact purposes. El Dorado County does not currently have an officially adopted significance criterion for unsignalized intersections. Based on previously approved traffic studies prepared for the County, significant impacts are defined to occur when the addition of project generated traffic causes the average intersection delay for all-way stop controlled intersections, or worst-case movement delay for two-way stop controlled intersections, to degrade to unacceptable levels (LOS “F”) and the intersection satisfies the CA MUTCD peak hour volume signal warrant.

1.5.1.3 Signal Warrants

In order to determine whether traffic signals should be installed at currently unsignalized intersections, a supplemental *California Manual on Uniform Traffic Control Devices*, dated November 2014 (*CA MUTCD*) based traffic signal warrant analysis was also completed. The term “signal warrants” refers to the list of established criteria used by Caltrans and other public agencies to quantitatively justify or ascertain the need for installation of a traffic signal at an unsignalized intersection location. The CA MUTCD signal warrant criteria are based upon several factors including volume of vehicular and pedestrian traffic, location of school areas, frequency and type of collisions, etc. CA MUTCD indicates that “the satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.” This TIS evaluated CA MUTCD Peak Hour Signal Warrant 3 as a representative type of warrant analysis for the Project Driveway / Hastings Drive, Camarc Drive (Project Driveway) / Starbuck Road, and Green Valley Road / Hastings Drive-Winterhaven Drive study intersections

1.5.2 QUEUING

Vehicle queueing deficiencies were analyzed at all study intersections. 95th percentile queue lengths were reported for all left-turn movements at all study intersection approaches with left-turn pockets and for overall queues at study intersections with single-lane approaches. 95th percentile queues essentially represent a worst case queue length that will be reached or exceeded only 5% of the time during the peak hour (i.e. 95% of queues would be less than this length). Queueing deficiencies were considered to occur when one of the following conditions is met:

1. A queuing deficiency would occur when the addition of Project trips causes the 95th percentile queue to exceed available storage length (when the 95th percentile queue did not exceed storage length before the addition of Project trips).
2. Where the 95th percentile queue already exceeds the turn pocket length or storage space under “no project” conditions, a queuing deficiency would occur if Project traffic lengthens the 95th percentile queue by 25 feet (i.e. one vehicle) or more.

1.6 REPORT ORGANIZATION

The remainder of this report is divided into the following chapters:

- **Chapter 2: Existing Conditions** – Describes existing conditions and operations of the study area intersections, freeways, transit system, pedestrian facilities, and bicycle facilities.
- **Chapter 3: Existing plus Project Conditions** – Describes the methods used to estimate and distribute project generated traffic and the resulting study area operations.
- **Chapter 4: Near-term Conditions** – Describes projected conditions and operations of study area facilities under Near-term (without Project) conditions.
- **Chapter 5: Near-term plus Project Conditions** – Describes projected conditions and operations of study area facilities under Near-term plus Project conditions.
- **Chapter 6: Cumulative Conditions** – Describes projected conditions and operations of study area facilities under Cumulative (without Project) conditions.
- **Chapter 7: Cumulative plus Project Conditions** – Describes projected conditions and operations of study area facilities under Cumulative plus Project conditions.
- **Chapter 8: Site Access and Circulation** – Describes site access and circulation for the Project site.
- **Chapter 9: Traffic Safety** – Describes traffic safety and accident rates on study area facilities.
- **Chapter 10: Potential Effects on Transit, Bicycle, and Pedestrian Facilities and Services** – Describes potential effects the proposed project will have on the transit system, pedestrian facilities, and bicycle facilities.
- **Chapter 11: Impacts and Mitigation Measures** – Describes the projected impacts the Project will have on study area facilities (if any) and presents potential mitigations.
- **Chapter 12: Queuing Analysis, Deficiencies, and Recommended Improvements** – Describes vehicle queuing analysis for the study intersections, the projected operational queue deficiencies caused by the addition of project trips to study intersections, and presents recommendations for improvements.

2. EXISTING CONDITIONS

This chapter describes the existing roadway and freeway network, transit services, pedestrian facilities, and bicycle facilities within the study area. It also presents existing turning movement volumes at study intersections and Synchro-calculated intersection delays and LOS.

2.1 EXISTING ROADWAY NETWORK

This section provides descriptions of the study area roadways and freeways.

Green Valley Road is a major two-lane road that runs east-west through El Dorado County between East Natoma Street (western limit) and Placerville Drive (eastern limit). The posted speed limit on Green Valley Road near the Project study area is 50 miles per hour.

Cameron Park Drive is a major two-lane road that runs north-south through El Dorado County between Green Valley Road (northern limit) and US Route 50 (southern limit). The posted speed limit on Green Valley Road near the Project study area is 45 miles per hour.

Cambridge Road is a two-lane road that runs north-south through El Dorado County between Starbuck Rd (northern limit) and Durock Road (southern limit). The posted speed limit on Green Valley Road near the Project study area is 35 miles per hour.

Peridot Drive is a two-lane local road that runs north-south through the Emerald Meadows residential development in El Dorado County between Green Valley Road (southern limit) and Aquamarine Circle (northern limit). The speed limit on Peridot Drive near the Project study area is assumed to be no more than 25 miles per hour.

Hastings Drive is a two-lane local road that runs north-south through El Dorado County between Green Valley Road (southern limit) and Starbuck Road (northern limit). The posted speed limit on Hastings Drive near the Project study area is 35 miles per hour.

Starbuck Road is two-lane road that runs north-south through El Dorado County between Green Valley Road (southern limit) and Deer Valley Road (northern limit). The posted speed limit on Green Valley Road near the Project study area is 35 miles per hour.

La Canada Drive is a two-lane local road that runs east-west through El Dorado County between Sterling Way (western limit) and La Crescenta Drive (eastern limit). The posted speed limit on La Canada Drive near the Project study area is 25 miles per hour.

Camarc Drive is a driveway that extends west from Starbuck Road into the proposed Project site serving the existing Camarc Gardens Apartment building.

2.2 PEDESTRIAN FACILITIES

Adjacent to or nearby the project site, sidewalks are only provided on the northwest corner of the Green Valley Road / Starbuck Road intersection, fronting the Rite Aid. Within the study area, sidewalks are available on the west side of Cameron Park Drive between Winterhaven Drive and La Canada Drive, the south side of La Canada Drive between Cameron Park Drive and Cimmarron Road, the west side of Hastings Drive between Green Valley Road and Tourmaline Way, the east side of Cambridge Road, the south side of Green Valley Road between Cambridge Road and the east CVS shopping center driveway, and along both sides of Peridot Drive.

Pedestrian crosswalks with push buttons exist on all legs of all signalized study intersections, with the exception of the eastbound leg of the Green Valley Road / Cambridge Drive- Peridot Drive intersection and the northbound leg of the La Canada Drive / Cameron Park Drive intersection. The Green Valley Road / Starbuck Road-Cameron Park Drive only has curb ramps on the northwest corner of the intersection.

2.3 BICYCLE FACILITIES

The *El Dorado County Bicycle Transportation Plan* (November 2010) refers to the Caltrans Highway Design Manual (HDM), Chapter 1000 for standards on designing bicycle facilities. The Caltrans HDM classifies bikeways as follows:

Class I Bikeway (Bike Path) – Provides a completely separated right-of-way for the exclusive use of bicycles and pedestrians with crossflow by motorists minimized.

Class II Bikeway (Bike Lane) – Provides a striped lane for one-way bicycle travel on a street or highway. These lanes are generally adjacent to the outside vehicular travel lane and are marked by special lane marking and signs.

Class III Bikeway (Bike Route) – Provides for shared use with bicycle or motor vehicle traffic, typically on lower volume roadways. Class III bikeways are typically designated by signs and are used to provide continuity to other bicycle facilities.

Within the Project study area, Class II bikeways exist on the following facilities:

- Green Valley Road between Starbuck Road-Cameron Park Drive and Deer Valley Road
- Cameron Park Drive between Green Valley Road and approximately 850 feet south of La Canada Drive

There are no existing Class I or Class III bikeways within the Project study area.

2.4 EXISTING TRANSIT SERVICE

Existing transit service in the Project study area is provided by El Dorado Transit local and commuter bus routes. The study area is served by bus Route 40: Cameron Park, which loops around Cameron Park between Green Valley Road and US 50 every hour between 6:30 AM and 6:30 PM, Monday through Friday. The route provides transfers to US 50 Express and Sacramento Commuter routes at the Cambridge Road Park and Ride. The closest stop to the Project is on the southwest corner of the Green Valley Road / Starbuck Road-Cameron Park Drive intersection. El Dorado Transit offers Dial-a-Ride and ADA Paratransit services, as well as Sac-Med, a public, non-emergency medical appointment transportation service.

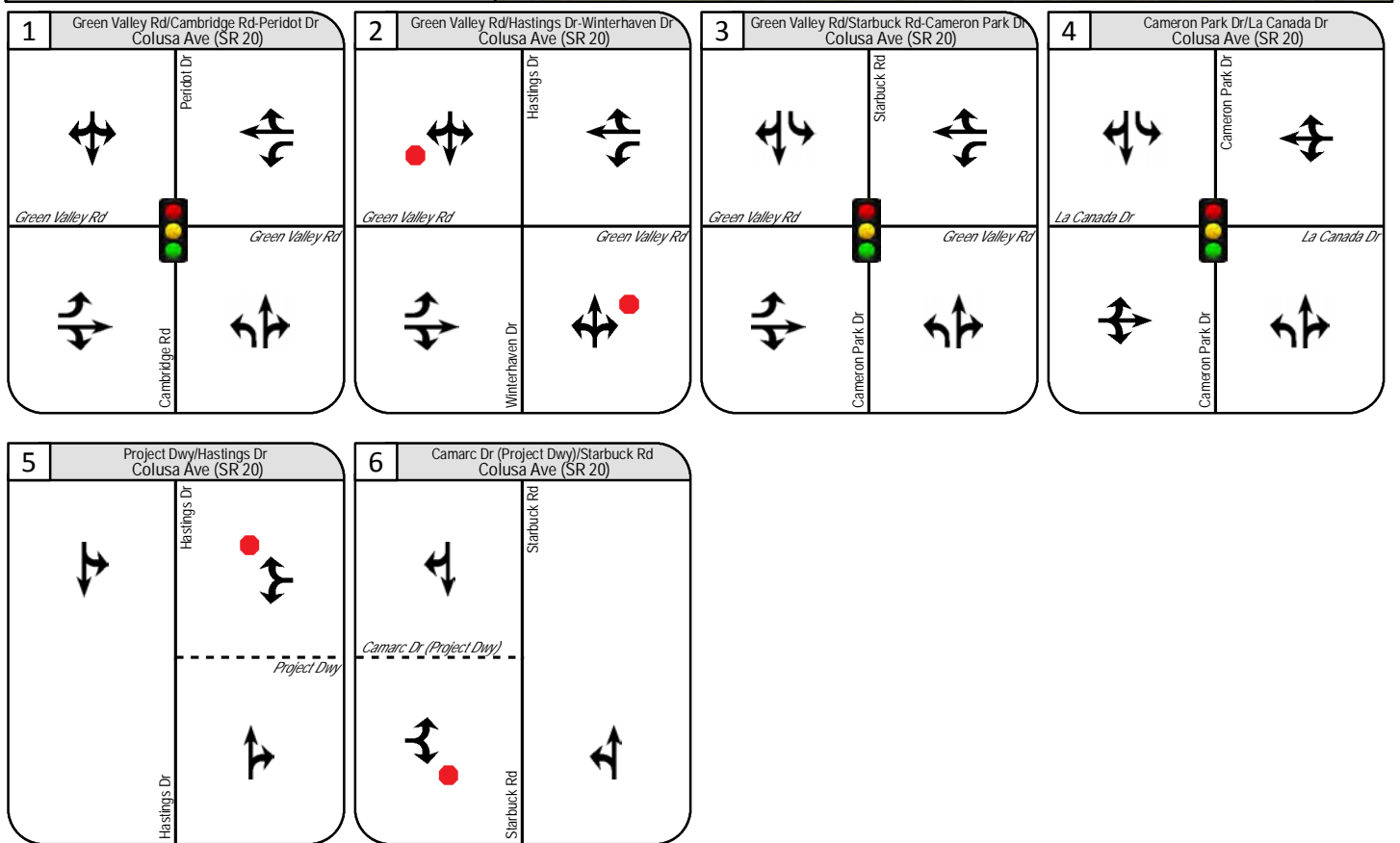
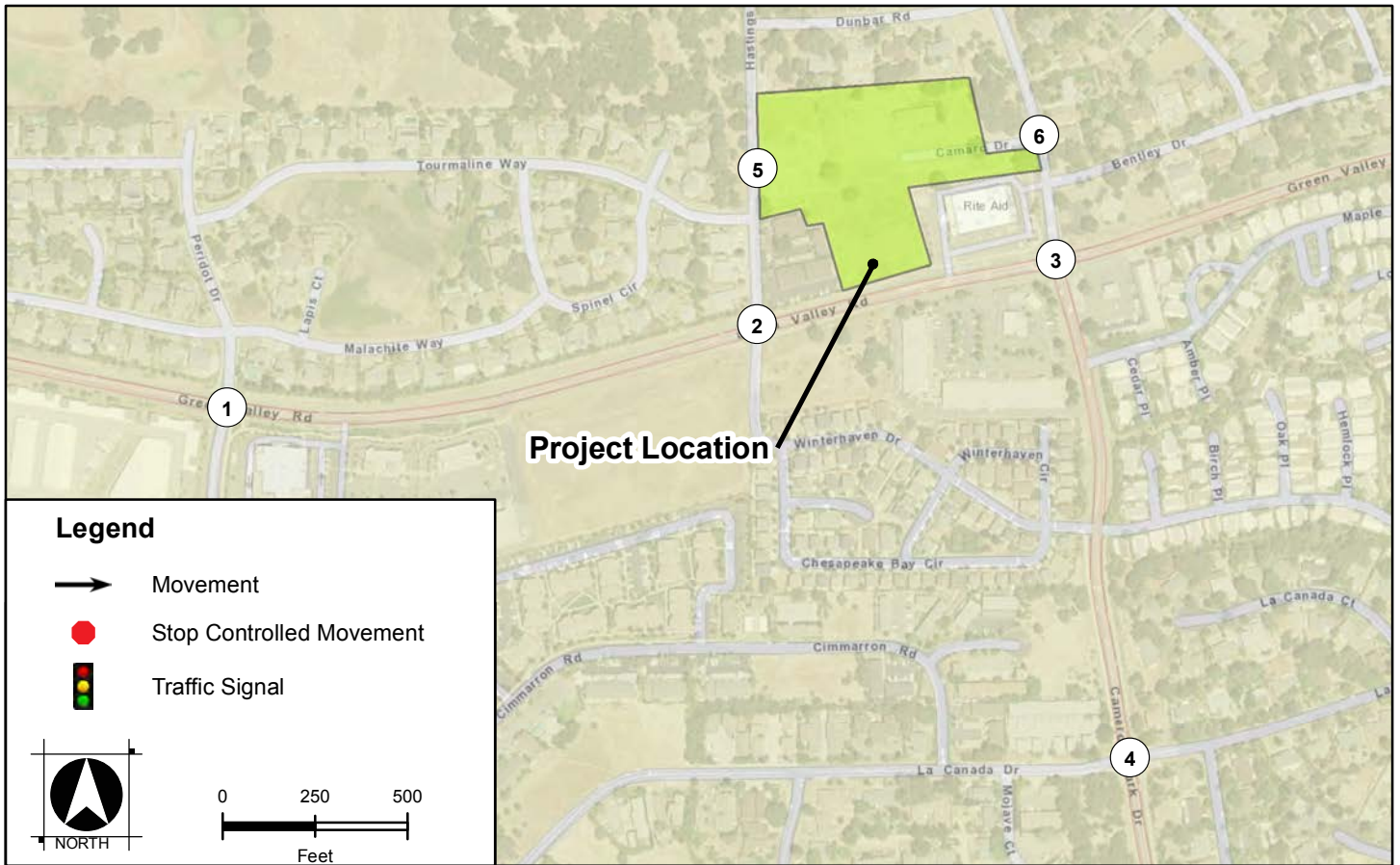
2.5 EXISTING INTERSECTION VOLUMES AND LANE GEOMETRICS

Project study intersection traffic operations were evaluated for the AM and PM peak hours under existing conditions. The AM peak hour is defined as the highest one hour of traffic flow counted between 7:00 AM and 9:00 AM on a typical weekday, and the PM peak hour is defined as the highest one hour of traffic flow counted between 4:00 PM and 6:00 PM on a typical weekday.

Wood Rodgers conducted new existing AM and PM peak hour vehicular, pedestrian, and bicycle traffic counts at the following study intersections on Thursday April 27, 2017:

- Green Valley Road / Cambridge Road-Peridot Drive
- Green Valley Road / Hastings Drive-Winterhaven Drive
- Green Valley Road / Starbuck Road-Cameron Park Drive
- La Canada Drive / Cameron park Drive

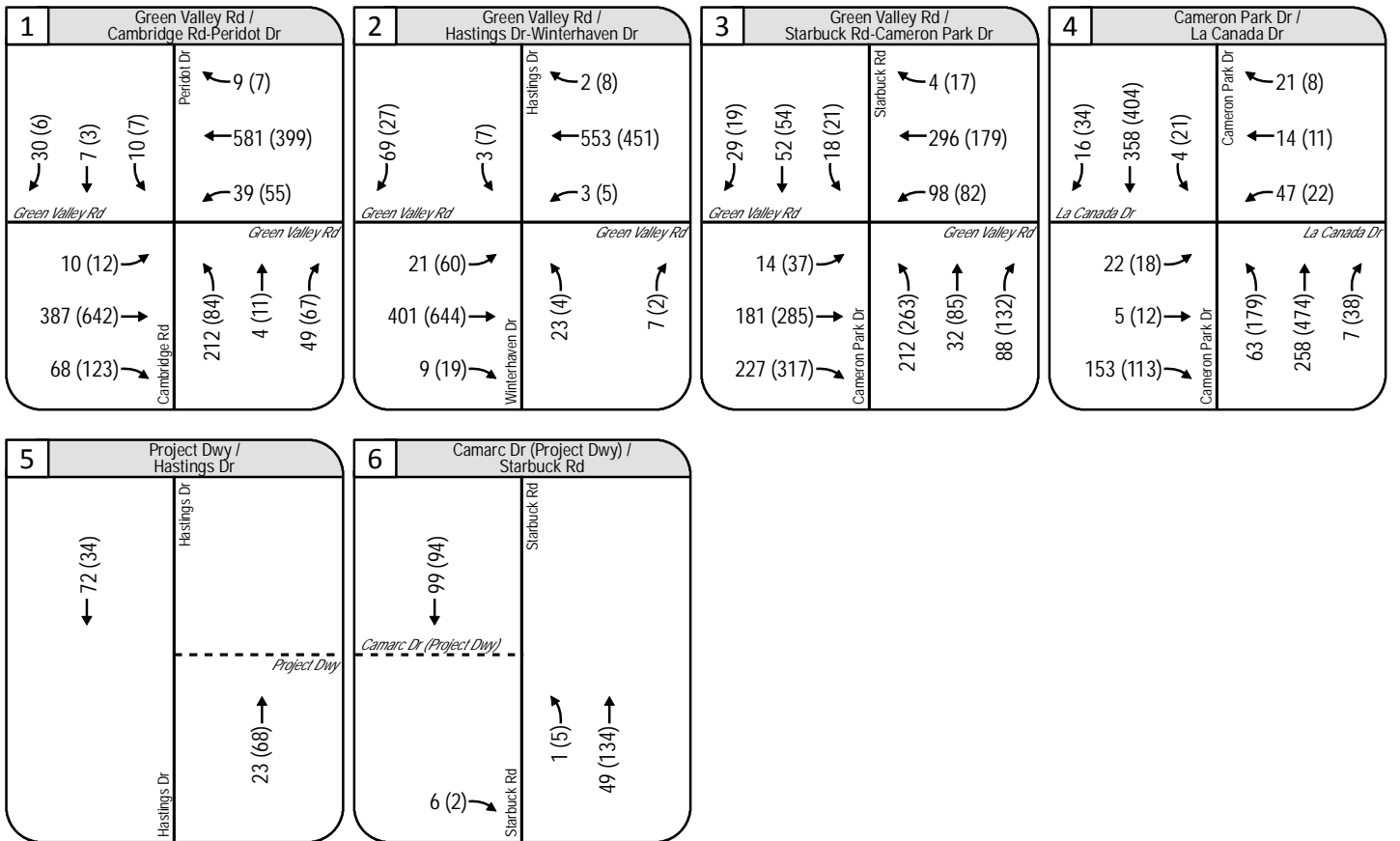
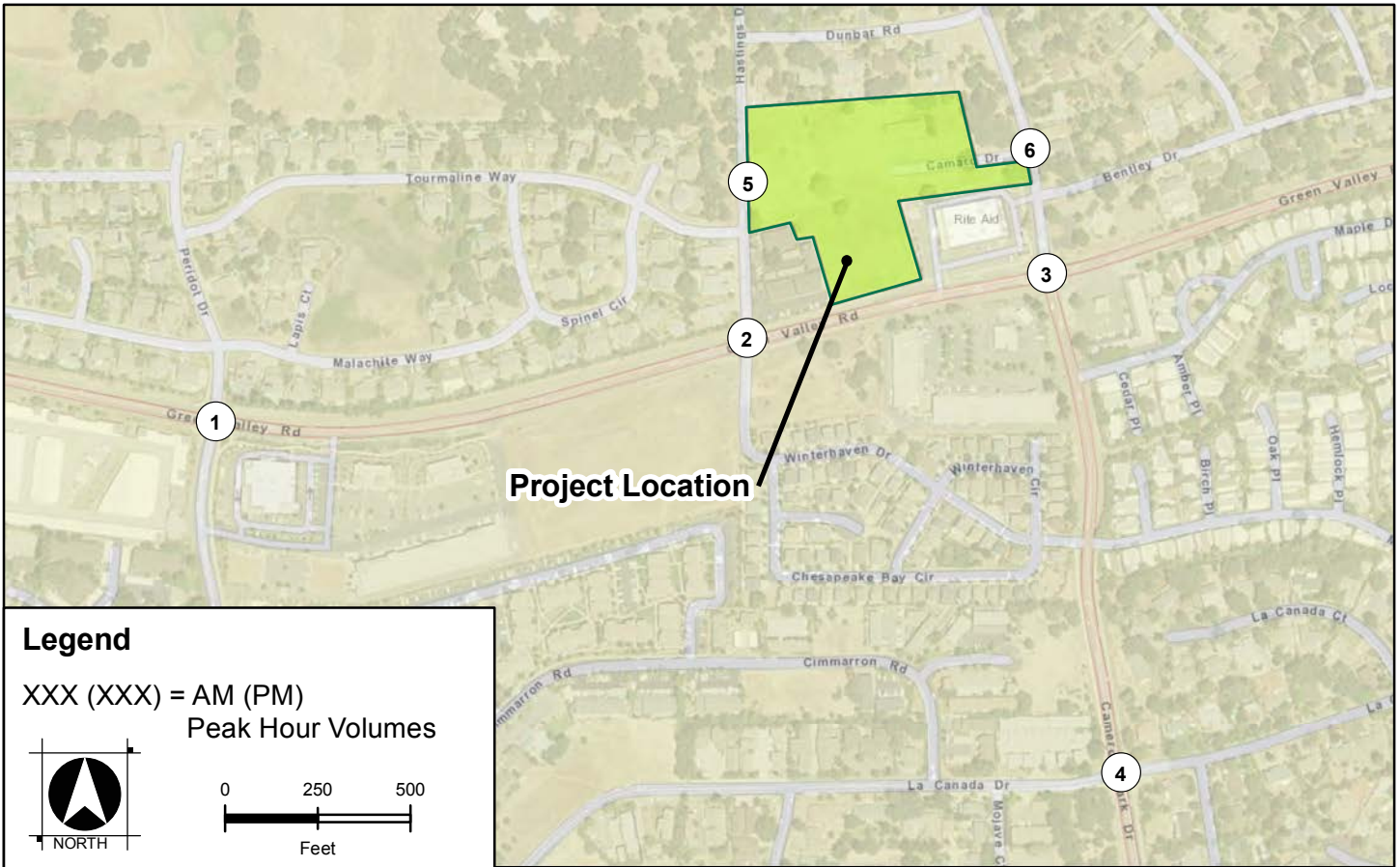
Traffic count data can be found in **Appendix A. Figure 3** illustrates existing intersection lane geometrics and control and **Figure 4** illustrates “Existing” conditions study intersection traffic volumes.



Existing Lane Geometric and Control
Cameron Ranch Development TIS
El Dorado County, CA
July 2017

Figure 3





"Existing" Traffic Volumes
 Cameron Ranch Development TIS
 El Dorado County, CA
 July 2017

Figure 4



2.6 “EXISTING” INTERSECTION OPERATIONS

Table 2 presents existing study intersection traffic operations under existing intersection geometrics and control (illustrated in **Figure 3**) and “Existing” traffic volumes (illustrated in **Figure 4**).

Table 2. “Existing” Conditions Intersection Traffic Operation

	Intersection	Control Type	AM Peak Hour			PM Peak Hour		
			Delay (S/V) ¹	LOS	Wrnt Met? ²	Delay (S/V) ¹	LOS	Wrnt Met? ²
1	Green Valley Road / Cambridge Road-Peridot Drive	Signal	28.3	C	-	28.2	C	-
2	Green Valley Road / Hastings Drive-Winterhaven Drive	TWSC	47.2	E	No	43.7	E	No
3	Green Valley Road / Starbuck Road-Cameron Park Drive	Signal	36.9	D	-	44.9	D	-
4	La Canada Drive / Cameron Park Drive	Signal	37.6	D	-	37.1	D	-
5	Project Driveway / Hastings Drive	TWSC	-	-	-	-	-	-
6	Camarc Drive (Project Driveway) / Starbuck Road	TWSC	8.8	A	No	8.8	A	No

*Notes: 1. For OWSC (One-Way-Stop-Control) and TWSC (Two-Way-Stop-Control) intersections, "worst-case" movement delay is indicated. "Average" control delays (in seconds/vehicle) are indicated for AWSC (All-Way-Stop-Control) and Signal-Control intersections.
2. Wrnt Met? = CA MUTCD Peak Hour Signal Warrant 3
BOLD indicates unacceptable level of service.*

As shown in **Table 2**, all study intersections are currently operating at acceptable level of service conditions during the AM and PM peak hours. CA MUTCD Peak Hour Signal Warrant 3 is not projected to be met at any study intersections under “Existing” conditions. Synchro software intersection LOS outputs can be found in **Appendix B**, and CA MUTCD Peak Hour Signal Warrant 3 worksheets can be found in **Appendix C**.

All recommended improvements and mitigation measures are discussed in a subsequent section of this TIS report.

3. EXISTING PLUS PROJECT CONDITIONS

This chapter provides a description of the proposed Project, a discussion of the trip generation and distribution/assignment methods used to come up with Project only volumes at study intersections, and an analysis of projected traffic operations and impacts due to the proposed Project.

3.1 PROJECT SITE DESCRIPTION

The proposed Project would redevelop a site that currently contains a two-story eight-unit apartment building into a 41 single-family dwelling unit residential development.

Site access will be provided via two Project access driveways. Driveway 1 will be a newly constructed driveway extending east from Hastings drive. Driveway 2 will be in the approximate location of existing Camarc Drive, which currently serves as a driveway to the Camarc Gardens Apartment complex.

3.2 PROJECT GENERATED TRIPS

3.2.1 TRIP GENERATION AND REDUCTIONS

Consistent with methods described in the *El Dorado County TIS Guidelines*, Institute of Transportation Engineers Trip Generation Manual rates were used to estimate Project trip generation. The entire proposed development Project can essentially be characterized as Single-Family Detached

Housing land use. The following trip generation rate from the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 9th Edition* was used to estimate Project generated trips:

Single-Family Detached Housing – For the proposed 41 single-family dwelling units, “Single-Family Detached Housing” (Use Code 210) trip generation rate is used. ITE Trip Generation describes single-family detached housing as: “...*detached homes on individual lots.*”

The Project is planned to replace a fully-occupied existing eight-unit apartment building currently on the Project site. As such, existing trips generated by the apartment building have been subtracted from the Project trip generation to yield a net Project trip generation.

Apartment trips were generated using land use rates for “Low-Rise Apartment” (Use Code 221). ITE Trip Generation describes low-rise apartments as: “...*units located in rental buildings that have one or two levels (floors), such as garden apartments.*” The “Low-Rise Apartment” land-use code was selected as it was the only ITE apartment code that had surveyed apartment complexes with unit-counts similar to the existing on-site apartment building.

Table 3 summarizes the trip generation rates used for the proposed Project and **Table 4** summarizes the trip generation volumes and reductions for the proposed Project.

As illustrated in **Table 4**, the proposed Project is anticipated to generate a total of 409 daily trips, 32 AM peak hour trips (9 inbound, 23 outbound), and 40 PM peak hour trips (25 inbound, 15 outbound) under typical “annual average” traffic demand conditions. These trips would be considered “new” (or incremental) trips on the City’s immediate local circulation system.

Table 3. Project Trip Generation Rates

Land Use Category	Source	ITE Code	Rate Unit	Daily Trip Rate/Unit	Weekday AM Peak Hour Rate/Unit			Weekday PM Peak Hour Rate/Unit		
					Total	In%	Out%	Total	In%	Out%
Single-Family Detached Housing	ITE	210	DU	11.28	0.94	25%	75%	1.15	63%	37%
Low-Rise Apartment	ITE	221	DU	6.59	0.88	21%	79%	0.88	65%	35%

*Notes: 1. DU = Dwelling Unit
2. The rates illustrated in this table are based on ITE Trip Generation (9th Edition) fitted curve equations, with the exception of Daily Trip Rate/Unit for Low-Rise Apartment.*

Table 4. Project Trip Generation Volumes

Land Use	Units	Quantity	Daily Trips	Weekday AM Peak Hour Trips			Weekday PM Peak Hour Trips		
				Total	In	Out	Total	In	Out
Single-Family Detached Housing	DU	41	462	38	10	28	47	30	17
Low-Rise Apartment	DU	-8	-53	-7	-1	-6	-7	-5	-2
Net Project Trip Generation			409	32	9	23	40	25	15

*Notes: 1. DU = Dwelling Unit
2. The trips illustrated in this table are based on ITE Trip Generation (9th Edition) fitted curve equations, with the exception of Daily Trip Rate/Unit for Low-Rise Apartment.*

3.2.2 PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

The Project trip distribution was determined based on previous traffic studies for the proposed Project, existing traffic counts, traffic assignment from County TDM, and assumed travel patterns based on Project proximity to employment centers, schools, and freeway access. **Figure 5** illustrates the estimated Project directional trip distribution and estimated AM and PM peak hour “Project Only” traffic volumes projected to be generally applicable for the Project under “Existing”, “Near-term”, and “Cumulative” conditions on an annualized average usage basis.

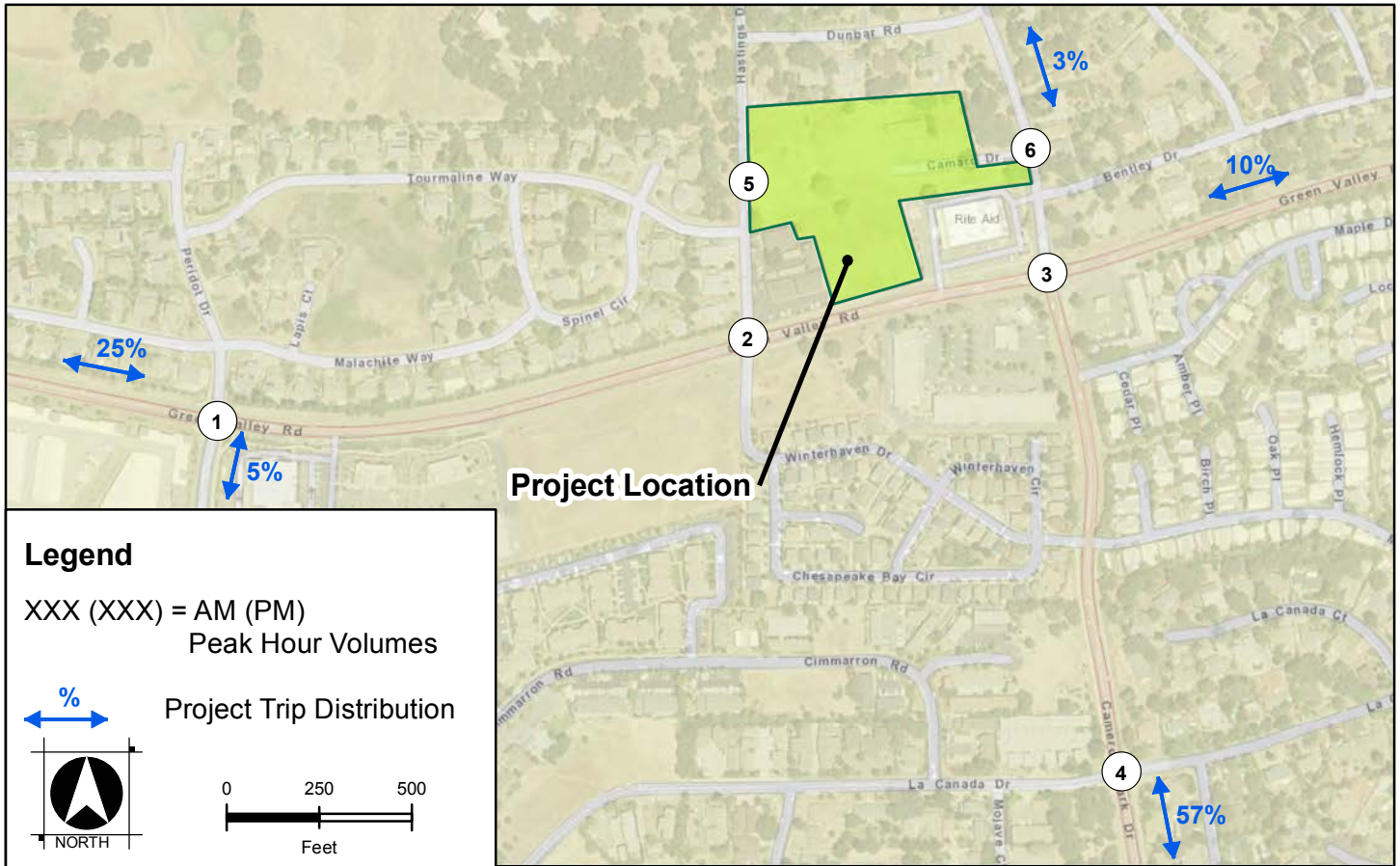
Figure 6 illustrates the estimated AM and PM peak hour “Existing plus Project” conditions traffic volumes at study intersections.

3.3 “EXISTING PLUS PROJECT” INTERSECTION OPERATIONS

“Existing plus Project” intersection operations were quantified under “Existing plus Project” traffic volumes (shown in **Figure 6**) and existing intersection lane geometrics and control (shown in **Figure 3**). **Table 5** illustrates the resulting “Existing plus Project” intersection LOS operations. As well as “Existing” conditions intersection delays and LOS for comparison purposes.

As shown in **Table 5**, the two-way stop-controlled Green Valley Road / Hastings Drive-Winterhaven Drive intersection is projected to operate at unacceptable worst-case movement LOS “F” under “Existing plus Project” AM peak hour conditions. All of the remaining study intersections are projected to operate at acceptable “Existing plus Project” level of service conditions during the AM and PM peak hours. CA MUTCD Peak Hour Signal Warrant 3 is not projected to be met at any study intersections under “Existing plus Project” conditions. Synchro software intersection LOS outputs can be found in **Appendix B**, and CA MUTCD Peak Hour Signal Warrant 3 worksheets can be found in **Appendix C**.

All recommended improvements and mitigation measures are discussed in a subsequent section of this TIS report.



Legend

XXX (XXX) = AM (PM)
Peak Hour Volumes

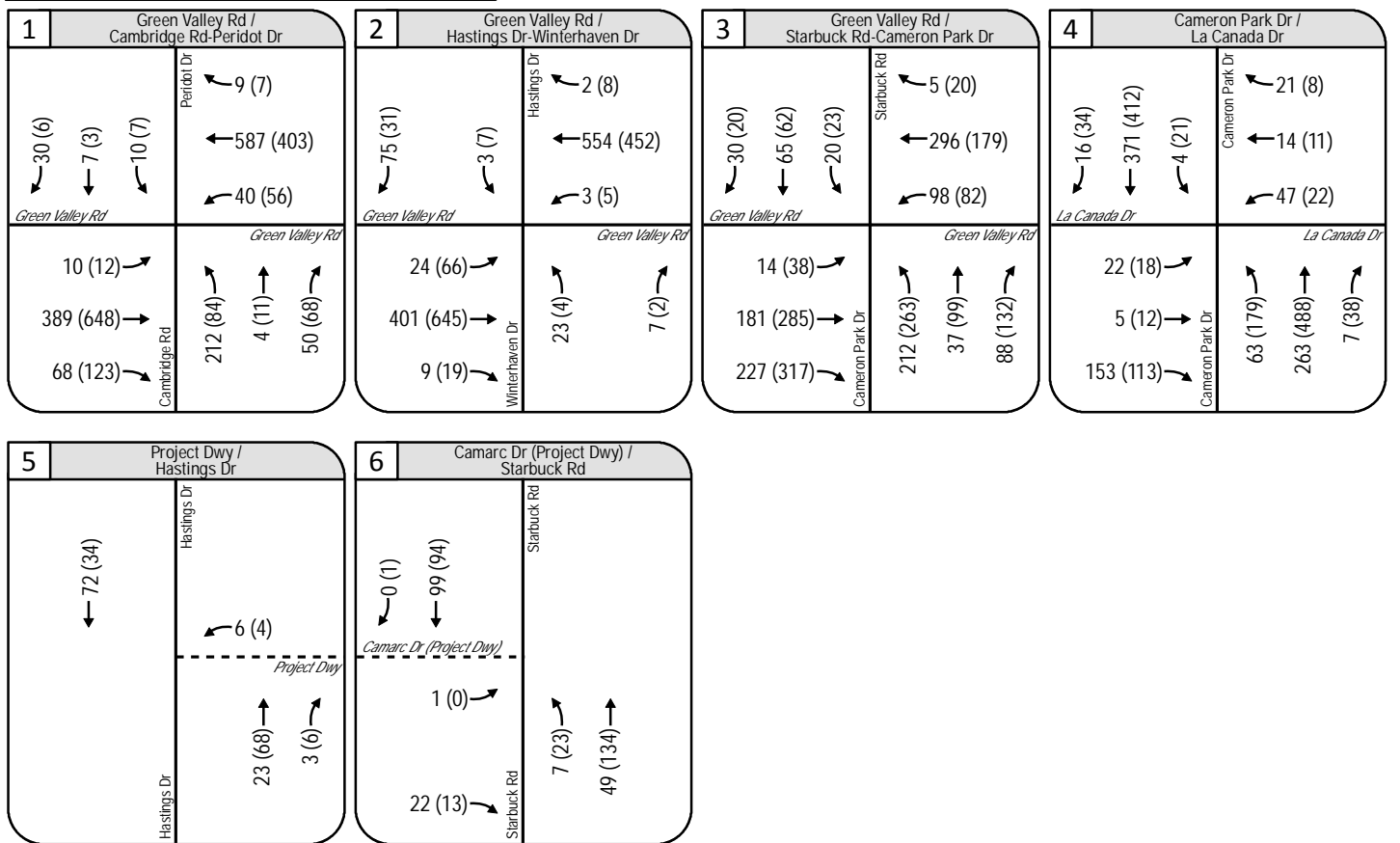
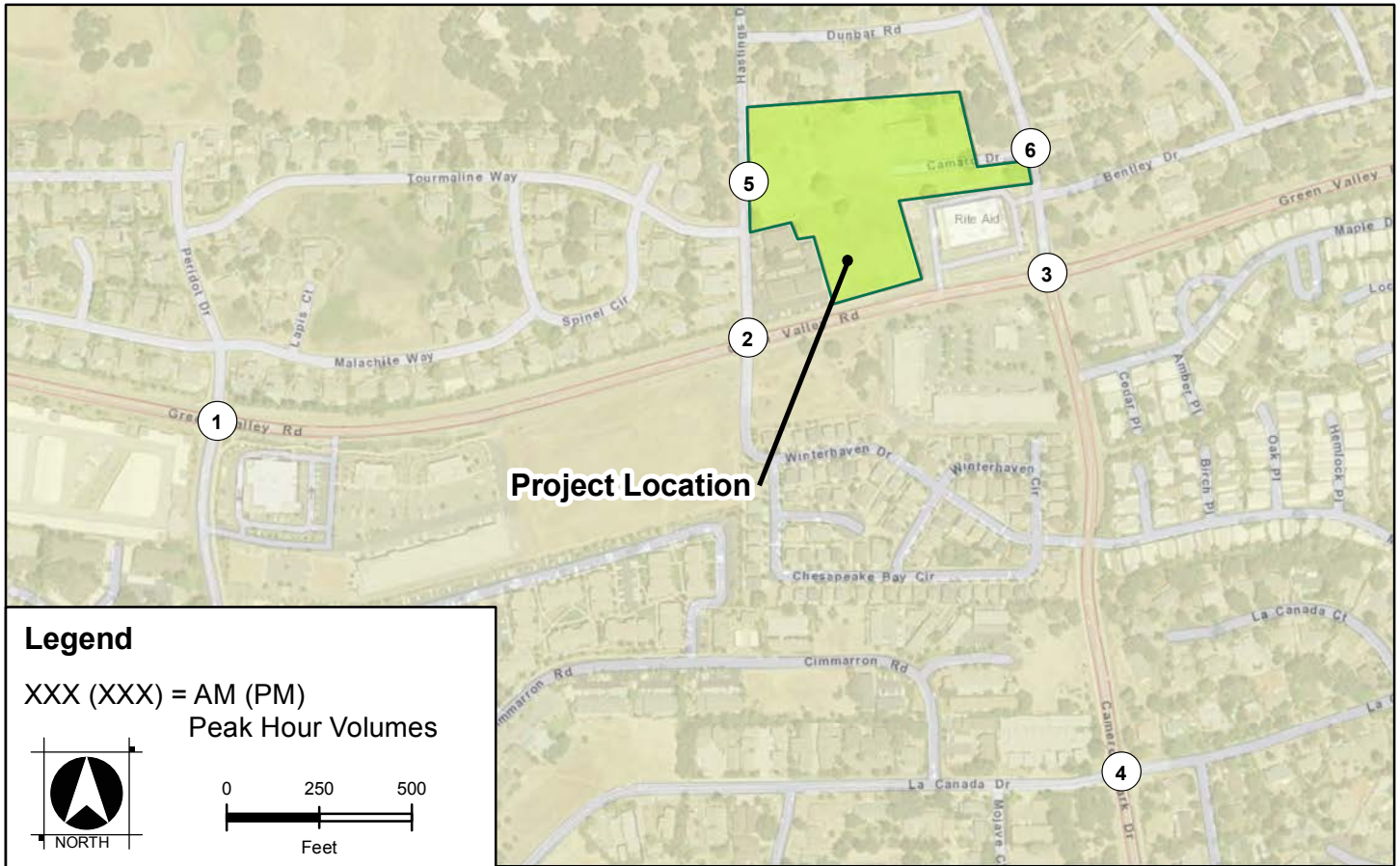
Project Trip Distribution

1	Green Valley Rd / Cambridge Rd-Peridot Dr	2	Green Valley Rd / Hastings Dr-Winterhaven Dr	3	Green Valley Rd / Starbuck Rd-Cameron Park Dr	4	Cameron Park Dr / La Canada Dr																																											
<table border="1"> <tr> <td>Peridot Dr</td> <td>← 6 (4)</td> <td>← 1 (1)</td> </tr> <tr> <td>Green Valley Rd</td> <td>← 1 (1)</td> <td></td> </tr> <tr> <td>Cambridge Rd</td> <td>2 (6) →</td> <td>1 (1) →</td> </tr> </table>	Peridot Dr	← 6 (4)	← 1 (1)	Green Valley Rd	← 1 (1)		Cambridge Rd	2 (6) →	1 (1) →	<table border="1"> <tr> <td>Hastings Dr</td> <td>← 1 (1)</td> </tr> <tr> <td>Green Valley Rd</td> <td>← 6 (4)</td> </tr> <tr> <td>Winterhaven Dr</td> <td>3 (6) →</td> </tr> <tr> <td>Green Valley Rd</td> <td>0 (1) →</td> </tr> </table>	Hastings Dr	← 1 (1)	Green Valley Rd	← 6 (4)	Winterhaven Dr	3 (6) →	Green Valley Rd	0 (1) →	<table border="1"> <tr> <td>Starbuck Rd</td> <td>↖ 1 (3)</td> </tr> <tr> <td>Green Valley Rd</td> <td>↖ 1 (1)</td> </tr> <tr> <td>Green Valley Rd</td> <td>↓ 13 (8)</td> </tr> <tr> <td>Green Valley Rd</td> <td>↘ 2 (2)</td> </tr> <tr> <td>Cameron Park Dr</td> <td>0 (1) →</td> </tr> <tr> <td>Green Valley Rd</td> <td>↑ 5 (14)</td> </tr> </table>	Starbuck Rd	↖ 1 (3)	Green Valley Rd	↖ 1 (1)	Green Valley Rd	↓ 13 (8)	Green Valley Rd	↘ 2 (2)	Cameron Park Dr	0 (1) →	Green Valley Rd	↑ 5 (14)	<table border="1"> <tr> <td>Cameron Park Dr</td> <td>↓ 13 (8)</td> </tr> <tr> <td>La Canada Dr</td> <td></td> </tr> <tr> <td>Cameron Park Dr</td> <td>↑ 5 (14)</td> </tr> </table>	Cameron Park Dr	↓ 13 (8)	La Canada Dr		Cameron Park Dr	↑ 5 (14)	<table border="1"> <tr> <td>Hastings Dr</td> <td>← 6 (4)</td> </tr> <tr> <td>Project Dwy</td> <td>↘ 3 (6)</td> </tr> </table>	Hastings Dr	← 6 (4)	Project Dwy	↘ 3 (6)	<table border="1"> <tr> <td>Starbuck Rd</td> <td>↖ 6 (18)</td> </tr> <tr> <td>Camarc Dr (Project Dwy)</td> <td>↖ 1 (0)</td> </tr> <tr> <td>Starbuck Rd</td> <td>↖ 16 (11)</td> </tr> </table>	Starbuck Rd	↖ 6 (18)	Camarc Dr (Project Dwy)	↖ 1 (0)	Starbuck Rd	↖ 16 (11)
Peridot Dr	← 6 (4)	← 1 (1)																																																
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Project Trip Distribution and "Project Only" Traffic Volumes
Cameron Ranch Development TIS
El Dorado County, CA
July 2017

Figure 5





"Existing plus Project" Traffic Volumes
 Cameron Ranch Development TIS
 El Dorado County, CA
 July 2017

Figure 6



Table 5. “Existing plus Project” Conditions Intersection Traffic Operations

	Intersection	Control Type	AM Peak Hour						PM Peak Hour					
			Existing Conditions			Existing plus Project			Existing Conditions			Existing plus Project		
			Delay ¹	LOS	Wnt ²	Delay ¹	LOS	Wnt ²	Delay ¹	LOS	Wnt ²	Delay ¹	LOS	Wnt ²
1	Green Valley Road / Cambridge Road-Peridot Drive	Signal	28.3	C	-	28.6	C	-	28.2	C	-	28.4	C	-
2	Green Valley Road / Hastings Drive-Winterhaven Drive	TWSC	47.2	E	No	50.4	F	No	43.7	E	No	45.9	E	No
3	Green Valley Road / Starbuck Road-Cameron Park Drive	Signal	36.9	D	-	37.7	D	-	44.9	D	-	45.3	D	-
4	La Canada Drive / Cameron Park Drive	Signal	37.6	D	-	38.3	D	-	37.1	D	-	37.5	D	-
5	Project Driveway / Hastings Drive	TWSC	-	-	-	9.1	A	No	-	-	-	9.2	A	No
6	Camarc Drive (Project Driveway) / Starbuck Road	TWSC	8.8	A	No	8.9	A	No	8.8	A	No	8.8	A	No

Notes: 1. For OWSC (One-Way-Stop-Control) and TWSC (Two-Way-Stop-Control) intersections, "worst-case" movement delay is indicated. "Average" control delays (in seconds/vehicle) are indicated for AWSC (All-Way-Stop-Control) and Signal-Control intersections.
 2. Wnt Met? = CA MUTCD Peak Hour Signal Warrant 3
BOLD indicates unacceptable level of service.

4. “NEAR-TERM” CONDITIONS

This chapter presents the study area intersection traffic operations results under “Near-term” conditions without Project generated trips. The *El Dorado County TIS Guidelines* define “Near-term” conditions as 10 years from the current year with traffic volumes calculated using a straight-line interpolation between existing traffic levels and the County’s TDM 2035 forecast traffic projections. Discussion of how 2035 forecast traffic volumes were obtained is included in Chapter 6 of this TIS. As there are currently no County CIPs on study are facilities assumed to be completed by year 2027, “Near-term” roadway network conditions are assumed to be the same as existing.

“Near-term” conditions are a near-term future condition that could reasonably represent study area conditions at the time of Project completion. Projected “Near-term” study intersection turning movement volumes are presented in **Figure 7**.

4.1 “NEAR-TERM” (NO PROJECT) INTERSECTION OPERATIONS

“Near-term” intersection operations were quantified under “Near-term” traffic volumes (shown in **Figure 7**) and existing lane geometrics and control (shown in **Figure 3**). **Table 6** illustrates the resulting “Near-term” intersection LOS operations.

Table 6. “Near-term” Conditions Intersection Traffic Operations

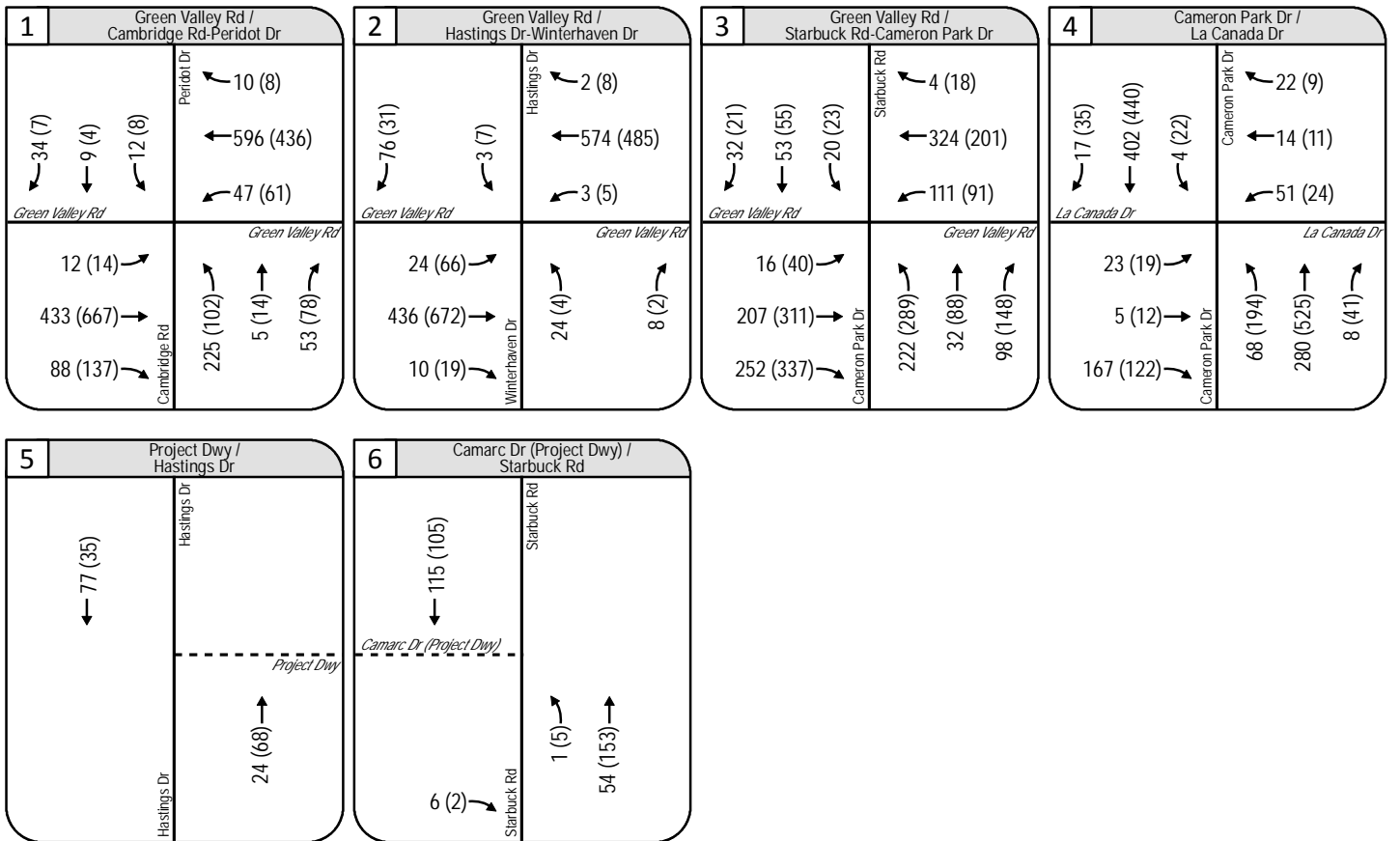
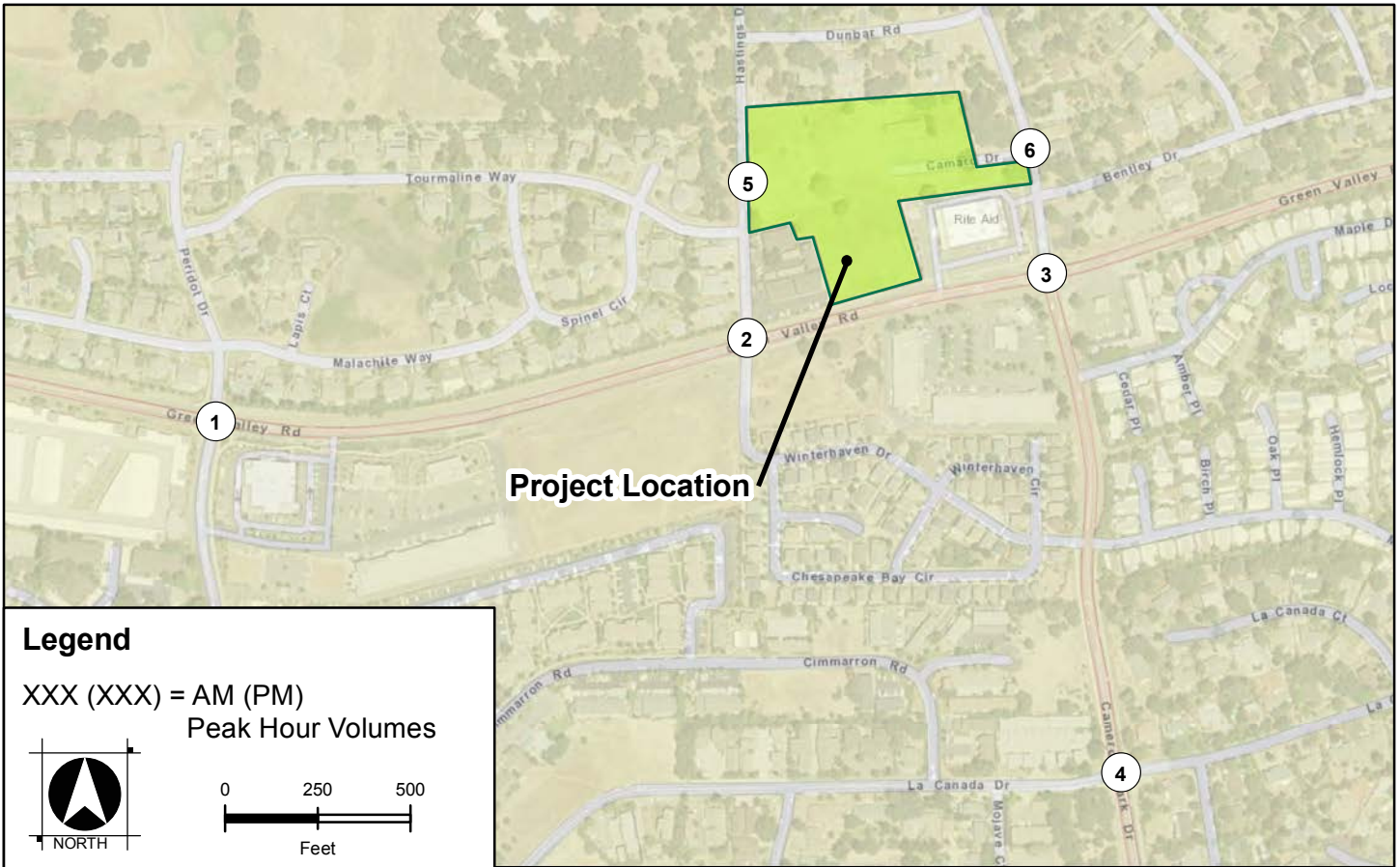
	Intersection	Control Type	AM Peak Hour			PM Peak Hour		
			Delay (S/V) ¹	LOS	Wrnt Met? ²	Delay (S/V) ¹	LOS	Wrnt Met? ²
1	Green Valley Road / Cambridge Road-Peridot Drive	Signal	37.8	D	-	29.1	C	-
2	Green Valley Road / Hastings Drive-Winterhaven Drive	TWSC	61.0	F	No	51.7	F	No
3	Green Valley Road / Starbuck Road-Cameron Park Drive	Signal	42.0	D	-	49.4	D	-
4	La Canada Drive / Cameron Park Drive	Signal	42.6	D	-	40.0	D	-
5	Project Driveway / Hastings Drive	TWSC	-	-	-	-	-	-
6	Camarc Drive (Project Driveway) / Starbuck Road	TWSC	8.9	A	No	8.8	A	No

Notes: 1. For OWSC (One-Way-Stop-Control) and TWSC (Two-Way-Stop-Control) intersections, “worst-case” movement delay is indicated. “Average” control delays (in seconds/vehicle) are indicated for AWSC (All-Way-Stop-Control) and Signal-Control intersections.
 2. Wmt Met? = CA MUTCD Peak Hour Signal Warrant 3
BOLD indicates unacceptable level of service.

As shown in **Table 6**, the two-way stop-controlled Green Valley Road / Hastings Drive-Winterhaven Drive intersection is projected to operate at unacceptable worst-case movement LOS “F” under “Near-term” AM and PM peak hour conditions.

All of the remaining study intersections are projected to operate at acceptable “Near-term” level of service conditions during the AM and PM peak hours. CA MUTCD Peak Hour Signal Warrant 3 is not projected to be met at any study intersections under “Near-term” conditions. Synchro software intersection LOS outputs can be found in **Appendix B**, and CA MUTCD Peak Hour Signal Warrant 3 worksheets can be found in **Appendix C**.

All recommended improvements and mitigation measures are discussed in a subsequent section of this TIS report.



"Near-Term" Traffic Volumes
 Cameron Ranch Development TIS
 El Dorado County, CA
 July 2017

Figure 7



5. “NEAR-TERM PLUS PROJECT” CONDITIONS

“Project Only” traffic volumes were added on top of “Near-term” conditions traffic volumes at study intersections to generate “Near-term plus Project” conditions traffic volumes. **Figure 8** illustrates the estimated AM and PM peak hour “Near-term plus Project” conditions traffic volumes at study intersections.

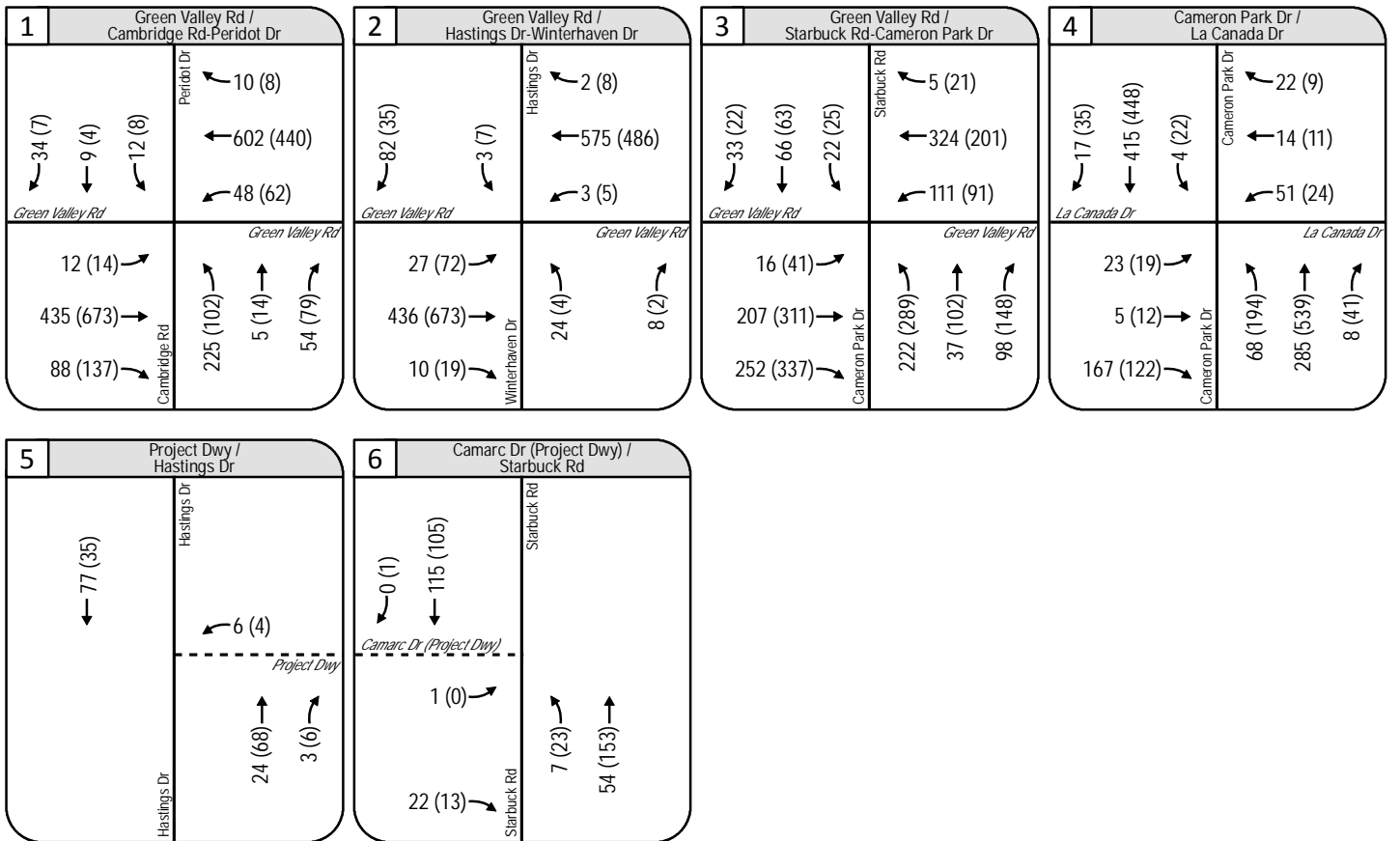
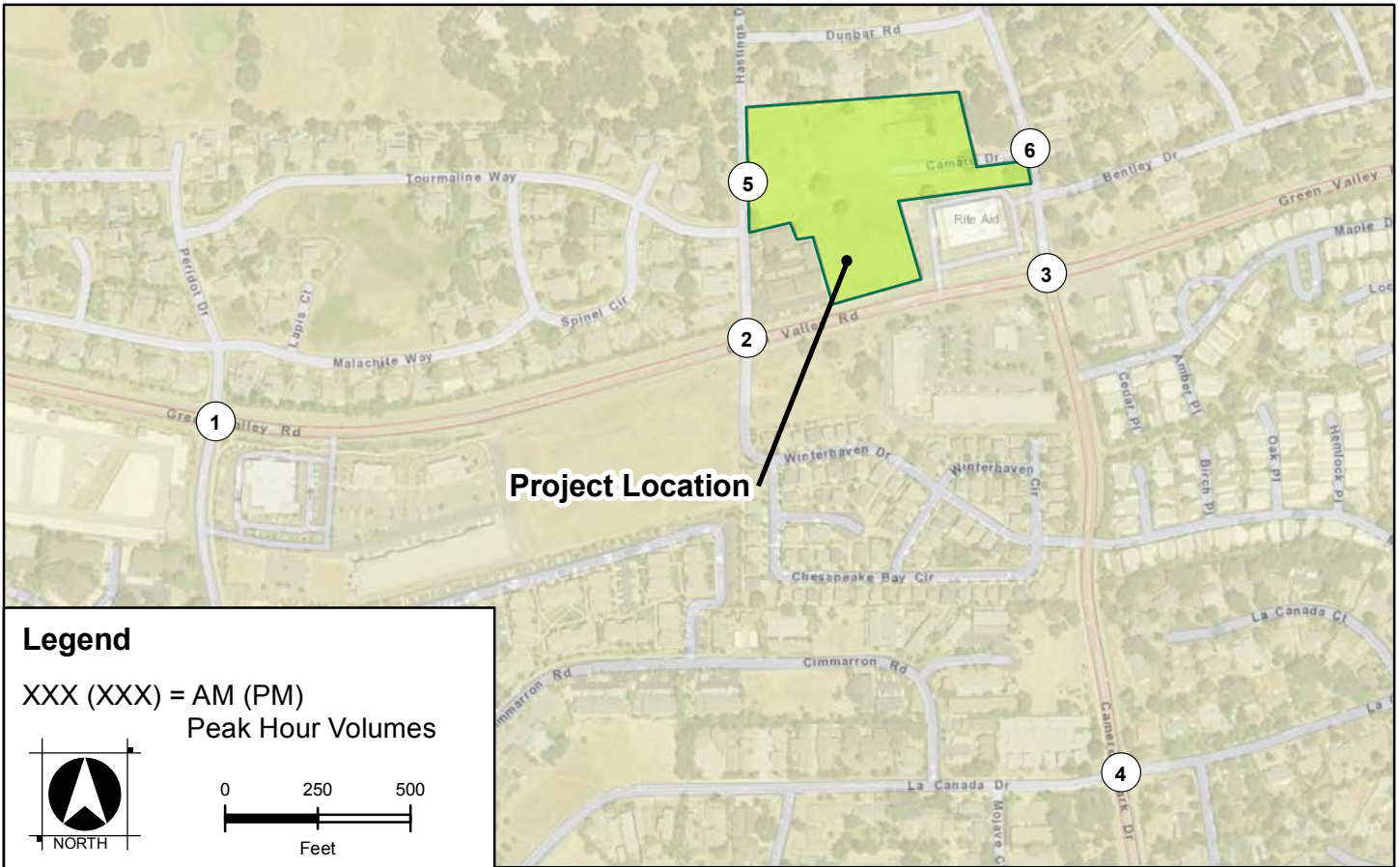
5.1 “NEAR-TERM PLUS PROJECT” INTERSECTION OPERATIONS

“Near-term plus Project” intersection operations were quantified under “Near-term plus Project” traffic volumes (shown in **Figure 8**) and existing lane geometrics and control (shown in **Figure 3**). **Table 7** illustrates the resulting “Near-term plus Project” intersection LOS operations, as well as “Near-term” conditions intersection delays and LOS for comparison purposes

As shown in **Table 7**, the two-way stop-controlled Green Valley Road / Hastings Drive-Winterhaven Drive intersection is projected to operate at unacceptable worst-case movement LOS “F” under “Near-term plus Project” AM and PM peak hour conditions.

All of the remaining study intersections are projected to operate at acceptable “Near-term plus Project” level of service conditions during the AM and PM peak hours. CA MUTCD Peak Hour Signal Warrant 3 is not projected to be met at any study intersections under “Near-term plus Project” conditions. Synchro software intersection LOS outputs can be found in **Appendix B**, and CA MUTCD Peak Hour Signal Warrant 3 worksheets can be found in **Appendix C**.

All recommended improvements and mitigation measures are discussed in a subsequent section of this TIS report.



"Near-Term plus Project" Traffic Volumes
 Cameron Ranch Development TIS
 El Dorado County, CA
 July 2017

Figure 8



Table 7. “Near-term plus Project” Conditions Intersection Traffic Operations

	Intersection	Control Type	AM Peak Hour						PM Peak Hour					
			Near-term Conditions			Near-term plus Project			Near-term Conditions			Near-term plus Project		
			Delay ¹	LOS	Wmt ²	Delay ¹	LOS	Wmt ²	Delay ¹	LOS	Wmt ²	Delay ¹	LOS	Wmt ²
1	Green Valley Road / Cambridge Road-Peridot Drive	Signal	37.8	D	-	38.2	D	-	29.1	C	-	29.3	C	-
2	Green Valley Road / Hastings Drive-Winterhaven Drive	TWSC	61.0	F	No	65.5	F	No	51.7	F	No	54.2	F	No
3	Green Valley Road / Starbuck Road-Cameron Park Drive	Signal	42.0	D	-	42.5	D	-	49.4	D	-	51.0	D	-
4	La Canada Drive / Cameron Park Drive	Signal	42.6	D	-	44.0	D	-	40.0	D	-	40.4	D	-
5	Project Driveway / Hastings Drive	TWSC	-	-	-	9.2	A	No	-	-	-	9.1	A	No
6	Camaro Drive (Project Driveway) / Starbuck Road	TWSC	8.9	A	No	9.0	A	No	8.8	A	No	8.9	A	No

Notes: 1. For OWSC (One-Way-Stop-Control) and TWSC (Two-Way-Stop-Control) intersections, "worst-case" movement delay is indicated. "Average" control delays (in seconds/vehicle) are indicated for AWSC (All-Way-Stop-Control) and Signal-Control intersections.
 2. Wmt Met? = CA MUTCD Peak Hour Signal Warrant 3
BOLD indicates unacceptable level of service.

6. CUMULATIVE BASE CONDITIONS

“Cumulative Base” conditions are defined as a cumulative future (Year 2035) condition estimated using the County TDM assuming the proposed Project site itself remains undeveloped. Latest base year 2010 and draft forecast year 2035 scenarios from the County TDM, provided by County staff, were used to find yearly growth factors for peak hour volumes on each approach of the study intersections. Growth factors for each intersection movement were balanced based on traffic entering and exiting the study intersection on each approach (i.e. the Furness factoring process).

Project traffic was determined to enter the surrounding roadway network via TAZ node number 239. The difference in land uses contained within TAZ 239 between the provided 2010 and 2035 TDM scenarios generated a similar amount of traffic as the proposed Project, which indicated the Project was essentially included in the TAZ under future conditions. As such, the calculated yearly growth factor between base year and year 2035 model volumes was applied to “Existing” condition traffic counts to determine “Cumulative plus Project” traffic volumes. “Project-Only” traffic volumes were then subtracted from “Cumulative plus Project” volumes to obtain the “Cumulative Base” traffic volumes used in this TIS.

As there are currently no CIPs on study area roadways assumed to be completed by 2035, “Cumulative Base” roadway network conditions are assumed to be the same as existing. “Cumulative Base” conditions study intersection turning movement volumes are presented in **Figure 9**.

6.1 “CUMULATIVE BASE” (NO PROJECT) INTERSECTION OPERATIONS

“Cumulative Base” intersection operations were quantified under “Cumulative Base” traffic volumes (shown in **Figure 9**) and existing lane geometrics and control (shown in **Figure 3**). **Table 8** illustrates the resulting “Cumulative Base” intersection LOS operations.

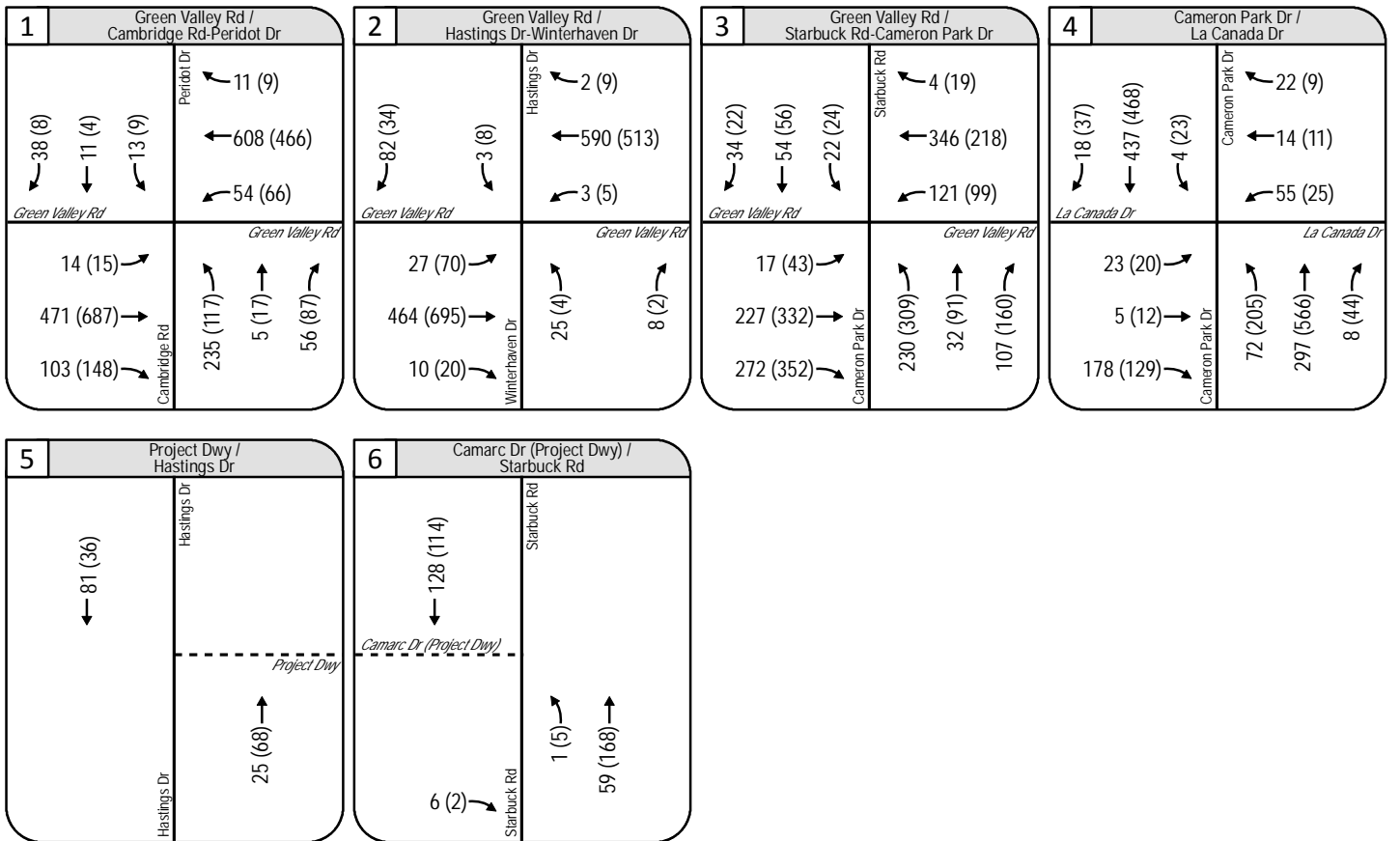
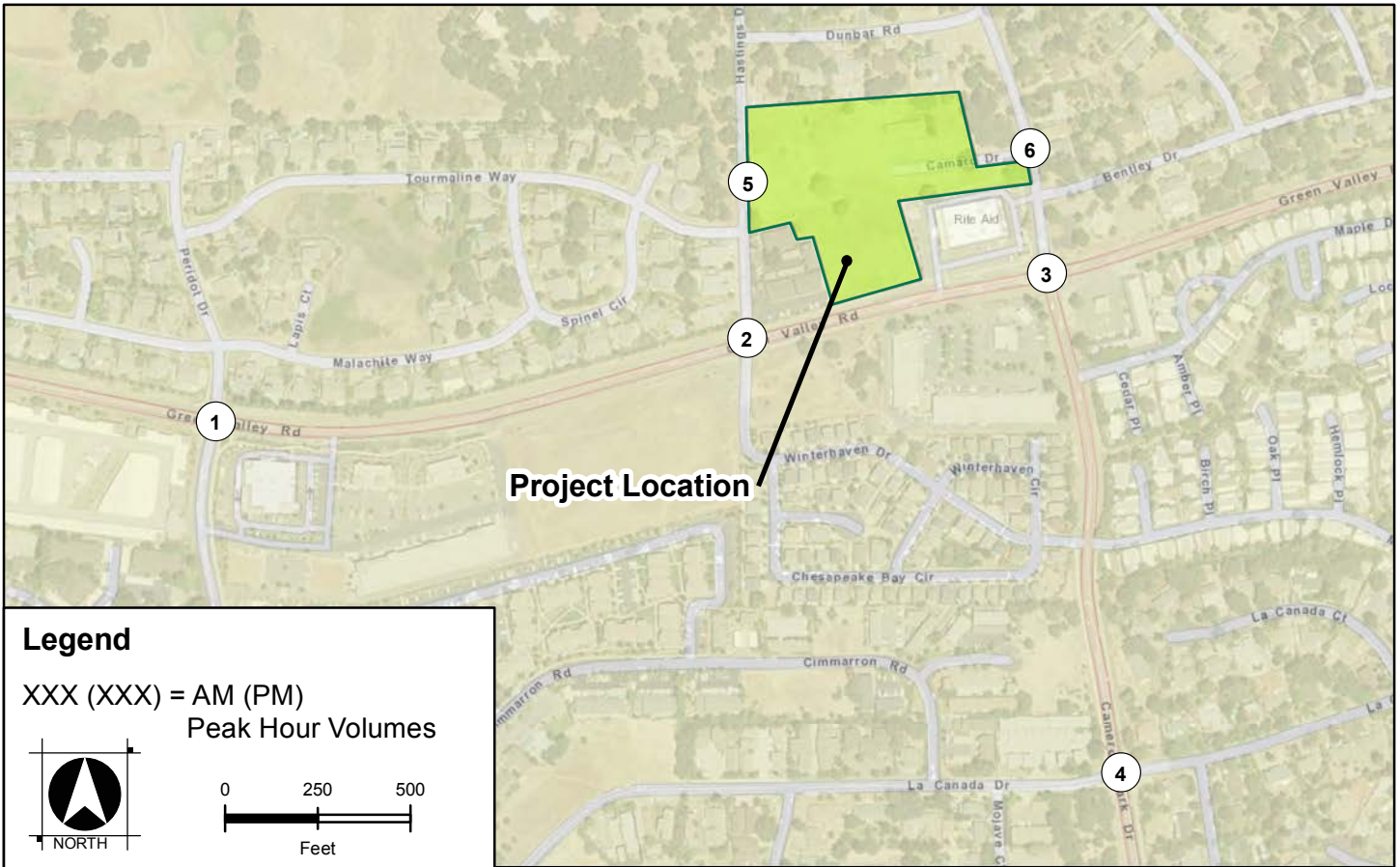
Table 8. “Cumulative Base” Conditions Intersection Traffic Operations

	Intersection	Control Type	AM Peak Hour			PM Peak Hour		
			Delay (S/V) ¹	LOS	Wrnt Met? ²	Delay (S/V) ¹	LOS	Wrnt Met? ²
1	Green Valley Road / Cambridge Road-Peridot Drive	Signal	42.1	D	-	32.2	C	-
2	Green Valley Road / Hastings Drive-Winterhaven Drive	TWSC	78.5	F	No	59.4	F	No
3	Green Valley Road / Starbuck Road-Cameron Park Drive	Signal	43.2	D	-	56.8	E	-
4	La Canada Drive / Cameron Park Drive	Signal	43.1	D	-	39.5	D	-
5	Project Driveway / Hastings Drive	TWSC	-	-	-	-	-	-
6	Camarc Drive (Project Driveway) / Starbuck Road	TWSC	9.0	A	No	8.9	A	No

Notes: 1. For OWSC (One-Way-Stop-Control) and TWSC (Two-Way-Stop-Control) intersections, “worst-case” movement delay is indicated. “Average” control delays (in seconds/vehicle) are indicated for AWSC (All-Way-Stop-Control) and Signal-Control intersections.
 2. Wrnt Met? = CA MUTCD Peak Hour Signal Warrant 3
BOLD indicates unacceptable level of service.

As shown in **Table 8**, the two-way stop-controlled Green Valley Road / Hastings Drive-Winterhaven Drive intersection is projected to operate at unacceptable worst-case movement LOS “F” under “Cumulative Base” AM and PM peak hour conditions.

All of the remaining study intersections are projected to operate at acceptable “Cumulative Base” level of service conditions during the AM and PM peak hours. CA MUTCD Peak Hour Signal Warrant 3 is not projected to be met at any study intersections under “Cumulative Base” conditions.



"Cumulative Base" Traffic Volumes
 Cameron Ranch Development TIS
 El Dorado County, CA
 July 2017

Figure 9



Synchro software intersection LOS outputs can be found in **Appendix B**, and CA MUTCD Peak Hour Signal Warrant 3 worksheets can be found in **Appendix C**.

All recommended improvements and mitigation measures are discussed in a subsequent section of this TIS report.

7. “CUMULATIVE PLUS PROJECT” CONDITIONS

“Project Only” traffic volumes were added on top of “Cumulative Base” conditions traffic volumes at study intersections to generate “Cumulative plus Project” conditions traffic volumes. **Figure 10** illustrates the estimated AM and PM peak hour “Cumulative Base plus Project” conditions traffic volumes at study intersections.

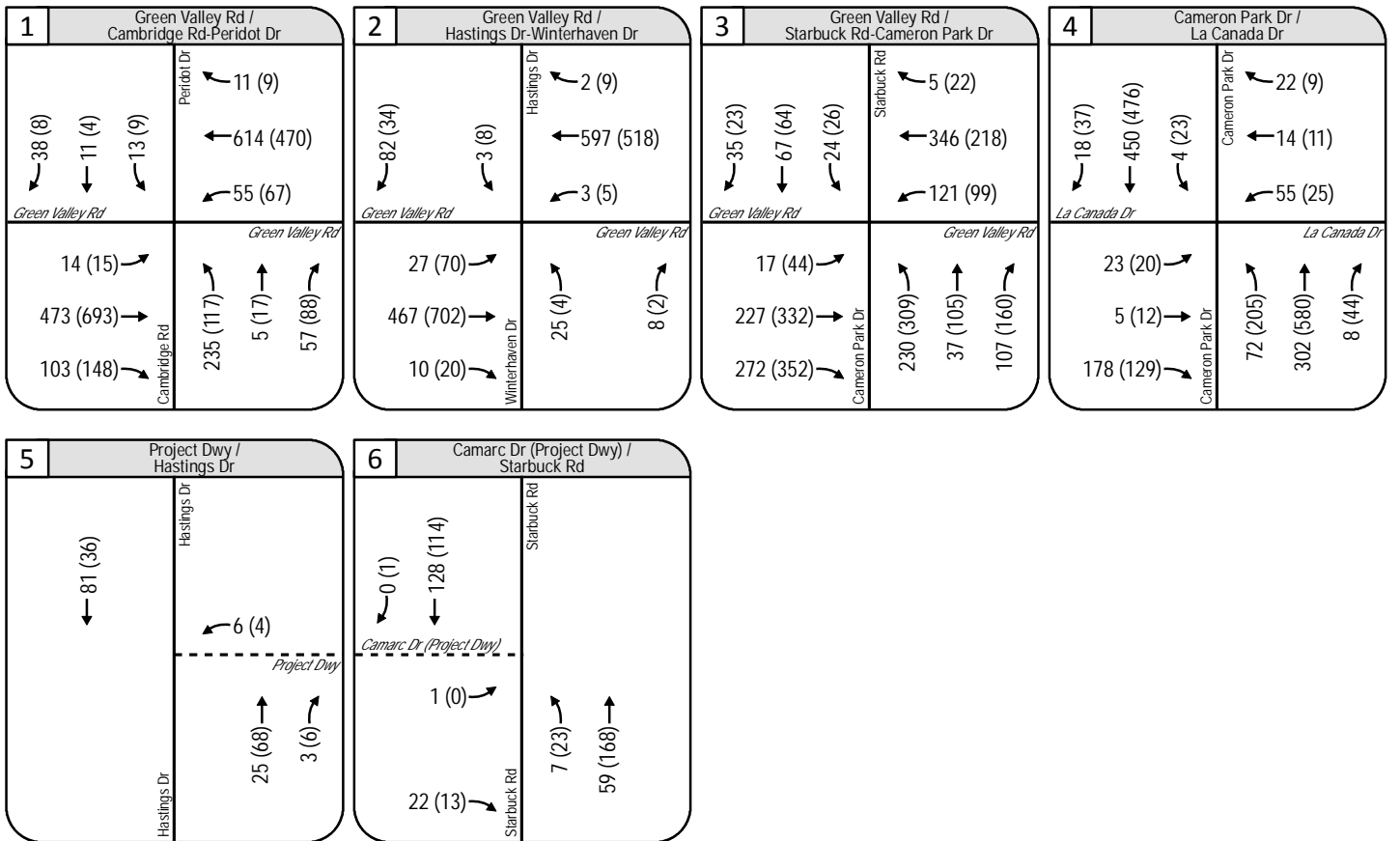
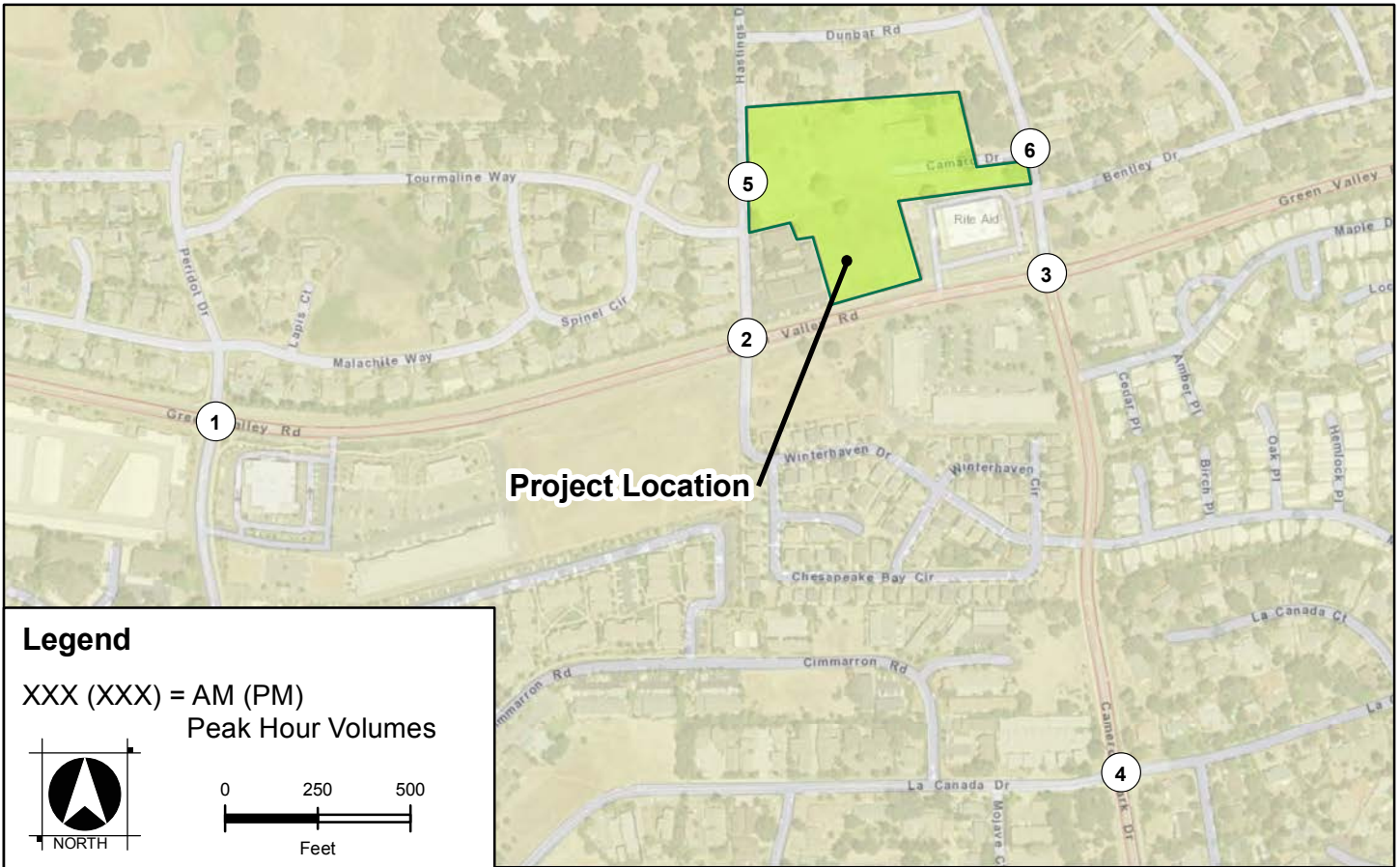
7.1 “CUMULATIVE PLUS PROJECT” INTERSECTION OPERATIONS

“Cumulative plus Project” intersection operations were quantified under “Cumulative plus Project” traffic volumes (shown in **Figure 10**) and existing lane geometrics and control (shown in **Figure 3**). **Table 9** illustrates the resulting “Cumulative plus Project” intersection LOS operations, as well as “Cumulative Base” conditions intersection delays and LOS for comparison purposes.

As shown in **Table 9** the two-way stop-controlled Green Valley Road / Hastings Drive-Winterhaven Drive intersection is projected to operate at unacceptable worst-case movement intersection LOS “F” under “Cumulative plus project” AM and PM peak hour conditions.

All of the remaining study intersections are projected to operate at acceptable “Cumulative Base plus Project” level of service conditions during the AM and PM peak hours. CA MUTCD Peak Hour Signal Warrant 3 is not projected to be met at any study intersections under “Cumulative Base plus Project” conditions. Synchro software intersection LOS outputs can be found in **Appendix B**, and CA MUTCD Peak Hour Signal Warrant 3 worksheets can be found in **Appendix C**.

All recommended improvements and mitigation measures are discussed in a subsequent section of this TIS report.



"Cumulative plus Project" Traffic Volumes
 Cameron Ranch Development TIS
 El Dorado County, CA
 July 2017

Figure 10



Table 9. "Cumulative plus Project" Conditions Intersection Traffic Operations

	Intersection	Control Type	AM Peak Hour						PM Peak Hour					
			Cumulative Conditions			Cumulative plus Project			Cumulative Conditions			Cumulative plus Project		
			Delay ¹	LOS	Wnt ²	Delay ¹	LOS	Wnt ²	Delay ¹	LOS	Wnt ²	Delay ¹	LOS	Wnt ²
1	Green Valley Road / Cambridge Road-Peridot Drive	Signal	42.1	D	-	42.4	D	-	32.2	C	-	32.5	C	-
2	Green Valley Road / Hastings Drive-Winterhaven Drive	TWSC	78.5	F	No	81.3	F	No	59.4	F	No	61.1	F	No
3	Green Valley Road / Starbuck Road-Cameron Park Drive	Signal	43.2	D	-	43.9	D	-	56.8	E	-	57.2	E	-
4	La Canada Drive / Cameron Park Drive	Signal	43.1	D	-	44.1	D	-	39.5	D	-	39.8	D	-
5	Project Driveway / Hastings Drive	TWSC	-	-	-	9.1	A	No	-	-	-	9.1	A	No
6	Camarc Drive (Project Driveway) / Starbuck Road	TWSC	9.0	A	No	9.1	A	No	8.9	A	No	8.9	A	No

Notes: 1. For OWSC (One-Way-Stop-Control) and TWSC (Two-Way-Stop-Control) intersections, "worst-case" movement delay is indicated. "Average" control delays (in seconds/vehicle) are indicated for AWSC (All-Way-Stop-Control) and Signal-Control intersections.
 2. Wnt Met? = CA MUTCD Peak Hour Signal Warrant 3
BOLD indicates unacceptable level of service.

8. SITE ACCESS AND CIRCULATION

This chapter reviews the proposed Project site plan, including discussion of site access driveways, internal queuing, internal circulation, pedestrian and bicycle facilities, on-site parking, and potential aisle or parking conflicts.

8.1 PROJECT ACCESS DRIVEWAYS

The proposed Project would gain access to the nearby roadway network via two (2) Project Driveways. The two project access driveways are described below:

- **Project Driveway 1:** A new full-access driveway that extends east from Hastings Drive, approximately 400 feet north of the Green Valley Road / Hastings Drive-Winterhaven Drive intersection and approximately 120 feet north of the Tourmaline Way / Hastings Drive T- intersection.. Project Driveway 1 is single lane in, single lane out, and egress stop-controlled, with Hastings Drive traffic having the right-of-way. Based on Synchro HCM 2010 analysis, the estimated queueing at this Project driveway is approximately 25 feet (or one vehicle) during the AM Peak hour and 0 feet during the PM Peak hour. Based on the Project site plan, Driveway 1 would have a throat depth of approximately 100 feet, which satisfies the minimum required throat depth of 25 feet and provides adequate storage for projected driveway queuing.
- **Project Driveway 2:** A full-access driveway that extends west from Starbuck Road, approximately 320 feet north of the Green Valley Road / Starbuck Road-Cameron Park Drive intersection. And approximately 125 feet north of the Rite Aid Entrance-Bentley Drive / Starbuck Road intersection. Project Driveway 2 is single lane in, single lane out, and egress stop-controlled, with Starbuck Road traffic having the right-of-way. The Project Driveway would be constructed in roughly the same location as Camarc Drive, an existing driveway that serves the apartment building currently on the Project site. Based on Synchro HCM 2010 analysis, the estimated queueing at this Project driveway is approximately 0 feet during the AM Peak hour and 25 feet (or one vehicle) during the PM Peak hour. Based on the Project site plan, Driveway 2 would have a throat depth of approximately 200 feet, which satisfies the minimum required throat depth of 25 feet and provides adequate storage for projected driveway queuing.

The proposed Project would be responsible for a 100% contribution towards the construction of the Project Driveway / Hastings Drive and Camarc Drive (Project Driveway) / Starbuck Road intersections (see **Appendix D** – Project Fair-Share Percentage Estimate). Since the proposed Project driveways would intersect Hastings Drive and Starbuck Road at 90 degree angles, and no on-street parking is allowed on Hastings Drive or Starbuck Road near the Project site, sufficient sight-distance would be available to maintain intersection visibility for vehicles existing and/or entering the Project site.

8.2 INTERNAL CIRCULATION AND ON-SITE PARKING

All roadways within the Project site plan will allow two-way traffic and all internal intersections will be yield-controlled. Traffic volumes on proposed internal Project site roadways are not projected to be large enough to require any critical traffic control improvements. Therefore, no internal street intersection improvements are recommended. Emergency vehicle access to the site is provided via the two proposed Project driveways.

On-street parking is planned to be provided on all internal Project roadways. A minimum of 2 off-street parking spaces (not in tandem) are required for conventional single-family detached land uses per section 17.18.060 of the El Dorado County Zoning Ordinance (last revised 2009). This requirement is satisfied per the Project site plan.

9. TRAFFIC SAFETY

This chapter discusses traffic safety and accident rates on study area facilities as outlined in the El Dorado County Annual Accident Location Study for 2016 (AALS), dated April 13, 2017.

9.1 ACCIDENT HISTORY

The County AALS contains data provided by California Highway Patrol collision reports. The AALS summarizes rates of Accidents per Million Entering Vehicles (Acc/MEV) at individual locations. The County's accepted accident rate is 1.00 Acc/MEV per location. Locations with accident rates higher than 1.00 Acc/MEV are considered for additional action.

Chapter 1 of the AALS identifies 55 locations that have been selected for further analysis due to meeting certain criteria over the 2016 study period (having three or more reported accidents during 2016, having two or more reported accidents during 2016 if one or more resulted in a fatality, etc.) and Chapter 2 provides further details and actions to be taken at each location. TIS study area facilities included in this list are:

- Cameron Park Drive in the vicinity of Green Valley Road

The three (3) accidents that occurred at this location in 2016, according to Chapter 1 of the AALS, are summarized in **Table 10**.

Table 10. AALS-Identified Accident Location Sites

Accident Location Site	Street	Direction	Cross Street	Injury	Fatal	Type
Cameron Park Drive in the Vicinity of Green Valley Road	Cameron Park Drive	South	Winterhaven Drive	2	0	Rearend
	Cameron Park Drive	South	Green Valley Road	0	0	Broadside
	Cameron Park Drive	South	Green Valley Road	1	0	Headon

According to Chapter 2 of the AALS, the three-year Acc/MEV rate at the Cameron Park Drive in the vicinity of Green Valley Road location is 0.26. As this accident rate is lower than the County threshold of 1.00, no action is required at this location. Per Chapters 5, 6, and 7 of the AALS, there are currently no study facilities considered for the County CIP, recently improved facilities, or pending improvements.

Table 11 summarizes accidents that occurred on the remaining facilities studied in this TIS as reported by the AALS 2016 Annual Accident Summary (Chapter 8).

Table 11. Additional 2016 Accident Sites

Street	Direction	Cross Street	Injury	Fatal	Type
Cameron Park Drive	South	La Canada Drive	1	0	Overturn
Cameron Park Drive	South	La Canada Drive	0	0	Sideswipe
Cameron Park Drive	South	Green Valley Road	0	0	Headon

As shown in **Table 11**, one (1) additional accident occurred on southbound Cameron Park Drive in the vicinity of Green Valley road that was not included in the AALS list of 55 accident location sites selected for further analysis. However, due to the low Acc/MEV rate of 0.26 at this location, the inclusion of this accident would not cause the site to exceed the County threshold of 1.00 Acc/MEV. In addition, Two (2) accidents occurred in 2016 in the vicinity of the La Canada Drive / Cameron Park Drive intersection. Since this location was not chosen as part of the AALS list of 55 accident location sites selected for further analysis, it can be assumed the Acc/MEV rate is lower than the County threshold of 1.00 Acc/MEV. Therefore, based on data from the County's AALS for 2016, accident rates within the Project vicinity are lower than the County's accepted benchmark of 1.00 Acc/MEV and no actions are currently required at any Project study facilities.

10. PEDESTRIAN, BICYCLE, AND TRANSIT IMPACTS

This chapter discusses projected Project impacts on study area transit, bicycle, and pedestrian facilities.

10.1 PEDESTRIAN AND BICYCLE FACILITIES

Pedestrian sidewalks are planned on all internal Project roadways. The Project tentative site plan (**Figure 2**) illustrates planned sidewalk connectivity to the existing sidewalk on the west side of Starbuck Road fronting Rite Aid. There are no planned pedestrian improvements along the Project border with Hastings Drive. On study facilities within the immediate Project vicinity, there are currently no paved sidewalks except for those fronting the Rite Aid parking lot.

Bicyclists can share proposed on-site roadways with vehicles to navigate the Project site and will be able access the existing Class II bike lanes on Green Valley Road and Cameron Park Drive via Project access driveways. Map 2 of the *El Dorado County Bicycle Transportation Plan* (November 9, 2010) illustrates proposed Class II bike lanes on the following study facilities:

- Cameron Park Drive from La Canada Drive to US 50
- Green Valley Road from Deer Valley Road to Francisco Drive

10.2 TRANSIT IMPACTS

The Project Study area is served by El Dorado Transit Route 40, which loops around Cameron Park every hour during the week. Project residents could access an existing transit stop located approximately 500 feet south (within walking distance) of the Camarc Drive (Project Driveway) / Starbuck Road intersection. There are currently no known planned transit improvements in the study area. Busses operating on study roadway facilities are not anticipated to experience significant increased delay due to the addition of Project trips to study intersections and roadways.

11. IMPACTS AND MITIGATION MEASURES

This chapter of the TIS evaluates the study intersection operations results presented in **Table 5** ("Existing plus Project" conditions), **Table 7** ("Background plus Project" conditions), and **Table 9** (Cumulative plus Project" conditions) against the LOS impact criteria defined in the *El Dorado County TIS Guidelines* and summarized in Section 1.5 of this report.

11.1 "EXISTING PLUS PROJECT" IMPACTS AND MITIGATION MEASURES

As illustrated in **Table 5**, the two-way stop-controlled Green Valley Road / Hastings Drive- Winterhaven Drive intersection is projected to operate at unacceptable LOS "F" under "Existing plus

Project” AM peak hour conditions. However, with the addition of Project-generated traffic, CA MUTCD Peak Hour Signal Warrant 3 is not projected to be met at this intersection. Therefore, Project impact at the Green Valley Road / Hastings Drive-Winterhaven Drive intersection is projected to be “**less than significant**”.

11.2 “NEAR-TERM PLUS PROJECT” IMPACTS AND MITIGATIONS MEASURES

As illustrated in **Table 7**, the two-way stop-controlled Green Valley Road / Hastings Drive-Winterhaven Drive intersection is projected to operate at unacceptable LOS “F” under “Near-term” and “Near-term plus Project” AM and PM peak hour conditions. However, with the addition of Project-generated traffic, CA MUTCD Peak Hour Signal Warrant 3 is not projected to be met at this intersection. Therefore, Project impact at the Green Valley Road / Hastings Drive-Winterhaven Drive intersection is projected to be “**less than significant**”.

11.3 “CUMULATIVE PLUS PROJECT” IMPACTS AND MITIGATIONS MEASURES

As illustrated in **Table 9**, the two-way stop-controlled Green Valley Road / Hastings Drive-Winterhaven Drive intersection is projected to operate at unacceptable LOS “F” under “Cumulative Base” and “Cumulative plus Project” AM and PM peak hour conditions. However, with the addition of Project-generated traffic, CA MUTCD Peak Hour Signal Warrant 3 is not projected to be met at this intersection. Therefore, Project impact at the Green Valley Road / Hastings Drive-Winterhaven Drive intersection is projected to be “**less than significant**”.

12. QUEUING ANALYSIS, DEFICIENCIES, AND RECOMMENDED IMPROVEMENTS

12.1 QUEUEING ANALYSIS

Queue Analysis was performed on all two-way stop-controlled and signalized study intersections for the AM and PM peak hours under all six study scenarios. For intersection approaches with left-turn pockets, 95th percentile queue lengths were reported for each left-turn movement, along with each movement’s available storage space. For single lane-approaches, the 95th percentile queue lengths were reported and compared to the length to the nearest cross-street. Results of this queue analysis are presented in **Table 12**.

As shown in **Table 12**, 95th percentile left-turn queues are projected to exceed the available storage length at the following intersections under “Existing”, “Existing plus Project”, “Near-term”, and “Near-term plus Project” AM and/or PM peak hour conditions:

- Green Valley Road / Cambridge Road-Peridot Drive: NBL
- Green Valley Road / Starbuck Road-Cameron Park Drive: NBL, WBL

Based on queueing deficiency criteria described in Section 1.5.2 of this report, the addition of Project-generated trips is not projected to cause queues to exceed available storage length at study intersection approaches (where the 95th percentile queue did not exceed storage length before the addition of Project trips) or lengthen queues where the 95th percentile queue already exceed the turn pocket length under “no project” conditions. Therefore, queueing deficiencies at all study intersections are projected to be “**less than significant**”.

Table 12. Queue Analysis

	Intersection	Approach	Available Storage Length (ft) ¹	Number of Trips Added AM(PM)	Projected Queue Length (ft) ²											
					AM Peak Hour						PM Peak Hour					
					Existing (Existing plus Project)		Near-term (Near-term plus Project)		Cumulative (Cumulative plus Project)		Existing (Existing plus Project)		Near-term (Near-term plus Project)		Cumulative (Cumulative plus Project)	
1	Green Valley Road / Cambridge Road-Peridot Drive	NBL	120	0(0)	200	(200)	200	(200)	250	(250)	125	(125)	150	(150)	175	(175)
		SB	130	0(0)	75	(75)	75	(75)	100	(100)	75	(75)	75	(75)	100	(100)
		EBL	130	0(0)	25	(25)	25	(25)	50	(50)	50	(50)	50	(50)	50	(50)
		WBL	135	1(1)	50	(50)	75	(75)	75	(75)	100	(100)	100	(100)	100	(100)
2	Green Valley Road / Hastings Drive-Winterhaven Drive	NB	300	0(0)	50	(50)	50	(50)	75	(75)	25	(25)	25	(25)	25	(25)
		SB	245	6(4)	50	(50)	50	(50)	50	(50)	25	(25)	25	(25)	25	(25)
		EBL	190	3(6)	25	(25)	25	(25)	25	(25)	25	(25)	25	(25)	25	(25)
		WBL	190	0(0)	0	(0)	0	(0)	0	(0)	0	(0)	0	(0)	0	(0)
3	Green Valley Road / Starbuck Road-Cameron Park Drive	NBL	200	0(0)	250	(250)	275	(275)	325	(325)	350	(350)	400	(400)	450	(450)
		SBL	50	2(2)	25	(50)	50	(50)	50	(50)	50	(50)	50	(50)	50	(50)
		EBL	270	0(1)	25	(25)	25	(25)	25	(25)	50	(50)	75	(75)	50	(50)
		WBL	155	0(0)	150	(150)	175	(175)	200	(200)	175	(175)	200	(200)	200	(200)
4	La Canada Drive / Cameron Park Drive	NBL	430	0(0)	100	(100)	125	(125)	150	(150)	250	(250)	275	(275)	300	(300)
		SBL	300	0(0)	25	(25)	25	(25)	25	(25)	25	(25)	25	(25)	50	(50)
		EB	275	0(0)	200	(200)	225	(225)	250	(250)	200	(200)	225	(225)	250	(250)
		WB	150	0(0)	100	(100)	100	(100)	100	(100)	75	(75)	75	(75)	75	(75)
5	Project Driveway / Hastings Drive	SB	350	0(0)	-	(0)	-	(0)	-	(0)	-	(0)	-	(0)	-	(0)
		WB	80	6(4)	-	(0)	-	(0)	-	(0)	-	(0)	-	(0)	-	(0)
6	Camarc Drive (Project Driveway) / Starbuck Road	NB	85	6(18)	0	(0)	0	(0)	0	(0)	0	(25)	0	(25)	0	(25)
		EB	200	1(0)	0	(25)	0	(25)	0	(25)	0	(0)	0	(0)	0	(0)

Notes: **Bold** values show queues projected to exceed available storage.

1. Length of turn pocket (approaches with dedicated left-turn lane) or length to nearest cross-street (single lane approaches).

2. Total queued vehicle length. All queue lengths were rounded up to the nearest 25 foot increment.

Appendix A
Traffic Count Data

National Data and Surveying Services

City of El Dorado County
 All Vehicles & Utturns On Unshifted
 Bikes & Peds On Bank 1
 Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7345-001 Peridot Dr-Cambridge Rd & Green Valley Rd
 Date : 4/27/2017

Unshifted Count = All Vehicles & Utturns

START TIME	Peridot Dr-Cambridge Rd Southbound					Green Valley Rd Westbound					Peridot Dr-Cambridge Rd Northbound					Green Valley Rd Eastbound					Total	Utturns 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	6	0	5	0	11	11	126	3	0	140	34	0	5	0	39	0	50	4	0	54	244	0
7:15	1	4	6	0	11	4	152	3	0	159	81	1	16	0	98	3	52	13	0	68	336	0
7:30	6	3	11	0	20	10	178	2	0	190	61	0	5	0	66	4	152	13	0	169	445	0
7:45	3	0	6	0	9	10	131	3	0	144	41	2	15	0	58	1	117	31	0	149	360	0
Total	16	7	28	0	51	35	587	11	0	633	217	3	41	0	261	8	371	61	0	440	1385	0
8:00	0	0	7	0	7	15	120	1	0	136	29	1	13	0	43	2	66	11	0	79	265	0
8:15	3	1	7	0	11	9	116	1	0	126	32	0	7	0	39	5	74	12	0	91	267	0
8:30	0	0	10	0	10	11	102	3	0	116	31	1	20	0	52	4	74	10	0	88	266	0
8:45	2	2	3	0	7	18	97	5	0	120	31	1	16	0	48	1	101	13	0	115	290	0
Total	5	3	27	0	35	53	435	10	0	498	123	3	56	0	182	12	315	46	0	373	1088	0
16:00	2	1	4	0	7	14	67	3	0	84	14	0	10	0	24	3	132	32	0	167	282	0
16:15	4	0	2	0	6	12	75	3	0	90	15	4	14	0	33	7	139	25	0	171	300	0
16:30	5	7	6	0	18	13	85	3	0	101	14	1	19	0	34	3	135	15	0	153	306	0
16:45	2	2	1	0	5	15	99	1	0	115	16	5	23	0	44	3	167	22	0	192	356	0
Total	13	10	13	0	36	54	326	10	0	390	59	10	66	0	135	16	573	94	0	683	1244	0
17:00	0	1	2	0	3	11	108	2	0	121	23	1	13	0	37	3	177	31	0	211	372	0
17:15	3	0	1	0	4	12	93	3	0	108	19	3	12	0	34	3	153	36	0	192	338	0
17:30	2	0	2	0	4	17	99	1	0	117	26	2	19	0	47	3	145	34	0	182	350	0
17:45	0	0	6	0	6	14	90	4	0	108	18	0	17	0	35	5	137	28	0	170	319	0
Total	5	1	11	0	17	54	390	10	0	454	86	6	61	0	153	14	612	129	0	755	1379	0
Grand Total	39	21	79	0	139	196	1738	41	0	1975	485	22	224	0	731	50	1871	330	0	2251	5096	0
Apprch %	28.1%	15.1%	56.8%	0.0%		9.9%	88.0%	2.1%	0.0%		66.3%	3.0%	30.6%	0.0%		2.2%	83.1%	14.7%	0.0%			
Total %	0.8%	0.4%	1.6%	0.0%	2.7%	3.8%	34.1%	0.8%	0.0%	38.8%	9.5%	0.4%	4.4%	0.0%	14.3%	1.0%	36.7%	6.5%	0.0%	44.2%	100.0%	

AM PEAK HOUR	Peridot Dr-Cambridge Rd Southbound					Green Valley Rd Westbound					Peridot Dr-Cambridge Rd Northbound					Green Valley 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	1	4	6	0	11	4	152	3	0	159	81	1	16	0	98	3	52	13	0	68	336
7:30	6	3	11	0	20	10	178	2	0	190	61	0	5	0	66	4	152	13	0	169	445
7:45	3	0	6	0	9	10	131	3	0	144	41	2	15	0	58	1	117	31	0	149	360
8:00	0	0	7	0	7	15	120	1	0	136	29	1	13	0	43	2	66	11	0	79	265
Total Volume	10	7	30	0	47	39	581	9	0	629	212	4	49	0	265	10	387	68	0	465	1406
% App Total	21.3%	14.9%	63.8%	0.0%		6.2%	92.4%	1.4%	0.0%		80.0%	1.5%	18.5%	0.0%		2.2%	83.2%	14.6%	0.0%		
PHF	.417	.438	.682	.000	.588	.650	.816	.750	.000	.828	.654	.500	.766	.000	.676	.625	.637	.548	.000	.688	.790

PM PEAK HOUR	Peridot Dr-Cambridge Rd Southbound					Green Valley Rd Westbound					Peridot Dr-Cambridge Rd Northbound					Green Valley 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 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	2	2	1	0	5	15	99	1	0	115	16	5	23	0	44	3	167	22	0	192	356
17:00	0	1	2	0	3	11	108	2	0	121	23	1	13	0	37	3	177	31	0	211	372
17:15	3	0	1	0	4	12	93	3	0	108	19	3	12	0	34	3	153	36	0	192	338
17:30	2	0	2	0	4	17	99	1	0	117	26	2	19	0	47	3	145	34	0	182	350
Total Volume	7	3	6	0	16	55	399	7	0	461	84	11	67	0	162	12	642	123	0	777	1416
% App Total	43.8%	18.8%	37.5%	0.0%		11.9%	86.6%	1.5%	0.0%		51.9%	6.8%	41.4%	0.0%		1.5%	82.6%	15.8%	0.0%		
PHF	.583	.375	.750	.000	.800	.809	.924	.583	.000	.952	.808	.550	.728	.000	.862	1.000	.907	.854	.000	.921	.952

National Data and Surveying Services

City of El Dorado County
 All Vehicles & Turns On Unshifted
 Bikes & Peds On Bank 1
 Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7345-001 Peridot Dr-Cambridge Rd & Green Valley Rd
 Date : 4/27/2017

Bank 1 Count = Bikes & Peds

START TIME	Peridot Dr-Cambridge Rd Southbound					Green Valley Rd Westbound					Peridot Dr-Cambridge Rd Northbound					Green Valley 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	0	0	0	1	0	0	0	1	0	0	0	0	0	1	0
7:15	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	2	0
7:30	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	1	1
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	4	0	0	2	4	0	0	0	0	0	4	2
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	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1
8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
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	1	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	1	2
16:00	0	0	0	0	0	0	0	0	6	0	0	0	0	3	0	0	0	0	0	0	0	9
16:15	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	2
16:30	0	1	0	0	1	1	0	0	0	1	0	0	0	2	0	0	0	0	0	0	2	2
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	1	1	0	0	7	1	0	0	6	0	0	0	0	0	0	0	2	13
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	1	0	0	0	1	2	0	0	1	2	0	0	0	0	0	3	1
17:30	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	4
17:45	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	2	0
Total	0	0	0	2	0	1	1	0	2	2	2	0	1	2	0	1	0	0	1	5	5	
Grand Total	0	2	0	2	2	2	1	0	9	3	6	0	0	11	6	0	1	0	0	1	12	22
Apprch %	0.0%	100.0%	0.0%			66.7%	33.3%	0.0%			100.0%	0.0%	0.0%			0.0%	100.0%	0.0%				
Total %	0.0%	16.7%	0.0%		16.7%	16.7%	8.3%	0.0%		25.0%	50.0%	0.0%	0.0%		50.0%	0.0%	8.3%	0.0%		8.3%	100.0%	

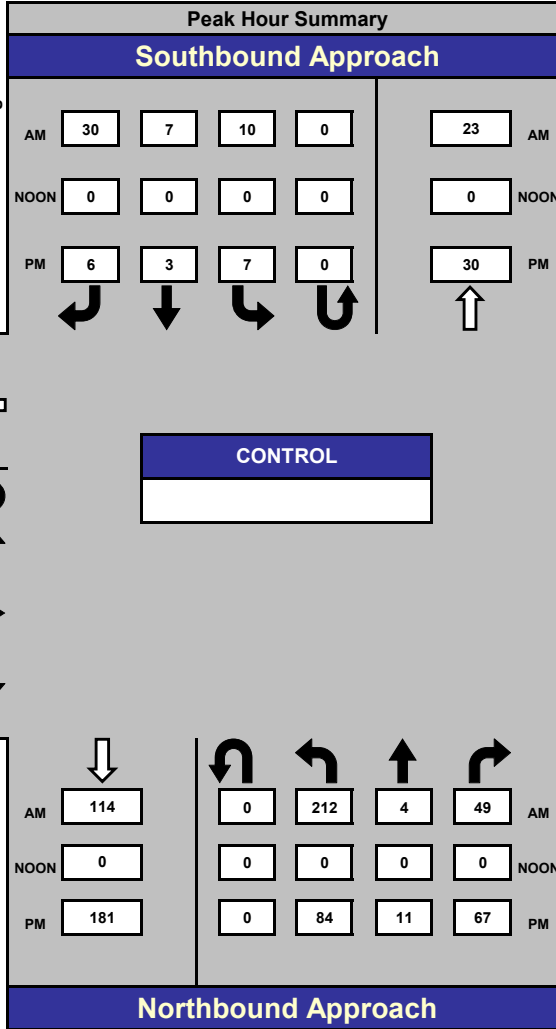
AM PEAK HOUR	Peridot Dr-Cambridge Rd Southbound					Green Valley Rd Westbound					Peridot Dr-Cambridge Rd Northbound					Green Valley Rd Eastbound					Total
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	2
7:30	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	1
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
8:00	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	0	0	0	0	0	3	0	0	2	3	0	0	0	0	0	3
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			100.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.375	.000	.000		.375	.000	.000	.000		.000	.375

PM PEAK HOUR	Peridot Dr-Cambridge Rd Southbound					Green Valley Rd Westbound					Peridot Dr-Cambridge Rd Northbound					Green Valley Rd Eastbound					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	
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	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	1	0	0	0	1	2	0	0	1	2	0	0	0	0	0	3
17:30	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	2	0	1	0	0	2	1	2	0	0	1	2	0	0	0	0	0	3
% App Total	0.0%	0.0%	0.0%			100.0%	0.0%	0.0%			100.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.250	.000	.000		.250	.250	.000	.000		.250	.000	.000	.000		.000	.250

Peridot Dr-Cambridge Rd & Green Valley Rd

Date: 4/27/2017
Day: Thursday

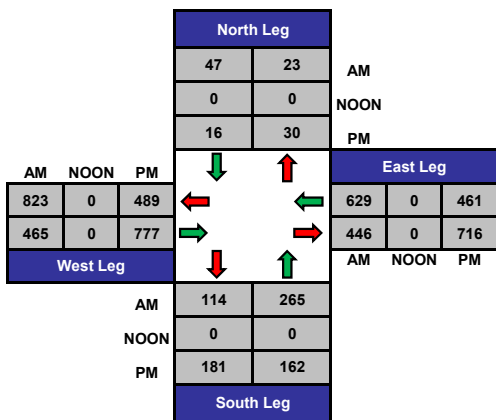
Project #: 17-7345-001



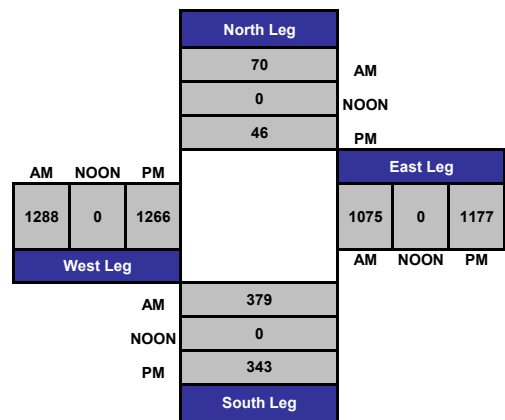
AM Peak Hour	07:15 - 08:15
NOON Peak Hour	
PM Peak Hour	16:45 - 17:45

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

Total Ins & Outs



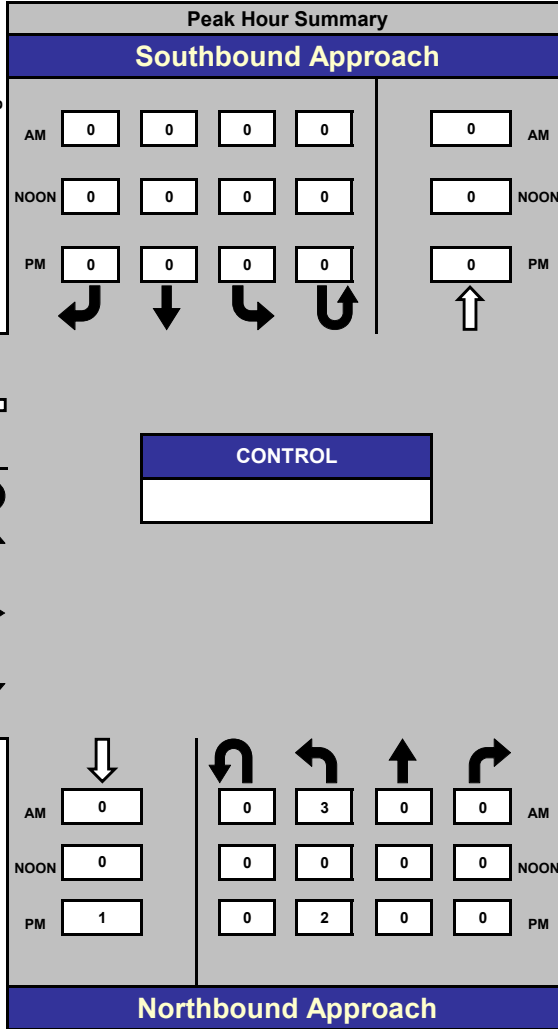
Total Volume Per Leg



Peridot Dr-Cambridge Rd & Green Valley Rd

Date: 4/27/2017
Day: Thursday

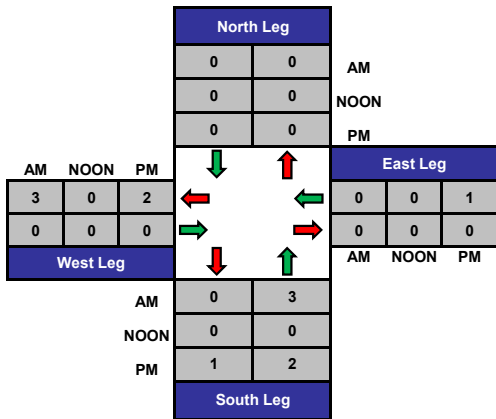
Project #: 17-7345-001



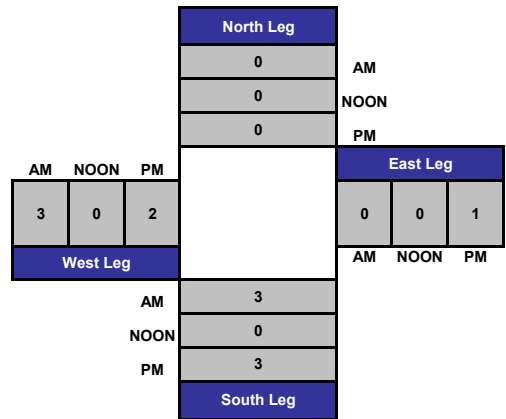
AM Peak Hour	07:15 - 08:15
NOON Peak Hour	
PM Peak Hour	16:45 - 17:45

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



National Data and Surveying Services

City of El Dorado County
 All Vehicles & Utturns On Unshifted
 Bikes & Peds On Bank 1
 Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7345-002 Hastings Dr-Winterhaven Dr & Green Valley Rd
 Date : 4/27/2017

Unshifted Count = All Vehicles & Utturns

START TIME	Hastings Dr-Winterhaven Dr Southbound					Green Valley Rd Westbound					Hastings Dr-Winterhaven Dr Northbound					Green Valley Rd Eastbound					Total	Utturns 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	1	0	16	0	17	0	133	1	0	134	6	0	1	0	7	1	62	1	0	64	222	0
7:15	3	0	15	0	18	1	143	0	0	144	10	0	1	0	11	2	73	0	0	75	248	0
7:30	0	0	29	0	29	0	159	2	0	161	7	0	3	0	10	8	131	5	0	144	344	0
7:45	0	0	17	0	17	0	111	0	0	111	1	0	2	0	3	9	118	2	0	129	260	0
Total	4	0	77	0	81	1	546	3	0	550	24	0	7	0	31	20	384	8	0	412	1074	0
8:00	0	0	8	0	8	2	140	0	0	142	5	0	1	0	6	2	79	2	0	83	239	0
8:15	2	0	3	0	5	1	128	1	0	130	1	0	1	0	2	3	78	1	0	82	219	0
8:30	2	0	1	0	3	1	117	2	0	120	3	0	3	0	6	5	95	2	0	102	231	0
8:45	0	0	10	0	10	1	103	1	0	105	3	0	1	0	4	5	109	0	0	114	233	0
Total	4	0	22	0	26	5	488	4	0	497	12	0	6	0	18	15	361	5	0	381	922	0
16:00	0	1	5	0	6	3	82	1	0	86	1	0	1	0	2	13	135	3	0	151	245	0
16:15	1	0	7	0	8	0	82	2	0	84	1	1	0	0	2	9	149	5	0	163	257	0
16:30	0	0	4	0	4	2	104	0	0	106	2	0	2	0	4	11	155	1	0	167	281	0
16:45	2	0	8	0	10	4	103	1	0	108	1	0	1	0	2	20	161	6	0	187	307	0
Total	3	1	24	0	28	9	371	4	0	384	5	1	4	0	10	53	600	15	0	668	1090	0
17:00	1	0	9	0	10	0	117	2	0	119	0	0	1	0	1	14	166	8	0	188	318	0
17:15	4	0	7	0	11	0	105	2	0	107	3	0	0	0	3	18	152	3	0	173	294	0
17:30	0	0	3	0	3	1	126	3	0	130	0	0	0	0	0	8	165	2	0	175	308	0
17:45	0	0	5	0	5	1	92	2	0	95	2	0	0	0	2	13	145	4	0	162	264	0
Total	5	0	24	0	29	2	440	9	0	451	5	0	1	0	6	53	628	17	0	698	1184	0
Grand Total	16	1	147	0	164	17	1845	20	0	1882	46	1	18	0	65	141	1973	45	0	2159	4270	0
Apprch %	9.8%	0.6%	89.6%	0.0%		0.9%	98.0%	1.1%	0.0%		70.8%	1.5%	27.7%	0.0%		6.5%	91.4%	2.1%	0.0%			
Total %	0.4%	0.0%	3.4%	0.0%	3.8%	0.4%	43.2%	0.5%	0.0%	44.1%	1.1%	0.0%	0.4%	0.0%	1.5%	3.3%	46.2%	1.1%	0.0%	50.6%	100.0%	

AM PEAK HOUR	Hastings Dr-Winterhaven Dr Southbound					Green Valley Rd Westbound					Hastings Dr-Winterhaven Dr Northbound					Green Valley 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	3	0	15	0	18	1	143	0	0	144	10	0	1	0	11	2	73	0	0	75	248	
7:30	0	0	29	0	29	0	159	2	0	161	7	0	3	0	10	8	131	5	0	144	344	
7:45	0	0	17	0	17	0	111	0	0	111	1	0	2	0	3	9	118	2	0	129	260	
8:00	0	0	8	0	8	2	140	0	0	142	5	0	1	0	6	2	79	2	0	83	239	
Total Volume	3	0	69	0	72	3	553	2	0	558	23	0	7	0	30	21	401	9	0	431	1091	
% App Total	4.2%	0.0%	95.8%	0.0%		0.5%	99.1%	0.4%	0.0%		76.7%	0.0%	23.3%	0.0%		4.9%	93.0%	2.1%	0.0%			
PHF	.250	.000	.595	.000	.621	.375	.869	.250	.000	.866	.575	.000	.583	.000	.682	.583	.765	.450	.000	.748	.793	

PM PEAK HOUR	Hastings Dr-Winterhaven Dr Southbound					Green Valley Rd Westbound					Hastings Dr-Winterhaven Dr Northbound					Green Valley 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 16:45 to 17:45																						
Peak Hour For Entire Intersection Begins at 16:45																						
16:45	2	0	8	0	10	4	103	1	0	108	1	0	1	0	2	20	161	6	0	187	307	
17:00	1	0	9	0	10	0	117	2	0	119	0	0	1	0	1	14	166	8	0	188	318	
17:15	4	0	7	0	11	0	105	2	0	107	3	0	0	0	3	18	152	3	0	173	294	
17:30	0	0	3	0	3	1	126	3	0	130	0	0	0	0	0	8	165	2	0	175	308	
Total Volume	7	0	27	0	34	5	451	8	0	464	4	0	2	0	6	60	644	19	0	723	1227	
% App Total	20.6%	0.0%	79.4%	0.0%		1.1%	97.2%	1.7%	0.0%		66.7%	0.0%	33.3%	0.0%		8.3%	89.1%	2.6%	0.0%			
PHF	.438	.000	.750	.000	.773	.313	.895	.667	.000	.892	.333	.000	.500	.000	.500	.750	.970	.594	.000	.961	.965	

National Data and Surveying Services

City of El Dorado County
 All Vehicles & Utturns On Unshifted
 Bikes & Peds On Bank 1
 Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7345-002 Hastings Dr-Winterhaven Dr & Green Valley Rd
 Date : 4/27/2017

Bank 1 Count = Bikes & Peds

START TIME	Hastings Dr-Winterhaven Dr Southbound					Green Valley Rd Westbound					Hastings Dr-Winterhaven Dr Northbound					Green Valley 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		
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	1	0	0	0	0	0	0	0	1
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	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2
Total	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	3
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
16:45	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	2	0	0	2	0	0	0	1	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	0	0	0	0
17:15	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
17:45	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2	0
Total	0	0	0	0	0	0	2	0	0	2	0	0	0	3	0	0	1	0	0	1	3	3
Grand Total	0	0	0	1	0	0	4	0	0	4	0	0	0	6	0	0	1	0	0	1	5	7
Apprch %	0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%				
Total %	0.0%	0.0%	0.0%		0.0%	0.0%	80.0%	0.0%		80.0%	0.0%	0.0%	0.0%		0.0%	0.0%	20.0%	0.0%		20.0%	100.0%	

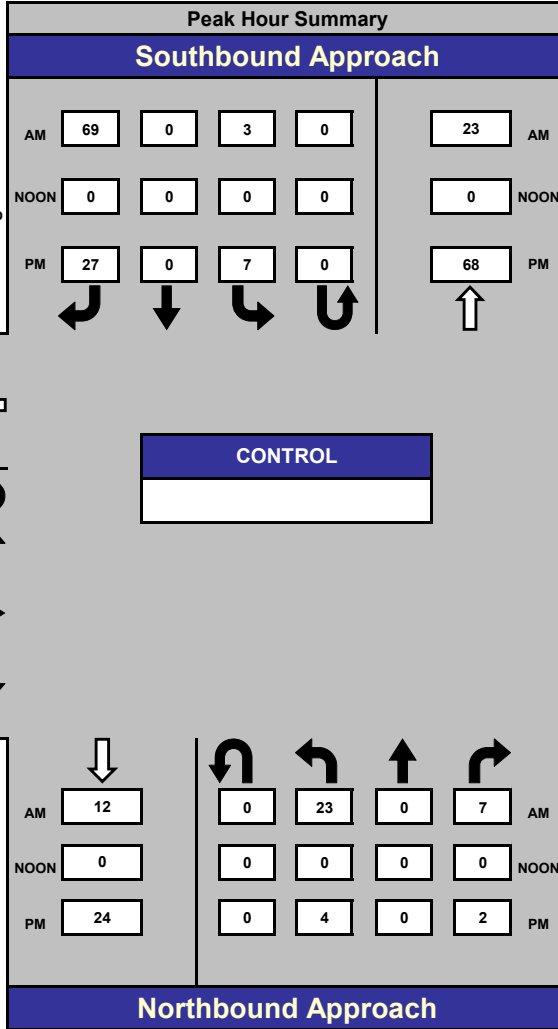
AM PEAK HOUR	Hastings Dr-Winterhaven Dr Southbound					Green Valley Rd Westbound					Hastings Dr-Winterhaven Dr Northbound					Green Valley Rd Eastbound					Total	
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
Peak Hour 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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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
8:00	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%				
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	

PM PEAK HOUR	Hastings Dr-Winterhaven Dr Southbound					Green Valley Rd Westbound					Hastings Dr-Winterhaven Dr Northbound					Green Valley Rd Eastbound					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		
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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	1	0	0	1	0	0	0	3	0	0	0	0	0	0	0	1
% App Total	0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%				
PHF	.000	.000	.000		.000	.000	.250	.000		.250	.000	.000	.000		.000	.000	.000	.000		.000	.250	

Hastings Dr-Winterhaven Dr & Green Valley Rd

Date: 4/27/2017
 Day: Thursday

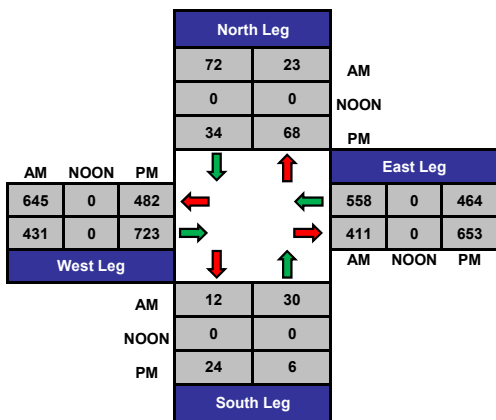
Project #: 17-7345-002



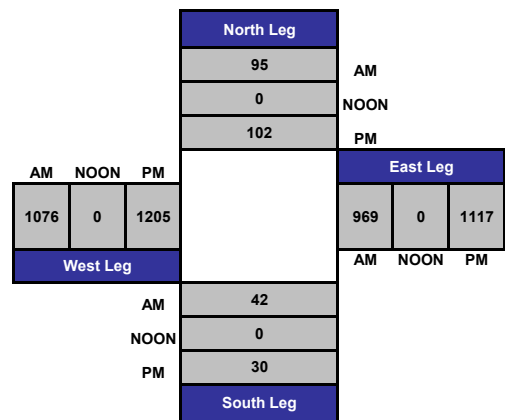
AM Peak Hour	07:15 - 08:15
NOON Peak Hour	
PM Peak Hour	16:45 - 17:45

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

Total Ins & Outs



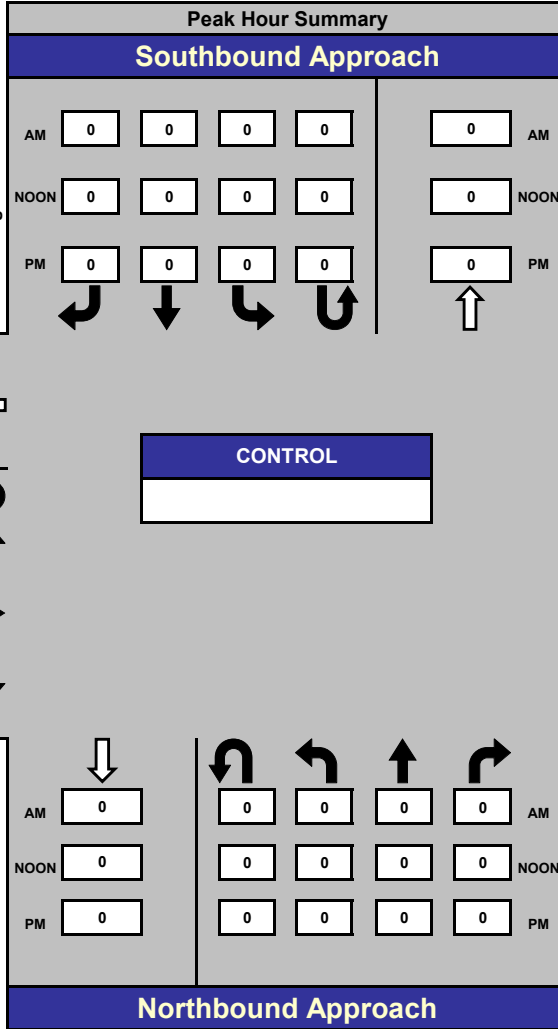
Total Volume Per Leg



Hastings Dr-Winterhaven Dr & Green Valley Rd

Date: 4/27/2017
 Day: Thursday

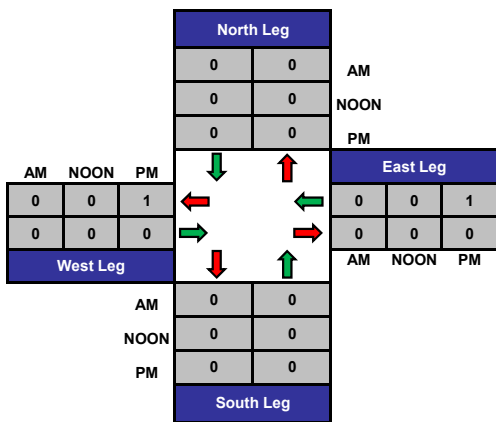
Project #: 17-7345-002



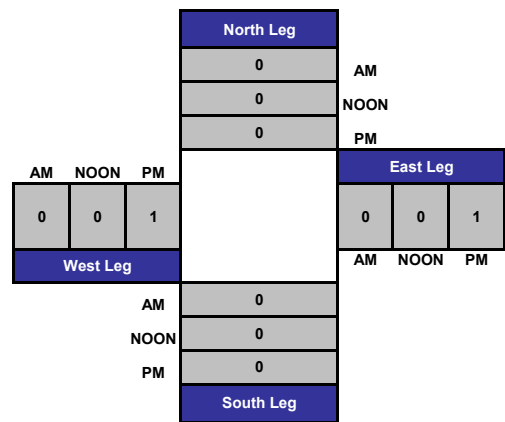
AM Peak Hour	07:15 - 08:15
NOON Peak Hour	
PM Peak Hour	16:45 - 17:45

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



National Data and Surveying Services

City of El Dorado County
 All Vehicles & Utturns On Unshifted
 Bikes & Peds On Bank 1
 Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7345-003 Starbuck Rd-Cameron Park Dr & Green Valley Rd
 Date : 4/27/2017

Unshifted Count = All Vehicles & Utturns

START TIME	Starbuck Rd-Cameron Park Dr Southbound					Green Valley Rd Westbound					Starbuck Rd-Cameron Park Dr Northbound					Green Valley Rd Eastbound					Total	Utturns 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	17	5	0	22	13	62	1	0	76	64	3	16	0	83	1	14	44	0	59	240	0
7:15	1	18	9	0	28	27	82	2	0	111	50	5	11	0	66	2	36	30	0	68	273	0
7:30	1	16	10	0	27	20	84	0	0	104	69	8	18	0	95	3	64	76	0	143	369	0
7:45	6	9	6	0	21	25	57	1	0	83	48	6	26	0	80	5	57	67	1	130	314	1
Total	8	60	30	0	98	85	285	4	0	374	231	22	71	0	324	11	171	217	1	400	1196	1
8:00	2	13	5	0	20	32	90	3	0	125	44	9	16	0	69	4	26	39	0	69	283	0
8:15	9	14	8	0	31	21	65	0	0	86	51	9	28	0	88	2	34	45	0	81	286	0
8:30	9	9	3	0	21	45	69	3	0	117	39	7	42	0	88	2	56	28	0	86	312	0
8:45	1	9	0	0	10	31	73	1	0	105	35	6	14	0	55	5	52	46	0	103	273	0
Total	21	45	16	0	82	129	297	7	0	433	169	31	100	0	300	13	168	158	0	339	1154	0
16:00	4	10	6	0	20	18	39	4	0	61	43	10	46	0	99	11	63	69	0	143	323	0
16:15	7	20	5	0	32	29	27	4	1	61	55	20	39	0	114	12	80	61	0	153	360	1
16:30	6	8	2	0	16	18	43	4	0	65	60	13	41	0	114	12	61	72	0	145	340	0
16:45	8	19	1	0	28	22	46	4	0	72	57	26	25	0	108	9	70	80	0	159	367	0
Total	25	57	14	0	96	87	155	16	1	259	215	69	151	0	435	44	274	282	0	600	1390	1
17:00	5	17	6	0	28	17	47	3	0	67	68	16	32	0	116	6	82	84	0	172	383	0
17:15	3	13	3	0	19	23	30	1	0	54	69	23	53	0	145	14	61	78	1	154	372	1
17:30	5	5	9	0	19	20	56	9	0	85	69	20	22	0	111	8	72	75	0	155	370	0
17:45	7	11	3	0	21	29	44	6	0	79	55	10	24	0	89	10	63	67	0	140	329	0
Total	20	46	21	0	87	89	177	19	0	285	261	69	131	0	461	38	278	304	1	621	1454	1
Grand Total	74	208	81	0	363	390	914	46	1	1351	876	191	453	0	1520	106	891	961	2	1960	5194	3
Apprch %	20.4%	57.3%	22.3%	0.0%		28.9%	67.7%	3.4%	0.1%		57.6%	12.6%	29.8%	0.0%		5.4%	45.5%	49.0%	0.1%			
Total %	1.4%	4.0%	1.6%	0.0%	7.0%	7.5%	17.6%	0.9%	0.0%	26.0%	16.9%	3.7%	8.7%	0.0%	29.3%	2.0%	17.2%	18.5%	0.0%	37.7%	100.0%	

AM PEAK HOUR	Starbuck Rd-Cameron Park Dr Southbound					Green Valley Rd Westbound					Starbuck Rd-Cameron Park Dr Northbound					Green Valley 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 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
7:30	1	16	10	0	27	20	84	0	0	104	69	8	18	0	95	3	64	76	0	143	369
7:45	6	9	6	0	21	25	57	1	0	83	48	6	26	0	80	5	57	67	1	130	314
8:00	2	13	5	0	20	32	90	3	0	125	44	9	16	0	69	4	26	39	0	69	283
8:15	9	14	8	0	31	21	65	0	0	86	51	9	28	0	88	2	34	45	0	81	286
Total Volume	18	52	29	0	99	98	296	4	0	398	212	32	88	0	332	14	181	227	1	423	1252
% App Total	18.2%	52.5%	29.3%	0.0%		24.6%	74.4%	1.0%	0.0%		63.9%	9.6%	26.5%	0.0%		3.3%	42.8%	53.7%	0.2%		
PHF	.500	.813	.725	.000	.798	.766	.822	.333	.000	.796	.768	.889	.786	.000	.874	.700	.707	.747	.250	.740	.848

PM PEAK HOUR	Starbuck Rd-Cameron Park Dr Southbound					Green Valley Rd Westbound					Starbuck Rd-Cameron Park Dr Northbound					Green Valley 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 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	8	19	1	0	28	22	46	4	0	72	57	26	25	0	108	9	70	80	0	159	367
17:00	5	17	6	0	28	17	47	3	0	67	68	16	32	0	116	6	82	84	0	172	383
17:15	3	13	3	0	19	23	30	1	0	54	69	23	53	0	145	14	61	78	1	154	372
17:30	5	5	9	0	19	20	56	9	0	85	69	20	22	0	111	8	72	75	0	155	370
Total Volume	21	54	19	0	94	82	179	17	0	278	263	85	132	0	480	37	285	317	1	640	1492
% App Total	22.3%	57.4%	20.2%	0.0%		29.5%	64.4%	6.1%	0.0%		54.8%	17.7%	27.5%	0.0%		5.8%	44.5%	49.5%	0.2%		
PHF	.656	.711	.528	.000	.839	.891	.799	.472	.000	.818	.953	.817	.623	.000	.828	.661	.869	.943	.250	.930	.974

National Data and Surveying Services

City of El Dorado County
 All Vehicles & Turns On Unshifted
 Bikes & Peds On Bank 1
 Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7345-003 Starbuck Rd-Cameron Park Dr & Green Valley Rd
 Date : 4/27/2017

Bank 1 Count = Bikes & Peds

START TIME	Starbuck Rd-Cameron Park Dr Southbound					Green Valley Rd Westbound					Starbuck Rd-Cameron Park Dr Northbound					Green Valley 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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
8:00	0	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	1	0	0	0	0	0	0	0	0	1
8:30	0	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	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	4
16:15	0	0	0	4	0	0	0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	10
16:30	0	0	0	3	0	0	0	0	0	0	2	1	0	0	3	0	0	0	0	0	0	3	3
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	
Total	0	0	0	7	0	0	0	0	3	0	2	1	0	7	3	0	0	0	1	0	3	18	
17:00	0	2	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
17:15	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	1	1
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	3
17:45	0	0	0	0	0	0	1	0	0	1	0	0	0	2	0	1	0	0	0	0	1	2	2
Total	0	2	0	1	2	0	1	0	0	1	1	0	0	6	1	1	0	0	0	1	5	7	
Grand Total	0	2	0	8	2	0	1	0	3	1	3	1	0	14	4	1	0	0	2	1	8	27	
Apprch %	0.0%	100.0%	0.0%			0.0%	100.0%	0.0%			75.0%	25.0%	0.0%			100.0%	0.0%	0.0%					
Total %	0.0%	25.0%	0.0%		25.0%	0.0%	12.5%	0.0%		12.5%	37.5%	12.5%	0.0%		50.0%	12.5%	0.0%	0.0%		12.5%		100.0%	

AM PEAK HOUR	Starbuck Rd-Cameron Park Dr Southbound					Green Valley Rd Westbound					Starbuck Rd-Cameron Park Dr Northbound					Green Valley Rd Eastbound					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		
Peak Hour Analysis From 07:30 to 08:30																						
Peak Hour For Entire Intersection Begins at 07:30																						
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	1	0	0	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	1	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%				
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000		.000		.000	.000

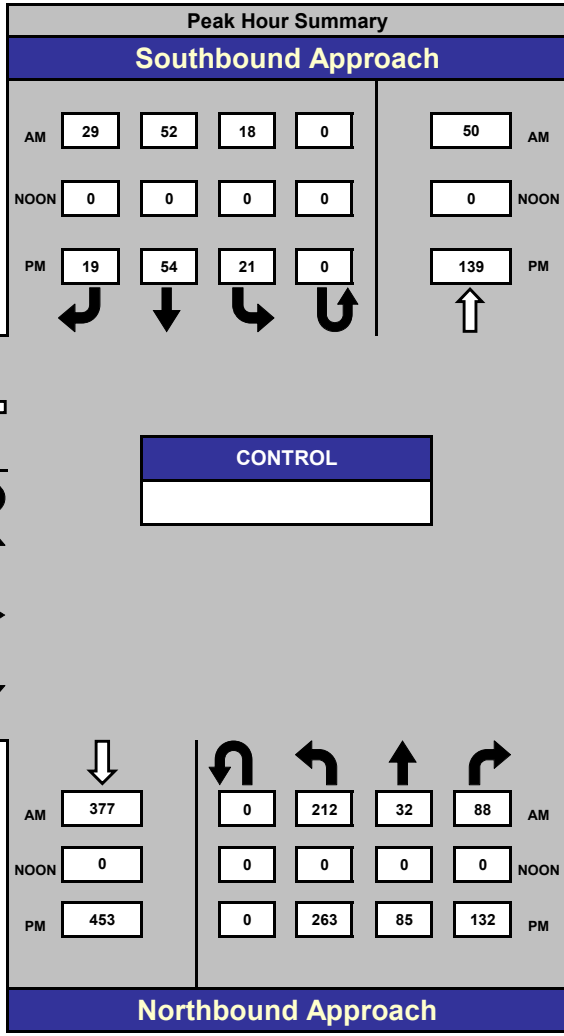
PM PEAK HOUR	Starbuck Rd-Cameron Park Dr Southbound					Green Valley Rd Westbound					Starbuck Rd-Cameron Park Dr Northbound					Green Valley Rd Eastbound					Total	
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
Peak Hour 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	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
17:00	0	2	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
17:15	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	1
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
Total Volume	0	2	0	1	2	0	0	0	0	0	1	0	0	4	1	0	0	0	1	0	0	3
% App Total	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			100.0%	0.0%	0.0%			0.0%	0.0%	0.0%				
PHF	.000	.250	.000		.250	.000	.000	.000		.000	.250	.000	.000		.250	.000	.000		.000		.000	.375

Starbuck Rd-Cameron Park Dr & Green Valley Rd

Date: 4/27/2017

Day: Thursday

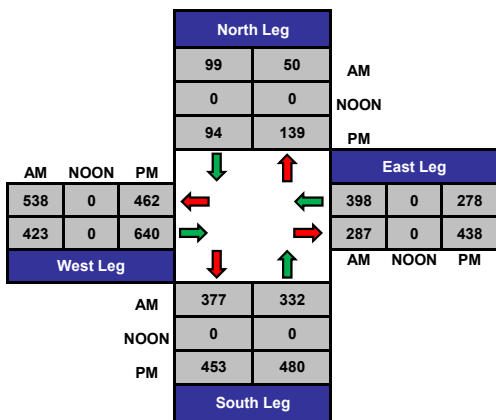
Project #: 17-7345-003



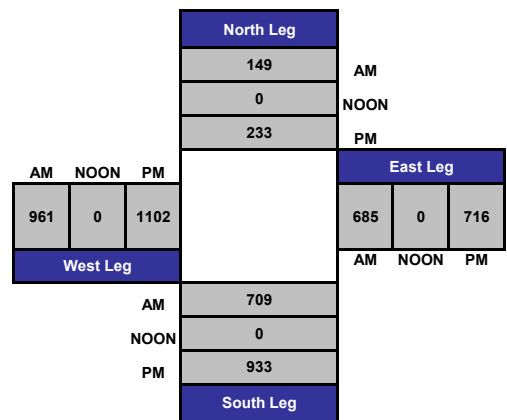
AM Peak Hour	07:30 - 08:30
NOON Peak Hour	
PM Peak Hour	16:45 - 17:45

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

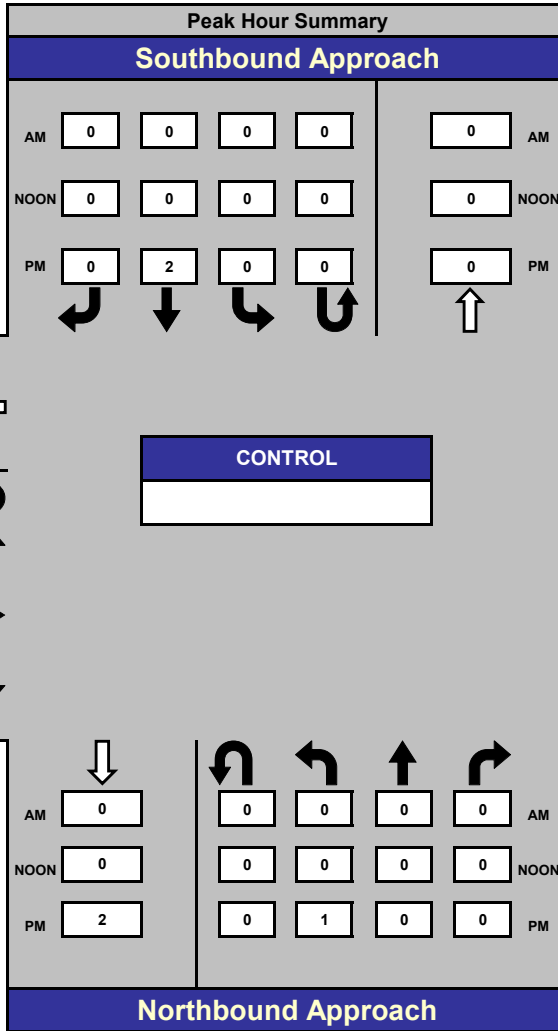


Starbuck Rd-Cameron Park Dr & Green Valley Rd

Date: 4/27/2017

Day: Thursday

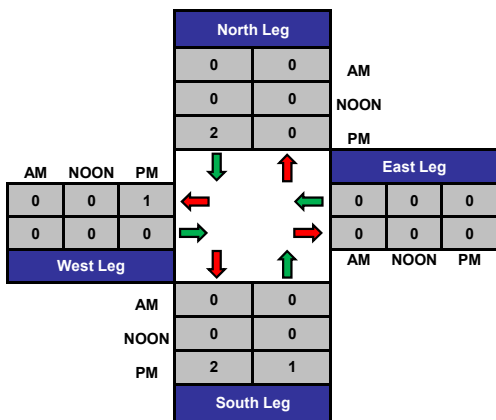
Project #: 17-7345-003



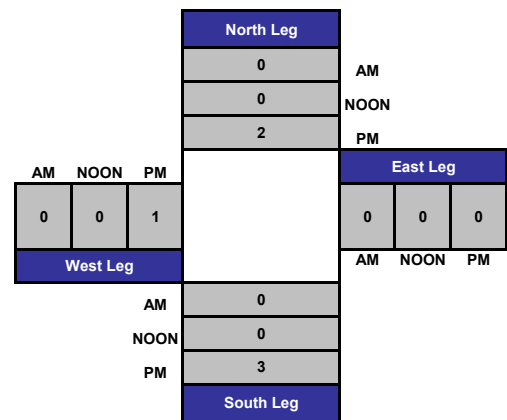
AM Peak Hour	07:30 - 08:30
NOON Peak Hour	
PM Peak Hour	16:45 - 17:45

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



National Data and Surveying Services

City of El Dorado County
 All Vehicles & Utturns On Unshifted
 Bikes & Peds On Bank 1
 Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7345-004 Cameron Park Dr & La Canada Dr
 Date : 4/27/2017

Unshifted Count = All Vehicles & Utturns

START TIME	Cameron Park Dr Southbound					La Canada Dr Westbound					Cameron Park Dr Northbound					La Canada Dr Eastbound					Total	Utturns 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	1	68	4	0	73	11	1	5	0	17	26	64	2	0	92	5	0	36	0	41	223	0
7:15	1	73	6	0	80	15	6	3	0	24	15	61	1	0	77	4	1	29	0	34	215	0
7:30	1	117	4	0	122	12	4	6	0	22	9	70	1	0	80	9	3	45	0	57	281	0
7:45	1	100	2	0	103	9	3	7	0	19	13	63	3	0	79	4	1	43	0	48	249	0
Total	4	358	16	0	378	47	14	21	0	82	63	258	7	0	328	22	5	153	0	180	968	0
8:00	4	62	2	0	68	8	1	3	0	12	18	67	5	0	90	4	3	26	0	33	203	0
8:15	0	71	4	0	75	8	0	4	0	12	22	75	4	0	101	6	1	21	0	28	216	0
8:30	0	81	7	0	88	8	1	1	0	10	12	80	2	0	94	12	1	27	0	40	232	0
8:45	2	97	3	0	102	11	2	4	0	17	15	52	1	0	68	4	1	33	0	38	225	0
Total	6	311	16	0	333	35	4	12	0	51	67	274	12	0	353	26	6	107	0	139	876	0
16:00	3	97	8	0	108	5	0	7	0	12	40	99	7	0	146	6	3	32	0	41	307	0
16:15	5	93	8	0	106	5	4	6	0	15	36	95	13	0	144	6	0	23	0	29	294	0
16:30	4	98	8	0	110	6	2	2	0	10	43	114	8	0	165	8	2	31	0	41	326	0
16:45	4	102	5	0	111	3	5	1	0	9	44	116	9	0	169	4	3	32	0	39	328	0
Total	16	390	29	0	435	19	11	16	0	46	163	424	37	0	624	24	8	118	0	150	1255	0
17:00	5	108	8	0	121	5	2	2	0	9	41	116	7	0	164	4	2	31	0	37	331	0
17:15	8	96	13	0	117	8	2	3	0	13	51	128	14	0	193	2	5	19	0	26	349	0
17:30	5	99	8	0	112	8	1	4	0	13	46	108	5	0	159	3	1	26	0	30	314	0
17:45	2	100	14	0	116	10	1	3	0	14	47	90	15	0	152	3	0	30	0	33	315	0
Total	20	403	43	0	466	31	6	12	0	49	185	442	41	0	668	12	8	106	0	126	1309	0
Grand Total	46	1462	104	0	1612	132	35	61	0	228	478	1398	97	0	1973	84	27	484	0	595	4408	0
Apprch %	2.9%	90.7%	6.5%	0.0%		57.9%	15.4%	26.8%	0.0%		24.2%	70.9%	4.9%	0.0%		14.1%	4.5%	81.3%	0.0%			
Total %	1.0%	33.2%	2.4%	0.0%	36.6%	3.0%	0.8%	1.4%	0.0%	5.2%	10.8%	31.7%	2.2%	0.0%	44.8%	1.9%	0.6%	11.0%	0.0%	13.5%	100.0%	

AM PEAK HOUR	Cameron Park Dr Southbound					La Canada Dr Westbound					Cameron Park Dr Northbound					La Canada Dr 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	1	68	4	0	73	11	1	5	0	17	26	64	2	0	92	5	0	36	0	41	223
7:15	1	73	6	0	80	15	6	3	0	24	15	61	1	0	77	4	1	29	0	34	215
7:30	1	117	4	0	122	12	4	6	0	22	9	70	1	0	80	9	3	45	0	57	281
7:45	1	100	2	0	103	9	3	7	0	19	13	63	3	0	79	4	1	43	0	48	249
Total Volume	4	358	16	0	378	47	14	21	0	82	63	258	7	0	328	22	5	153	0	180	968
% App Total	1.1%	94.7%	4.2%	0.0%		57.3%	17.1%	25.6%	0.0%		19.2%	78.7%	2.1%	0.0%		12.2%	2.8%	85.0%	0.0%		
PHF	1.000	.765	.667	.000	.775	.783	.583	.750	.000	.854	.606	.921	.583	.000	.891	.611	.417	.850	.000	.789	.861

PM PEAK HOUR	Cameron Park Dr Southbound					La Canada Dr Westbound					Cameron Park Dr Northbound					La Canada Dr 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	4	98	8	0	110	6	2	2	0	10	43	114	8	0	165	8	2	31	0	41	326
16:45	4	102	5	0	111	3	5	1	0	9	44	116	9	0	169	4	3	32	0	39	328
17:00	5	108	8	0	121	5	2	2	0	9	41	116	7	0	164	4	2	31	0	37	331
17:15	8	96	13	0	117	8	2	3	0	13	51	128	14	0	193	2	5	19	0	26	349
Total Volume	21	404	34	0	459	22	11	8	0	41	179	474	38	0	691	18	12	113	0	143	1334
% App Total	4.6%	88.0%	7.4%	0.0%		53.7%	26.8%	19.5%	0.0%		25.9%	68.6%	5.5%	0.0%		12.6%	8.4%	79.0%	0.0%		
PHF	.656	.935	.654	.000	.948	.688	.550	.667	.000	.788	.877	.926	.679	.000	.895	.563	.600	.883	.000	.872	.956

National Data and Surveying Services

City of El Dorado County
 All Vehicles & Turns On Unshifted
 Bikes & Peds On Bank 1
 Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7345-004 Cameron Park Dr & La Canada Dr
 Date : 4/27/2017

Bank 1 Count = Bikes & Peds

START TIME	Cameron Park Dr Southbound					La Canada Dr Westbound					Cameron Park Dr Northbound					La Canada Dr 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		
16:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2
16:45	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	1	0	1	1	0	0	0	0	0	0	2	0	0	2	0	0	0	1	0	3	2
17:00	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0
17:15	0	2	0	1	2	0	0	0	0	0	0	1	0	0	1	0	0	0	2	0	3	3
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	2	0	1	2	0	0	1	0	1	0	1	0	0	1	0	0	0	2	0	4	3
Grand Total	0	3	0	2	3	0	0	1	0	1	0	3	0	0	3	0	0	0	3	0	7	5
Apprch %	0.0%	100.0%	0.0%			0.0%	0.0%	100.0%	0.0%		0.0%	100.0%	0.0%			0.0%	0.0%	0.0%				
Total %	0.0%	42.9%	0.0%		42.9%	0.0%	0.0%	14.3%		14.3%	0.0%	42.9%	0.0%		42.9%	0.0%	0.0%	0.0%		0.0%	100.0%	

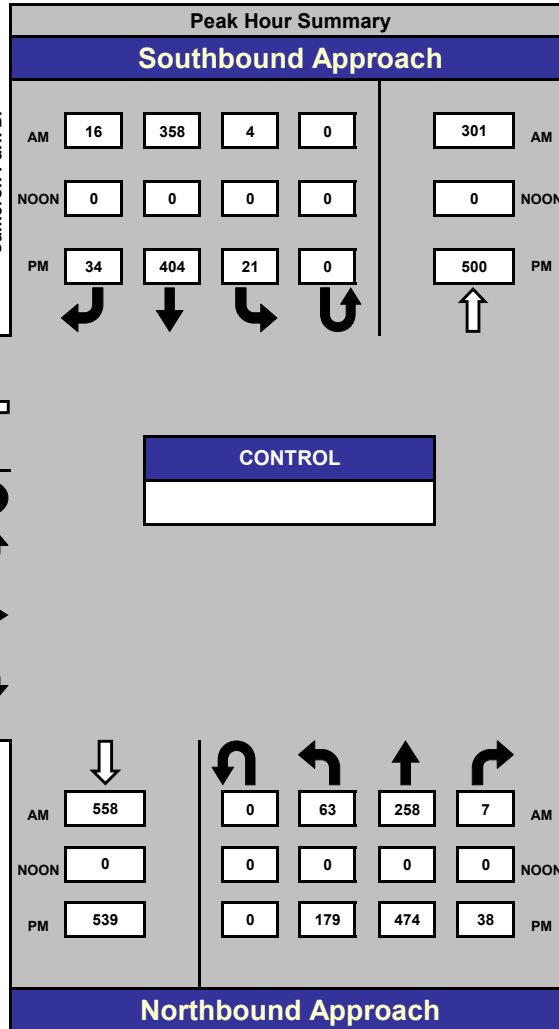
PM PEAK HOUR	Cameron Park Dr Southbound					La Canada Dr Westbound					Cameron Park Dr Northbound					La Canada Dr Eastbound					Total	
	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL		
Peak Hour Analysis From 16:30 to 17:30																						
Peak Hour For Entire Intersection Begins at 16:30																						
16:30	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2	
16:45	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
17:00	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1
17:15	0	2	0	1	2	0	0	0	0	0	0	1	0	0	1	0	0	0	2	0	3	
Total Volume	0	2	0	2	2	0	0	1	0	1	0	3	0	0	3	0	0	0	2	0	6	
% App Total	0.0%	100.0%	0.0%			0.0%	0.0%	100.0%	0.0%		0.0%	100.0%	0.0%			0.0%	0.0%	0.0%				
PHF	.000	.250	.000		.250	.000	.000	.250		.250	.000	.375	.000		.375	.000	.000	.000		.000	.500	

Cameron Park Dr & La Canada Dr

Date: 4/27/2017

Day: Thursday

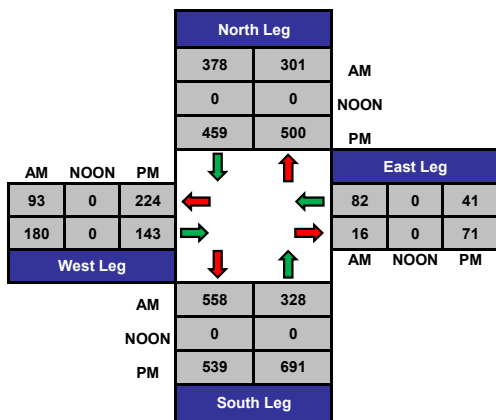
Project #: 17-7345-004



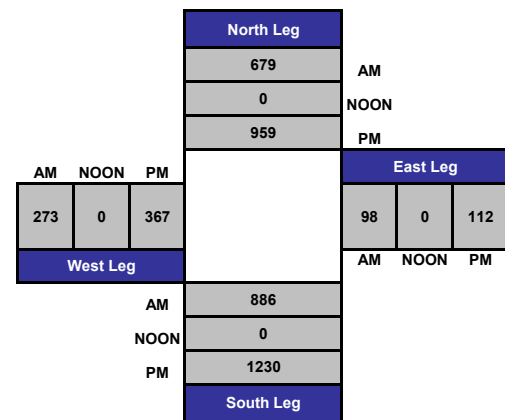
AM Peak Hour	07:00 - 08:00
NOON Peak Hour	
PM Peak Hour	16:30 - 17:30

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

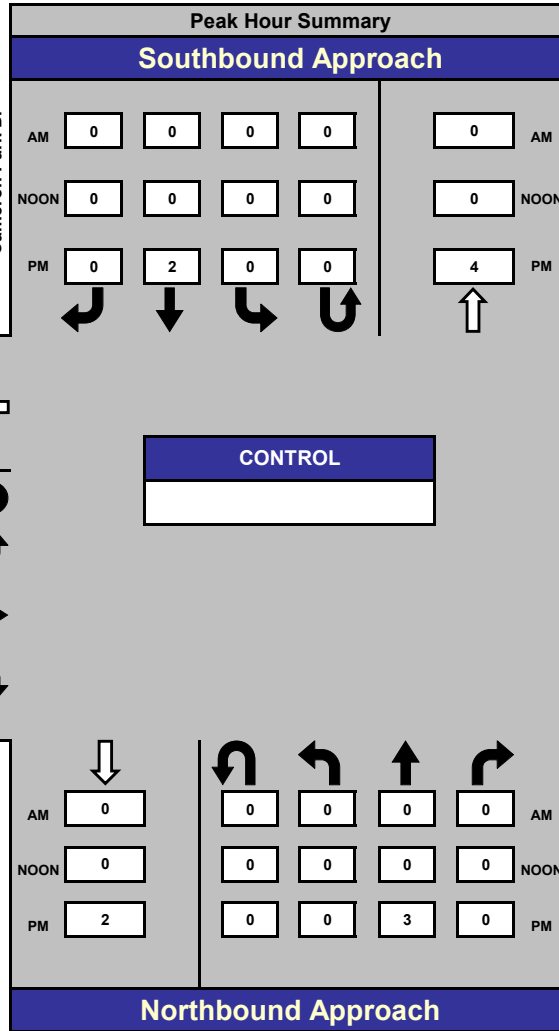


Cameron Park Dr & La Canada Dr

Date: 4/27/2017

Day: Thursday

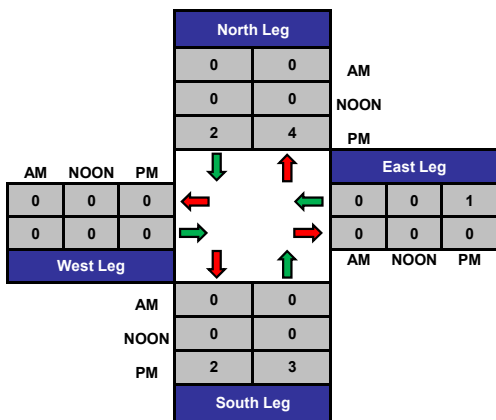
Project #: 17-7345-004



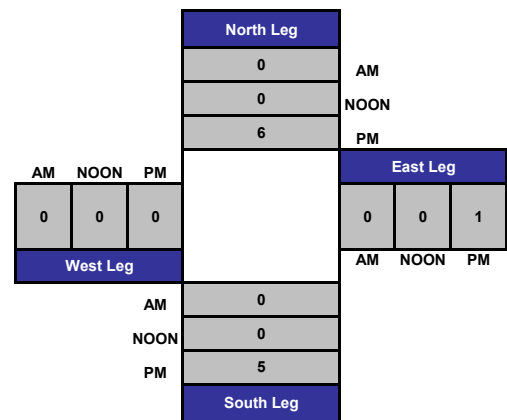
AM Peak Hour	07:00 - 08:00
NOON Peak Hour	
PM Peak Hour	16:30 - 17:30

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



Appendix B
HCM 2010 Synchro Outputs

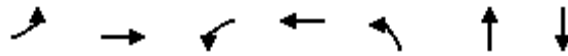
Existing AM Peak Hour

1: Cambridge Road/Peridot Dr & Green Valley Rd

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	387	68	39	581	9	212	4	49	10	7	30
Future Volume (veh/h)	10	387	68	39	581	9	212	4	49	10	7	30
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	14	561	99	47	700	11	312	6	72	17	12	51
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.69	0.69	0.69	0.83	0.83	0.83	0.68	0.68	0.68	0.59	0.59	0.59
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	164	769	136	68	813	13	349	30	361	0	28	117
Arrive On Green	0.18	1.00	1.00	0.04	0.44	0.44	0.20	0.24	0.24	0.04	0.09	0.09
Sat Flow, veh/h	1774	1542	272	1774	1829	29	1774	123	1479	0	310	1319
Grp Volume(v), veh/h	14	0	660	47	0	711	312	0	78	0	0	63
Grp Sat Flow(s),veh/h/ln	1774	0	1814	1774	0	1858	1774	0	1602	0	0	1630
Q Serve(g_s), s	0.6	0.0	0.4	2.4	0.0	31.0	15.4	0.0	3.5	0.0	0.0	3.3
Cycle Q Clear(g_c), s	0.6	0.0	0.4	2.4	0.0	31.0	15.4	0.0	3.5	0.0	0.0	3.3
Prop In Lane	1.00		0.15	1.00		0.02	1.00		0.92	0.00		0.81
Lane Grp Cap(c), veh/h	164	0	904	68	0	826	349	0	392	0	0	145
V/C Ratio(X)	0.09	0.00	0.73	0.69	0.00	0.86	0.90	0.00	0.20	0.00	0.00	0.43
Avail Cap(c_a), veh/h	164	0	904	118	0	826	394	0	392	0	0	145
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	33.5	0.0	0.1	42.7	0.0	22.5	35.3	0.0	27.0	0.0	0.0	38.9
Incr Delay (d2), s/veh	0.2	0.0	5.2	11.7	0.0	11.4	20.7	0.0	1.1	0.0	0.0	9.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	1.3	1.4	0.0	18.4	9.5	0.0	1.7	0.0	0.0	1.9
LnGrp Delay(d),s/veh	33.8	0.0	5.2	54.5	0.0	33.9	55.9	0.0	28.1	0.0	0.0	48.1
LnGrp LOS	C		A	D		C	E		C			D
Approach Vol, veh/h		674			758			390				63
Approach Delay, s/veh		5.8			35.2			50.4				48.1
Approach LOS		A			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	7.7	26.0	7.5	48.9	21.7	12.0	12.3	44.0				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	6.0	22.0	6.0	40.0	20.0	8.0	6.0	40.0				
Max Q Clear Time (g_c+I1), s	0.0	5.5	4.4	2.4	17.4	5.3	2.6	33.0				
Green Ext Time (p_c), s	0.0	0.3	0.0	4.5	0.3	0.1	1.3	2.4				
Intersection Summary												
HCM 2010 Ctrl Delay			28.3									
HCM 2010 LOS			C									

Existing AM Peak Hour

1: Cambridge Road/Peridot Dr & Green Valley Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	14	660	47	711	312	78	80
v/c Ratio	0.12	0.72	0.40	0.70	0.85	0.13	1.57
Control Delay	42.1	24.5	52.3	16.1	56.4	6.4	349.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.1	24.5	52.3	16.1	56.4	6.4	349.3
Queue Length 50th (ft)	8	310	28	234	168	2	-35
Queue Length 95th (ft)	20	295	m43	m311	185	16	#61
Internal Link Dist (ft)		606		1376		1198	195
Turn Bay Length (ft)	130		135		120		
Base Capacity (vph)	118	920	120	1019	393	594	51
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.72	0.39	0.70	0.79	0.13	1.57

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Existing AM Peak Hour

2: Winterhaven Drive/Hastings Dr & Green Valley Rd

Intersection

Int Delay, s/veh 3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	21	401	9	3	553	2	23	0	7	3	0	69
Future Vol, veh/h	21	401	9	3	553	2	23	0	7	3	0	69
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	195	-	-	190	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	87	87	87	68	68	68	62	62	62
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	28	535	12	3	636	2	34	0	10	5	0	111





















Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	638	0	0	547	0	0	1296	1242	541	1246	1247	637
Stage 1	-	-	-	-	-	-	597	597	-	644	644	-
Stage 2	-	-	-	-	-	-	699	645	-	602	603	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	946	-	-	1022	-	-	139	175	541	151	173	477
Stage 1	-	-	-	-	-	-	490	491	-	461	468	-
Stage 2	-	-	-	-	-	-	430	467	-	486	488	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	946	-	-	1022	-	-	104	169	541	144	167	477
Mov Cap-2 Maneuver	-	-	-	-	-	-	104	169	-	144	167	-
Stage 1	-	-	-	-	-	-	475	476	-	447	467	-
Stage 2	-	-	-	-	-	-	329	466	-	463	474	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	47.2	16.3
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	128	946	-	-	1022	-	-	435
HCM Lane V/C Ratio	0.345	0.03	-	-	0.003	-	-	0.267
HCM Control Delay (s)	47.2	8.9	-	-	8.5	-	-	16.3
HCM Lane LOS	E	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.4	0.1	-	-	0	-	-	1.1

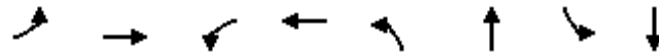
Existing AM Peak Hour

3: Cameron Park Dr/Starbuck Rd & Green Valley Rd

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	181	227	98	296	4	212	32	88	18	52	29
Future Volume (veh/h)	14	181	227	98	296	4	212	32	88	18	52	29
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	19	245	307	122	370	5	244	37	101	22	65	36
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.74	0.74	0.74	0.80	0.80	0.80	0.87	0.87	0.87	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	37	388	486	138	1049	14	256	50	135	208	96	53
Arrive On Green	0.02	0.52	0.52	0.08	0.57	0.57	0.14	0.11	0.11	0.12	0.08	0.08
Sat Flow, veh/h	1774	752	943	1774	1834	25	1774	442	1207	1774	1126	624
Grp Volume(v), veh/h	19	0	552	122	0	375	244	0	138	22	0	101
Grp Sat Flow(s),veh/h/ln	1774	0	1695	1774	0	1858	1774	0	1650	1774	0	1750
Q Serve(g_s), s	1.0	0.0	21.1	6.1	0.0	9.7	12.3	0.0	7.3	1.0	0.0	5.0
Cycle Q Clear(g_c), s	1.0	0.0	21.1	6.1	0.0	9.7	12.3	0.0	7.3	1.0	0.0	5.0
Prop In Lane	1.00		0.56	1.00		0.01	1.00		0.73	1.00		0.36
Lane Grp Cap(c), veh/h	37	0	873	138	0	1063	256	0	185	208	0	149
V/C Ratio(X)	0.51	0.00	0.63	0.88	0.00	0.35	0.95	0.00	0.75	0.11	0.00	0.68
Avail Cap(c_a), veh/h	118	0	873	138	0	1063	256	0	587	208	0	486
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	43.6	0.0	15.7	41.1	0.0	10.3	38.2	0.0	38.7	35.5	0.0	40.0
Incr Delay (d2), s/veh	10.4	0.0	3.5	44.1	0.0	0.9	45.1	0.0	5.9	0.2	0.0	5.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	10.7	4.7	0.0	5.3	9.2	0.0	3.6	0.5	0.0	2.7
LnGrp Delay(d),s/veh	54.0	0.0	19.2	85.2	0.0	11.3	83.3	0.0	44.6	35.7	0.0	45.3
LnGrp LOS	D		B	F		B	F		D	D		D
Approach Vol, veh/h		571			497			382			123	
Approach Delay, s/veh		20.3			29.4			69.4			43.6	
Approach LOS		C			C			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	14.6	14.1	11.0	50.4	17.0	11.6	5.9	55.5				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	6.0	32.0	7.0	29.0	13.0	25.0	6.0	30.0				
Max Q Clear Time (g_c+I1), s	3.0	9.3	8.1	23.1	14.3	7.0	3.0	11.7				
Green Ext Time (p_c), s	0.1	0.7	0.0	2.7	0.0	0.4	0.0	5.2				
Intersection Summary												
HCM 2010 Ctrl Delay			36.9									
HCM 2010 LOS			D									

Existing AM Peak Hour

3: Cameron Park Dr/Starbuck Rd & Green Valley Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	19	552	123	375	244	138	23	101
v/c Ratio	0.16	0.69	0.57	0.35	0.96	0.35	0.10	0.40
Control Delay	57.4	11.3	50.1	15.7	78.7	6.9	31.2	28.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.4	11.3	50.1	15.7	78.7	6.9	31.2	28.1
Queue Length 50th (ft)	11	16	65	91	142	5	13	38
Queue Length 95th (ft)	m16	m178	#145	229	m#248	m12	25	59
Internal Link Dist (ft)		281		789		653		251
Turn Bay Length (ft)	270		155		200		50	
Base Capacity (vph)	124	796	217	1057	255	654	226	510
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.69	0.57	0.35	0.96	0.21	0.10	0.20

Intersection Summary

















95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Existing AM Peak Hour

4: Cameron Park Dr & La Canada Dr

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	5	153	47	14	21	63	258	7	4	358	16
Future Volume (veh/h)	22	5	153	47	14	21	63	258	7	4	358	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	28	6	194	55	16	25	71	290	8	5	459	21
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.79	0.79	0.79	0.85	0.85	0.85	0.89	0.89	0.89	0.78	0.78	0.78
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	32	7	222	73	21	33	449	601	17	449	589	27
Arrive On Green	0.16	0.16	0.16	0.07	0.07	0.07	0.34	0.44	0.44	0.25	0.33	0.33
Sat Flow, veh/h	198	42	1371	993	289	451	1774	1804	50	1774	1768	81
Grp Volume(v), veh/h	228	0	0	96	0	0	71	0	298	5	0	480
Grp Sat Flow(s),veh/h/ln	1611	0	0	1733	0	0	1774	0	1854	1774	0	1848
Q Serve(g_s), s	12.4	0.0	0.0	4.9	0.0	0.0	2.5	0.0	10.2	0.2	0.0	21.0
Cycle Q Clear(g_c), s	12.4	0.0	0.0	4.9	0.0	0.0	2.5	0.0	10.2	0.2	0.0	21.0
Prop In Lane	0.12		0.85	0.57		0.26	1.00		0.03	1.00		0.04
Lane Grp Cap(c), veh/h	261	0	0	127	0	0	449	0	618	449	0	616
V/C Ratio(X)	0.87	0.00	0.00	0.75	0.00	0.00	0.16	0.00	0.48	0.01	0.00	0.78
Avail Cap(c_a), veh/h	286	0	0	424	0	0	449	0	618	449	0	616
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	36.8	0.0	0.0	40.9	0.0	0.0	23.1	0.0	19.6	25.2	0.0	27.0
Incr Delay (d2), s/veh	23.0	0.0	0.0	8.7	0.0	0.0	0.2	0.0	2.7	0.0	0.0	9.4
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	7.2	0.0	0.0	2.7	0.0	0.0	1.2	0.0	5.6	0.1	0.0	12.3
LnGrp Delay(d),s/veh	59.8	0.0	0.0	49.6	0.0	0.0	23.3	0.0	22.2	25.2	0.0	36.4
LnGrp LOS	E			D			C		C	C		D
Approach Vol, veh/h		228			96			369			485	
Approach Delay, s/veh		59.8			49.6			22.4			36.3	
Approach LOS		E			D			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	26.8	34.0		18.6	26.8	34.0		10.6				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	6.0	30.0		16.0	6.0	30.0		22.0				
Max Q Clear Time (g_c+I1), s	2.2	12.2		14.4	4.5	23.0		6.9				
Green Ext Time (p_c), s	0.0	1.4		0.2	0.0	1.5		0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			37.6									
HCM 2010 LOS			D									



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	228	96	71	298	5	480
v/c Ratio	0.83	0.48	0.60	0.27	0.04	0.49
Control Delay	61.3	37.9	63.3	12.1	35.5	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.3	37.9	63.3	12.1	35.5	8.9
Queue Length 50th (ft)	125	42	40	77	3	126
Queue Length 95th (ft)	#189	80	#99	173	m5	68
Internal Link Dist (ft)	707	720		358		558
Turn Bay Length (ft)			430		300	
Base Capacity (vph)	291	441	118	1100	118	975
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.22	0.60	0.27	0.04	0.49

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Intersection							
Int Delay, s/veh	0.4						
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations							
Traffic Vol, veh/h	0	6	1	49	99	0	
Future Vol, veh/h	0	6	1	49	99	0	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Stop	Stop	Free	Free	Free	Free	
RT Channelized	-	None	-	None	-	None	
Storage Length	0	-	-	-	-	-	
Veh in Median Storage, #	0	-	-	0	0	-	
Grade, %	0	-	-	0	0	-	
Peak Hour Factor	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	
Mvmt Flow	0	7	1	53	108	0	
Major/Minor	Minor2		Major1		Major2		
Conflicting Flow All	163	108	108	0	-	0	
Stage 1	108	-	-	-	-	-	
Stage 2	55	-	-	-	-	-	
Critical Hdwy	6.42	6.22	4.12	-	-	-	
Critical Hdwy Stg 1	5.42	-	-	-	-	-	
Critical Hdwy Stg 2	5.42	-	-	-	-	-	
Follow-up Hdwy	3.518	3.318	2.218	-	-	-	
Pot Cap-1 Maneuver	828	946	1483	-	-	-	
Stage 1	916	-	-	-	-	-	
Stage 2	968	-	-	-	-	-	
Platoon blocked, %				-	-	-	
Mov Cap-1 Maneuver	827	946	1483	-	-	-	
Mov Cap-2 Maneuver	827	-	-	-	-	-	
Stage 1	916	-	-	-	-	-	
Stage 2	967	-	-	-	-	-	
Approach	EB		NB		SB		
HCM Control Delay, s	8.8		0.1		0		
HCM LOS	A						
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	1483	-	946	-	-		
HCM Lane V/C Ratio	0.001	-	0.007	-	-		
HCM Control Delay (s)	7.4	0	8.8	-	-		
HCM Lane LOS	A	A	A	-	-		
HCM 95th %tile Q(veh)	0	-	0	-	-		

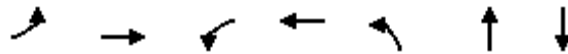
Existing PM Peak Hour

1: Cambridge Road/Peridot Dr & Green Valley Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	642	123	55	399	7	84	11	67	7	3	6
Future Volume (veh/h)	12	642	123	55	399	7	84	11	67	7	3	6
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	13	698	134	58	420	7	98	13	78	9	4	8
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.95	0.95	0.95	0.86	0.86	0.86	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	26	829	159	167	1141	19	123	46	276	0	81	162
Arrive On Green	0.01	0.55	0.55	0.09	0.62	0.62	0.07	0.20	0.20	0.01	0.15	0.15
Sat Flow, veh/h	1774	1519	292	1774	1827	30	1774	230	1381	0	556	1111
Grp Volume(v), veh/h	13	0	832	58	0	427	98	0	91	0	0	12
Grp Sat Flow(s),veh/h/ln	1774	0	1811	1774	0	1857	1774	0	1611	0	0	1667
Q Serve(g_s), s	0.8	0.0	42.5	3.4	0.0	12.3	6.0	0.0	5.3	0.0	0.0	0.7
Cycle Q Clear(g_c), s	0.8	0.0	42.5	3.4	0.0	12.3	6.0	0.0	5.3	0.0	0.0	0.7
Prop In Lane	1.00		0.16	1.00		0.02	1.00		0.86	0.00		0.67
Lane Grp Cap(c), veh/h	26	0	988	167	0	1160	123	0	322	0	0	242
V/C Ratio(X)	0.49	0.00	0.84	0.35	0.00	0.37	0.79	0.00	0.28	0.00	0.00	0.05
Avail Cap(c_a), veh/h	97	0	988	167	0	1160	194	0	322	0	0	242
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	53.8	0.0	21.0	46.7	0.0	10.1	50.4	0.0	37.3	0.0	0.0	40.5
Incr Delay (d2), s/veh	13.4	0.0	8.7	1.2	0.0	0.9	11.4	0.0	2.2	0.0	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	23.4	1.7	0.0	6.6	3.3	0.0	2.5	0.0	0.0	0.3
LnGrp Delay(d),s/veh	67.2	0.0	29.7	47.9	0.0	11.0	61.8	0.0	39.5	0.0	0.0	40.8
LnGrp LOS	E		C	D		B	E		D			D
Approach Vol, veh/h		845			485			189			12	
Approach Delay, s/veh		30.3			15.4			51.0			40.8	
Approach LOS		C			B			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	5.6	26.0	14.4	64.0	11.6	20.0	5.6	72.7				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	6.0	22.0	6.0	60.0	12.0	16.0	6.0	60.0				
Max Q Clear Time (g_c+I1), s	0.0	7.3	5.4	44.5	8.0	2.7	2.8	14.3				
Green Ext Time (p_c), s	0.0	0.3	0.0	4.9	0.1	0.0	0.0	2.6				
Intersection Summary												
HCM 2010 Ctrl Delay			28.2									
HCM 2010 LOS			C									

Existing PM Peak Hour

1: Cambridge Road/Peridot Dr & Green Valley Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	13	832	58	427	98	91	21
v/c Ratio	0.14	0.79	0.60	0.37	0.59	0.18	2.62
Control Delay	53.0	25.9	69.1	8.4	61.8	9.6	1014.5
Queue Delay	0.0	1.9	0.0	0.0	0.0	0.0	0.0
Total Delay	53.0	27.8	69.1	8.4	61.8	9.6	1014.5
Queue Length 50th (ft)	9	455	36	64	67	7	-19
Queue Length 95th (ft)	29	662	m#88	128	116	41	#63
Internal Link Dist (ft)		606		1376		1198	195
Turn Bay Length (ft)	130		135		120		
Base Capacity (vph)	97	1053	96	1142	193	495	8
Starvation Cap Reductn	0	105	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.88	0.60	0.37	0.51	0.18	2.63

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Existing PM Peak Hour

2: Winterhaven Drive/Hastings Dr & Green Valley Rd

Intersection

Int Delay, s/veh 1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	60	644	19	5	451	8	4	0	2	7	0	27
Future Vol, veh/h	60	644	19	5	451	8	4	0	2	7	0	27
Conflicting Peds, #/hr	0	0	3	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	195	-	-	190	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	89	89	89	50	50	50	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	80	859	25	6	507	9	8	0	4	9	0	35





















Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	516	0	0	887
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.12	-	-	4.12
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.218	-	-	2.218
Pot Cap-1 Maneuver	1050	-	-	763
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1050	-	-	763
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.1	43.7	21.6
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	105	1050	-	-	763	-	-	261
HCM Lane V/C Ratio	0.114	0.076	-	-	0.007	-	-	0.169
HCM Control Delay (s)	43.7	8.7	-	-	9.8	-	-	21.6
HCM Lane LOS	E	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.4	0.2	-	-	0	-	-	0.6

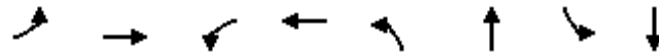
Existing PM Peak Hour

3: Cameron Park Dr/Starbuck Rd & Green Valley Rd

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	285	317	82	179	17	263	85	132	21	54	19
Future Volume (veh/h)	37	285	317	82	179	17	263	85	132	21	54	19
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	40	306	341	100	218	21	317	102	159	25	64	23
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.93	0.93	0.93	0.82	0.82	0.82	0.83	0.83	0.83	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	57	432	482	113	952	92	323	151	235	43	93	33
Arrive On Green	0.03	0.54	0.54	0.06	0.57	0.57	0.18	0.23	0.23	0.02	0.07	0.07
Sat Flow, veh/h	1774	804	896	1774	1673	161	1774	657	1025	1774	1300	467
Grp Volume(v), veh/h	40	0	647	100	0	239	317	0	261	25	0	87
Grp Sat Flow(s),veh/h/ln	1774	0	1701	1774	0	1834	1774	0	1682	1774	0	1768
Q Serve(g_s), s	2.5	0.0	31.2	6.2	0.0	7.1	19.6	0.0	15.6	1.5	0.0	5.3
Cycle Q Clear(g_c), s	2.5	0.0	31.2	6.2	0.0	7.1	19.6	0.0	15.6	1.5	0.0	5.3
Prop In Lane	1.00		0.53	1.00		0.09	1.00		0.61	1.00		0.26
Lane Grp Cap(c), veh/h	57	0	914	113	0	1044	323	0	385	43	0	127
V/C Ratio(X)	0.70	0.00	0.71	0.89	0.00	0.23	0.98	0.00	0.68	0.58	0.00	0.69
Avail Cap(c_a), veh/h	97	0	914	113	0	1044	323	0	596	97	0	402
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	52.7	0.0	19.0	51.1	0.0	11.7	44.8	0.0	38.7	53.1	0.0	49.9
Incr Delay (d2), s/veh	14.6	0.0	4.6	51.0	0.0	0.5	46.0	0.0	2.1	11.8	0.0	6.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	15.7	4.6	0.0	3.7	13.7	0.0	7.5	0.9	0.0	2.8
LnGrp Delay(d),s/veh	67.3	0.0	23.6	102.1	0.0	12.3	90.8	0.0	40.8	64.9	0.0	56.3
LnGrp LOS	E		C	F		B	F		D	E		E
Approach Vol, veh/h		687			339			578			112	
Approach Delay, s/veh		26.1			38.8			68.2			58.2	
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	6.7	29.2	11.0	63.1	24.0	11.9	7.5	66.6				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	6.0	39.0	7.0	42.0	20.0	25.0	6.0	43.0				
Max Q Clear Time (g_c+I1), s	3.5	17.6	8.2	33.2	21.6	7.3	4.5	9.1				
Green Ext Time (p_c), s	0.0	2.3	0.0	3.5	0.0	0.3	0.0	6.1				
Intersection Summary												
HCM 2010 Ctrl Delay			44.9									
HCM 2010 LOS			D									

Existing PM Peak Hour

3: Cameron Park Dr/Starbuck Rd & Green Valley Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	40	647	100	239	317	261	25	87
v/c Ratio	0.43	0.95	0.89	0.30	0.57	0.37	0.27	0.42
Control Delay	77.7	43.3	112.2	22.7	28.6	8.0	57.1	41.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.7	43.3	112.2	22.7	28.6	8.0	57.1	41.5
Queue Length 50th (ft)	30	267	71	114	189	98	17	49
Queue Length 95th (ft)	m46	#638	#151	158	#345	9	42	78
Internal Link Dist (ft)		281		789		653		251
Turn Bay Length (ft)	270		155		200		50	
Base Capacity (vph)	96	680	112	786	561	709	96	416
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.95	0.89	0.30	0.57	0.37	0.26	0.21

Intersection Summary

















95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Existing PM Peak Hour

4: Cameron Park Dr & La Canada Dr

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	12	113	22	11	8	179	474	38	21	404	34
Future Volume (veh/h)	18	12	113	22	11	8	179	474	38	21	404	34
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		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	21	14	130	28	14	10	199	527	42	22	425	36
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.87	0.87	0.87	0.79	0.79	0.79	0.90	0.90	0.90	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	25	16	153	41	21	15	614	773	62	420	584	49
Arrive On Green	0.12	0.12	0.12	0.04	0.04	0.04	0.35	0.45	0.45	0.24	0.35	0.35
Sat Flow, veh/h	207	138	1281	941	470	336	1774	1700	135	1774	1690	143
Grp Volume(v), veh/h	165	0	0	52	0	0	199	0	569	22	0	461
Grp Sat Flow(s),veh/h/ln	1626	0	0	1747	0	0	1774	0	1835	1774	0	1833
Q Serve(g_s), s	10.9	0.0	0.0	3.2	0.0	0.0	9.1	0.0	27.0	1.1	0.0	24.2
Cycle Q Clear(g_c), s	10.9	0.0	0.0	3.2	0.0	0.0	9.1	0.0	27.0	1.1	0.0	24.2
Prop In Lane	0.13		0.79	0.54		0.19	1.00		0.07	1.00		0.08
Lane Grp Cap(c), veh/h	194	0	0	77	0	0	614	0	834	420	0	633
V/C Ratio(X)	0.85	0.00	0.00	0.68	0.00	0.00	0.32	0.00	0.68	0.05	0.00	0.73
Avail Cap(c_a), veh/h	237	0	0	349	0	0	614	0	834	420	0	633
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.5	0.0	0.0	51.8	0.0	0.0	26.5	0.0	23.7	32.4	0.0	31.5
Incr Delay (d2), s/veh	21.3	0.0	0.0	9.9	0.0	0.0	0.3	0.0	4.5	0.1	0.0	7.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	0.0	0.0	1.8	0.0	0.0	4.5	0.0	14.6	0.5	0.0	13.4
LnGrp Delay(d),s/veh	68.8	0.0	0.0	61.7	0.0	0.0	26.8	0.0	28.2	32.5	0.0	38.7
LnGrp LOS	E			E			C		C	C		D
Approach Vol, veh/h		165			52			768				483
Approach Delay, s/veh		68.8			61.7			27.8				38.4
Approach LOS		E			E			C				D
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	30.1	54.0		17.1	42.1	42.0		8.8				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	6.0	50.0		16.0	18.0	38.0		22.0				
Max Q Clear Time (g_c+I1), s	3.1	29.0		12.9	11.1	26.2		5.2				
Green Ext Time (p_c), s	0.2	3.4		0.2	0.3	2.0		0.2				
Intersection Summary												
HCM 2010 Ctrl Delay			37.1									
HCM 2010 LOS			D									






Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	165	52	199	569	22	461
v/c Ratio	0.76	0.30	0.77	0.48	0.23	0.50
Control Delay	67.7	41.2	64.9	15.1	53.8	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.7	41.2	64.9	15.1	53.8	8.9
Queue Length 50th (ft)	112	29	134	172	16	86
Queue Length 95th (ft)	#190	51	#227	435	m21	m283
Internal Link Dist (ft)	707	720		358		558
Turn Bay Length (ft)			430		300	
Base Capacity (vph)	241	359	289	1189	96	919
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.14	0.69	0.48	0.23	0.50




















Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

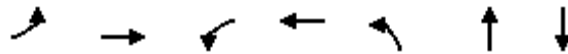
m Volume for 95th percentile queue is metered by upstream signal.

Intersection							
Int Delay, s/veh	0.3						
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations							
Traffic Vol, veh/h	0	2	5	134	94	0	
Future Vol, veh/h	0	2	5	134	94	0	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Stop	Stop	Free	Free	Free	Free	
RT Channelized	-	None	-	None	-	None	
Storage Length	0	-	-	-	-	-	
Veh in Median Storage, #	0	-	-	0	0	-	
Grade, %	0	-	-	0	0	-	
Peak Hour Factor	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	
Mvmt Flow	0	2	5	146	102	0	
Major/Minor	Minor2	Major1			Major2		
Conflicting Flow All	259	102	102	0	-	0	
Stage 1	102	-	-	-	-	-	
Stage 2	157	-	-	-	-	-	
Critical Hdwy	6.42	6.22	4.12	-	-	-	
Critical Hdwy Stg 1	5.42	-	-	-	-	-	
Critical Hdwy Stg 2	5.42	-	-	-	-	-	
Follow-up Hdwy	3.518	3.318	2.218	-	-	-	
Pot Cap-1 Maneuver	730	953	1490	-	-	-	
Stage 1	922	-	-	-	-	-	
Stage 2	871	-	-	-	-	-	
Platoon blocked, %				-	-	-	
Mov Cap-1 Maneuver	727	953	1490	-	-	-	
Mov Cap-2 Maneuver	727	-	-	-	-	-	
Stage 1	922	-	-	-	-	-	
Stage 2	868	-	-	-	-	-	
Approach	EB	NB			SB		
HCM Control Delay, s	8.8	0.3			0		
HCM LOS	A						
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	1490	-	953	-	-		
HCM Lane V/C Ratio	0.004	-	0.002	-	-		
HCM Control Delay (s)	7.4	0	8.8	-	-		
HCM Lane LOS	A	A	A	-	-		
HCM 95th %tile Q(veh)	0	-	0	-	-		

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	389	68	40	587	9	212	4	50	10	7	30
Future Volume (veh/h)	10	389	68	40	587	9	212	4	50	10	7	30
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	14	564	99	48	707	11	312	6	74	17	12	51
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.69	0.69	0.69	0.83	0.83	0.83	0.68	0.68	0.68	0.59	0.59	0.59
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	164	769	135	69	813	13	349	29	362	0	28	117
Arrive On Green	0.18	1.00	1.00	0.04	0.44	0.44	0.20	0.24	0.24	0.04	0.09	0.09
Sat Flow, veh/h	1774	1543	271	1774	1829	28	1774	120	1481	0	310	1319
Grp Volume(v), veh/h	14	0	663	48	0	718	312	0	80	0	0	63
Grp Sat Flow(s),veh/h/ln	1774	0	1814	1774	0	1858	1774	0	1601	0	0	1630
Q Serve(g_s), s	0.6	0.0	0.5	2.4	0.0	31.5	15.4	0.0	3.6	0.0	0.0	3.3
Cycle Q Clear(g_c), s	0.6	0.0	0.5	2.4	0.0	31.5	15.4	0.0	3.6	0.0	0.0	3.3
Prop In Lane	1.00		0.15	1.00		0.02	1.00		0.93	0.00		0.81
Lane Grp Cap(c), veh/h	164	0	904	69	0	826	349	0	391	0	0	145
V/C Ratio(X)	0.09	0.00	0.73	0.70	0.00	0.87	0.90	0.00	0.20	0.00	0.00	0.43
Avail Cap(c_a), veh/h	164	0	904	118	0	826	394	0	391	0	0	145
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	33.5	0.0	0.1	42.7	0.0	22.6	35.3	0.0	27.0	0.0	0.0	38.9
Incr Delay (d2), s/veh	0.2	0.0	5.3	11.9	0.0	12.1	20.7	0.0	1.2	0.0	0.0	9.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	1.4	1.4	0.0	18.7	9.5	0.0	1.7	0.0	0.0	1.9
LnGrp Delay(d),s/veh	33.8	0.0	5.3	54.7	0.0	34.7	55.9	0.0	28.2	0.0	0.0	48.1
LnGrp LOS	C		A	D		C	E		C			D
Approach Vol, veh/h		677			766			392				63
Approach Delay, s/veh		5.9			36.0			50.3				48.1
Approach LOS		A			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	7.7	26.0	7.5	48.8	21.7	12.0	12.3	44.0				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	6.0	22.0	6.0	40.0	20.0	8.0	6.0	40.0				
Max Q Clear Time (g_c+I1), s	0.0	5.6	4.4	2.5	17.4	5.3	2.6	33.5				
Green Ext Time (p_c), s	0.0	0.3	0.0	4.5	0.3	0.1	1.3	2.3				
Intersection Summary												
HCM 2010 Ctrl Delay			28.6									
HCM 2010 LOS			C									

Existing plus Project AM Peak Hour

1: Cambridge Road/Peridot Dr & Green Valley Rd























Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	14	663	48	718	312	80	80
v/c Ratio	0.12	0.72	0.40	0.70	0.85	0.13	1.57
Control Delay	42.1	24.6	52.1	17.0	56.4	6.4	349.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.1	24.6	52.1	17.0	56.4	6.4	349.3
Queue Length 50th (ft)	8	313	27	236	168	2	-35
Queue Length 95th (ft)	20	297	m45	m318	185	16	#61
Internal Link Dist (ft)		606		1376		1198	195
Turn Bay Length (ft)	130		135		120		
Base Capacity (vph)	118	920	121	1019	393	595	51
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.72	0.40	0.70	0.79	0.13	1.57

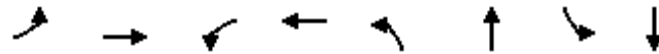
Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	401	9	3	554	2	23	0	7	3	0	75
Future Vol, veh/h	24	401	9	3	554	2	23	0	7	3	0	75
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	195	-	-	190	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	87	87	87	68	68	68	62	62	62
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	535	12	3	637	2	34	0	10	5	0	121
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	639	0	0	547	0	0	1310	1251	541	1255	1256	638
Stage 1	-	-	-	-	-	-	605	605	-	645	645	-
Stage 2	-	-	-	-	-	-	705	646	-	610	611	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	945	-	-	1022	-	-	136	172	541	148	171	477
Stage 1	-	-	-	-	-	-	485	487	-	461	467	-
Stage 2	-	-	-	-	-	-	427	467	-	482	484	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	945	-	-	1022	-	-	99	166	541	141	165	477
Mov Cap-2 Maneuver	-	-	-	-	-	-	99	166	-	141	165	-
Stage 1	-	-	-	-	-	-	469	471	-	445	466	-
Stage 2	-	-	-	-	-	-	318	466	-	457	468	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			0			50.4			16.5		
HCM LOS	F			F			F			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	122	945	-	-	1022	-	-	437				
HCM Lane V/C Ratio	0.362	0.034	-	-	0.003	-	-	0.288				
HCM Control Delay (s)	50.4	8.9	-	-	8.5	-	-	16.5				
HCM Lane LOS	F	A	-	-	A	-	-	C				
HCM 95th %tile Q(veh)	1.5	0.1	-	-	0	-	-	1.2				

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	181	227	98	296	5	212	37	88	20	65	30
Future Volume (veh/h)	14	181	227	98	296	5	212	37	88	20	65	30
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	19	245	307	122	370	6	244	43	101	25	81	38
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.74	0.74	0.74	0.80	0.80	0.80	0.87	0.87	0.87	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	37	379	475	138	1024	17	256	57	134	223	116	54
Arrive On Green	0.02	0.50	0.50	0.08	0.56	0.56	0.14	0.12	0.12	0.04	0.03	0.03
Sat Flow, veh/h	1774	752	943	1774	1828	30	1774	495	1163	1774	1199	562
Grp Volume(v), veh/h	19	0	552	122	0	376	244	0	144	25	0	119
Grp Sat Flow(s),veh/h/ln	1774	0	1695	1774	0	1858	1774	0	1658	1774	0	1761
Q Serve(g_s), s	1.0	0.0	21.6	6.1	0.0	10.0	12.3	0.0	7.6	1.2	0.0	6.0
Cycle Q Clear(g_c), s	1.0	0.0	21.6	6.1	0.0	10.0	12.3	0.0	7.6	1.2	0.0	6.0
Prop In Lane	1.00		0.56	1.00		0.02	1.00		0.70	1.00		0.32
Lane Grp Cap(c), veh/h	37	0	854	138	0	1041	256	0	191	223	0	170
V/C Ratio(X)	0.51	0.00	0.65	0.88	0.00	0.36	0.95	0.00	0.75	0.11	0.00	0.70
Avail Cap(c_a), veh/h	118	0	854	138	0	1041	256	0	589	223	0	489
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	43.6	0.0	16.5	41.1	0.0	10.9	38.2	0.0	38.6	38.3	0.0	42.3
Incr Delay (d2), s/veh	10.4	0.0	3.8	44.1	0.0	1.0	45.1	0.0	5.9	0.2	0.0	5.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	10.9	4.7	0.0	5.4	9.2	0.0	3.8	0.6	0.0	3.2
LnGrp Delay(d),s/veh	54.0	0.0	20.2	85.2	0.0	11.9	83.3	0.0	44.5	38.5	0.0	47.4
LnGrp LOS	D		C	F		B	F		D	D		D
Approach Vol, veh/h		571			498			388			144	
Approach Delay, s/veh		21.3			29.9			68.9			45.9	
Approach LOS		C			C			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	15.3	14.4	11.0	49.3	17.0	12.7	5.9	54.4				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	6.0	32.0	7.0	29.0	13.0	25.0	6.0	30.0				
Max Q Clear Time (g_c+I1), s	3.2	9.6	8.1	23.6	14.3	8.0	3.0	12.0				
Green Ext Time (p_c), s	0.1	0.7	0.0	2.5	0.0	0.5	0.0	5.2				
Intersection Summary												
HCM 2010 Ctrl Delay			37.7									
HCM 2010 LOS			D									

Existing plus Project AM Peak Hour 3: Cameron Park Dr/Starbuck Rd & Green Valley Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	19	552	123	376	244	144	25	119
v/c Ratio	0.16	0.74	0.57	0.37	0.96	0.32	0.11	0.45
Control Delay	58.1	13.2	50.1	16.5	78.8	6.7	31.2	31.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.1	13.2	50.1	16.5	78.8	6.7	31.2	31.3
Queue Length 50th (ft)	11	17	65	95	142	6	14	50
Queue Length 95th (ft)	m16	m178	#145	230	m#247	m12	26	72
Internal Link Dist (ft)		281		789		653		251
Turn Bay Length (ft)	270		155		200		50	
Base Capacity (vph)	124	750	217	1003	255	657	229	509
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.74	0.57	0.37	0.96	0.22	0.11	0.23

Intersection Summary



















95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Existing plus Project AM Peak Hour

4: Cameron Park Dr & La Canada Dr

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	5	153	47	14	21	63	263	7	4	371	16
Future Volume (veh/h)	22	5	153	47	14	21	63	263	7	4	371	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	28	6	194	55	16	25	71	296	8	5	476	21
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.79	0.79	0.79	0.85	0.85	0.85	0.89	0.89	0.89	0.78	0.78	0.78
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	32	7	222	73	21	33	449	602	16	449	590	26
Arrive On Green	0.16	0.16	0.16	0.07	0.07	0.07	0.34	0.44	0.44	0.25	0.33	0.33
Sat Flow, veh/h	198	42	1371	993	289	451	1774	1805	49	1774	1771	78
Grp Volume(v), veh/h	228	0	0	96	0	0	71	0	304	5	0	497
Grp Sat Flow(s),veh/h/ln	1611	0	0	1733	0	0	1774	0	1854	1774	0	1849
Q Serve(g_s), s	12.4	0.0	0.0	4.9	0.0	0.0	2.5	0.0	10.5	0.2	0.0	22.1
Cycle Q Clear(g_c), s	12.4	0.0	0.0	4.9	0.0	0.0	2.5	0.0	10.5	0.2	0.0	22.1
Prop In Lane	0.12		0.85	0.57		0.26	1.00		0.03	1.00		0.04
Lane Grp Cap(c), veh/h	261	0	0	127	0	0	449	0	618	449	0	616
V/C Ratio(X)	0.87	0.00	0.00	0.75	0.00	0.00	0.16	0.00	0.49	0.01	0.00	0.81
Avail Cap(c_a), veh/h	286	0	0	424	0	0	449	0	618	449	0	616
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	36.8	0.0	0.0	40.9	0.0	0.0	23.1	0.0	19.6	25.2	0.0	27.4
Incr Delay (d2), s/veh	23.0	0.0	0.0	8.7	0.0	0.0	0.2	0.0	2.8	0.0	0.0	10.8
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	7.2	0.0	0.0	2.7	0.0	0.0	1.2	0.0	5.8	0.1	0.0	13.0
LnGrp Delay(d),s/veh	59.8	0.0	0.0	49.6	0.0	0.0	23.3	0.0	22.4	25.2	0.0	38.2
LnGrp LOS	E			D			C		C	C		D
Approach Vol, veh/h		228			96			375			502	
Approach Delay, s/veh		59.8			49.6			22.6			38.0	
Approach LOS		E			D			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	26.8	34.0		18.6	26.8	34.0		10.6				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	6.0	30.0		16.0	6.0	30.0		22.0				
Max Q Clear Time (g_c+I1), s	2.2	12.5		14.4	4.5	24.1		6.9				
Green Ext Time (p_c), s	0.0	1.4		0.2	0.0	1.4		0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			38.3									
HCM 2010 LOS			D									



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	228	96	71	304	5	497
v/c Ratio	0.83	0.48	0.60	0.28	0.04	0.51
Control Delay	61.3	37.9	63.3	12.1	36.5	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.3	37.9	63.3	12.1	36.5	9.5
Queue Length 50th (ft)	125	42	40	79	3	137
Queue Length 95th (ft)	#189	80	#99	177	m5	79
Internal Link Dist (ft)	707	720		358		558
Turn Bay Length (ft)			430		300	
Base Capacity (vph)	291	441	118	1100	118	976
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.22	0.60	0.28	0.04	0.51

Intersection Summary




















95th percentile volume exceeds capacity, queue may be longer.

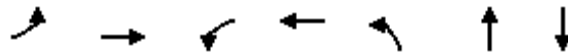
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	6	0	23	3	0	72
Future Vol, veh/h	6	0	23	3	0	72
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	0	25	3	0	78
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	105	27	0	0	28	0
Stage 1	27	-	-	-	-	-
Stage 2	78	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	893	1048	-	-	1585	-
Stage 1	996	-	-	-	-	-
Stage 2	945	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	893	1048	-	-	1585	-
Mov Cap-2 Maneuver	893	-	-	-	-	-
Stage 1	996	-	-	-	-	-
Stage 2	945	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	9.1		0		0	
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	- 893	1585	-		
HCM Lane V/C Ratio	-	- 0.007	-	-		
HCM Control Delay (s)	-	- 9.1	0	-		
HCM Lane LOS	-	- A	A	-		
HCM 95th %tile Q(veh)	-	- 0	0	-		

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Vol, veh/h	1	22	7	49	99	0
Future Vol, veh/h	1	22	7	49	99	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	24	8	53	108	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	176	108	108	0	-	0
Stage 1	108	-	-	-	-	-
Stage 2	68	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	814	946	1483	-	-	-
Stage 1	916	-	-	-	-	-
Stage 2	955	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	809	946	1483	-	-	-
Mov Cap-2 Maneuver	809	-	-	-	-	-
Stage 1	916	-	-	-	-	-
Stage 2	949	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	8.9	0.9		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1483	-	939	-	-	
HCM Lane V/C Ratio	0.005	-	0.027	-	-	
HCM Control Delay (s)	7.4	0	8.9	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	0.1	-	-	

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	648	123	56	403	7	84	11	68	7	3	6
Future Volume (veh/h)	12	648	123	56	403	7	84	11	68	7	3	6
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	13	704	134	59	424	7	98	13	79	9	4	8
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.95	0.95	0.95	0.86	0.86	0.86	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	26	830	158	167	1141	19	123	46	277	0	81	162
Arrive On Green	0.01	0.55	0.55	0.09	0.62	0.62	0.07	0.20	0.20	0.01	0.15	0.15
Sat Flow, veh/h	1774	1522	290	1774	1827	30	1774	228	1383	0	556	1111
Grp Volume(v), veh/h	13	0	838	59	0	431	98	0	92	0	0	12
Grp Sat Flow(s),veh/h/ln	1774	0	1811	1774	0	1857	1774	0	1611	0	0	1667
Q Serve(g_s), s	0.8	0.0	43.0	3.4	0.0	12.5	6.0	0.0	5.3	0.0	0.0	0.7
Cycle Q Clear(g_c), s	0.8	0.0	43.0	3.4	0.0	12.5	6.0	0.0	5.3	0.0	0.0	0.7
Prop In Lane	1.00		0.16	1.00		0.02	1.00		0.86	0.00		0.67
Lane Grp Cap(c), veh/h	26	0	988	167	0	1160	123	0	322	0	0	242
V/C Ratio(X)	0.49	0.00	0.85	0.35	0.00	0.37	0.79	0.00	0.29	0.00	0.00	0.05
Avail Cap(c_a), veh/h	97	0	988	167	0	1160	194	0	322	0	0	242
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	53.8	0.0	21.1	46.7	0.0	10.1	50.4	0.0	37.3	0.0	0.0	40.5
Incr Delay (d2), s/veh	13.4	0.0	9.0	1.3	0.0	0.9	11.4	0.0	2.2	0.0	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	23.9	1.7	0.0	6.6	3.3	0.0	2.6	0.0	0.0	0.3
LnGrp Delay(d),s/veh	67.2	0.0	30.1	48.0	0.0	11.0	61.8	0.0	39.6	0.0	0.0	40.8
LnGrp LOS	E		C	D		B	E		D			D
Approach Vol, veh/h		851			490			190			12	
Approach Delay, s/veh		30.7			15.5			51.0			40.8	
Approach LOS		C			B			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	5.6	26.0	14.4	64.0	11.6	20.0	5.6	72.7				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	6.0	22.0	6.0	60.0	12.0	16.0	6.0	60.0				
Max Q Clear Time (g_c+I1), s	0.0	7.3	5.4	45.0	8.0	2.7	2.8	14.5				
Green Ext Time (p_c), s	0.0	0.3	0.0	4.9	0.1	0.0	0.0	2.6				
Intersection Summary												
HCM 2010 Ctrl Delay			28.4									
HCM 2010 LOS			C									























Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	13	838	59	431	98	92	21
v/c Ratio	0.14	0.80	0.61	0.38	0.59	0.19	2.62
Control Delay	53.0	26.2	69.8	8.4	61.8	9.5	1014.5
Queue Delay	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.0	28.3	69.8	8.4	61.8	9.5	1014.5
Queue Length 50th (ft)	9	462	36	65	67	7	-19
Queue Length 95th (ft)	29	#679	m#84	131	116	41	#63
Internal Link Dist (ft)		606		1376		1198	195
Turn Bay Length (ft)	130		135		120		
Base Capacity (vph)	97	1053	96	1142	193	495	8
Starvation Cap Reductn	0	104	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.88	0.61	0.38	0.51	0.19	2.63

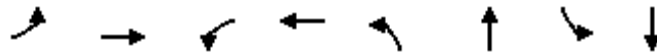
Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

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	66	645	19	5	452	8	4	0	2	7	0	31
Future Vol, veh/h	66	645	19	5	452	8	4	0	2	7	0	31
Conflicting Peds, #/hr	0	0	3	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	195	-	-	190	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	89	89	89	50	50	50	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	88	860	25	6	508	9	8	0	4	9	0	40
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	517	0	0	888	0	0	1596	1580	876	1575	1588	512
Stage 1	-	-	-	-	-	-	1052	1052	-	524	524	-
Stage 2	-	-	-	-	-	-	544	528	-	1051	1064	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1049	-	-	763	-	-	86	109	348	89	108	562
Stage 1	-	-	-	-	-	-	274	303	-	537	530	-
Stage 2	-	-	-	-	-	-	523	528	-	274	300	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1049	-	-	763	-	-	74	99	347	82	98	562
Mov Cap-2 Maneuver	-	-	-	-	-	-	74	99	-	82	98	-
Stage 1	-	-	-	-	-	-	250	277	-	492	526	-
Stage 2	-	-	-	-	-	-	482	524	-	248	274	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.8			0.1			45.9			21.3		
HCM LOS	E			E			E			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	100	1049	-	-	763	-	-	270				
HCM Lane V/C Ratio	0.12	0.084	-	-	0.007	-	-	0.183				
HCM Control Delay (s)	45.9	8.7	-	-	9.8	-	-	21.3				
HCM Lane LOS	E	A	-	-	A	-	-	C				
HCM 95th %tile Q(veh)	0.4	0.3	-	-	0	-	-	0.7				

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	285	317	82	179	20	263	99	132	23	62	20
Future Volume (veh/h)	38	285	317	82	179	20	263	99	132	23	62	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	41	306	341	100	218	24	317	119	159	27	74	24
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.93	0.93	0.93	0.82	0.82	0.82	0.83	0.83	0.83	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	58	427	476	113	927	102	323	170	227	45	104	34
Arrive On Green	0.03	0.53	0.53	0.06	0.56	0.56	0.18	0.23	0.23	0.03	0.08	0.08
Sat Flow, veh/h	1774	804	896	1774	1649	182	1774	724	968	1774	1340	435
Grp Volume(v), veh/h	41	0	647	100	0	242	317	0	278	27	0	98
Grp Sat Flow(s),veh/h/ln	1774	0	1701	1774	0	1831	1774	0	1692	1774	0	1775
Q Serve(g_s), s	2.5	0.0	31.7	6.2	0.0	7.3	19.6	0.0	16.6	1.7	0.0	5.9
Cycle Q Clear(g_c), s	2.5	0.0	31.7	6.2	0.0	7.3	19.6	0.0	16.6	1.7	0.0	5.9
Prop In Lane	1.00		0.53	1.00		0.10	1.00		0.57	1.00		0.24
Lane Grp Cap(c), veh/h	58	0	903	113	0	1030	323	0	396	45	0	138
V/C Ratio(X)	0.71	0.00	0.72	0.89	0.00	0.24	0.98	0.00	0.70	0.60	0.00	0.71
Avail Cap(c_a), veh/h	97	0	903	113	0	1030	323	0	600	97	0	403
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	52.7	0.0	19.5	51.1	0.0	12.1	44.8	0.0	38.6	53.0	0.0	49.5
Incr Delay (d2), s/veh	15.0	0.0	4.8	51.0	0.0	0.5	46.0	0.0	2.3	11.9	0.0	6.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	16.0	4.6	0.0	3.9	13.7	0.0	8.0	1.0	0.0	3.2
LnGrp Delay(d),s/veh	67.7	0.0	24.3	102.1	0.0	12.7	90.8	0.0	40.9	64.9	0.0	56.1
LnGrp LOS	E		C	F		B	F		D	E		E
Approach Vol, veh/h		688			342			595			125	
Approach Delay, s/veh		26.9			38.8			67.5			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	6.8	29.8	11.0	62.4	24.0	12.6	7.6	65.9				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	6.0	39.0	7.0	42.0	20.0	25.0	6.0	43.0				
Max Q Clear Time (g_c+I1), s	3.7	18.6	8.2	33.7	21.6	7.9	4.5	9.3				
Green Ext Time (p_c), s	0.0	2.4	0.0	3.4	0.0	0.4	0.0	6.1				
Intersection Summary												
HCM 2010 Ctrl Delay			45.3									
HCM 2010 LOS			D									

Existing plus Project PM Peak Hour 3: Cameron Park Dr/Starbuck Rd & Green Valley Rd



















Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	41	647	100	242	317	278	27	98
v/c Ratio	0.44	0.95	0.89	0.31	0.61	0.39	0.29	0.45
Control Delay	78.3	43.2	112.2	22.7	31.0	10.0	58.0	43.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.3	43.2	112.2	22.7	31.0	10.0	58.0	43.5
Queue Length 50th (ft)	30	264	71	115	190	114	19	57
Queue Length 95th (ft)	m47	#636	#151	160	#345	17	45	87
Internal Link Dist (ft)		281		789		653		251
Turn Bay Length (ft)	270		155		200		50	
Base Capacity (vph)	96	680	112	785	521	707	96	416
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.95	0.89	0.31	0.61	0.39	0.28	0.24

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	12	113	22	11	8	179	488	38	21	412	34
Future Volume (veh/h)	18	12	113	22	11	8	179	488	38	21	412	34
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		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	21	14	130	28	14	10	199	542	42	22	434	36
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.87	0.87	0.87	0.79	0.79	0.79	0.90	0.90	0.90	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	25	16	153	41	21	15	614	774	60	420	585	49
Arrive On Green	0.12	0.12	0.12	0.04	0.04	0.04	0.35	0.45	0.45	0.24	0.35	0.35
Sat Flow, veh/h	207	138	1281	941	470	336	1774	1704	132	1774	1693	140
Grp Volume(v), veh/h	165	0	0	52	0	0	199	0	584	22	0	470
Grp Sat Flow(s),veh/h/ln	1626	0	0	1747	0	0	1774	0	1836	1774	0	1834
Q Serve(g_s), s	10.9	0.0	0.0	3.2	0.0	0.0	9.1	0.0	28.0	1.1	0.0	24.8
Cycle Q Clear(g_c), s	10.9	0.0	0.0	3.2	0.0	0.0	9.1	0.0	28.0	1.1	0.0	24.8
Prop In Lane	0.13		0.79	0.54		0.19	1.00		0.07	1.00		0.08
Lane Grp Cap(c), veh/h	194	0	0	77	0	0	614	0	834	420	0	633
V/C Ratio(X)	0.85	0.00	0.00	0.68	0.00	0.00	0.32	0.00	0.70	0.05	0.00	0.74
Avail Cap(c_a), veh/h	237	0	0	349	0	0	614	0	834	420	0	633
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.5	0.0	0.0	51.8	0.0	0.0	26.5	0.0	24.0	32.4	0.0	31.7
Incr Delay (d2), s/veh	21.3	0.0	0.0	9.9	0.0	0.0	0.3	0.0	4.9	0.1	0.0	7.7
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	6.1	0.0	0.0	1.8	0.0	0.0	4.5	0.0	15.2	0.5	0.0	13.9
LnGrp Delay(d),s/veh	68.8	0.0	0.0	61.7	0.0	0.0	26.8	0.0	28.9	32.5	0.0	39.3
LnGrp LOS	E			E			C		C	C		D
Approach Vol, veh/h		165			52			783			492	
Approach Delay, s/veh		68.8			61.7			28.3			39.0	
Approach LOS		E			E			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	30.1	54.0		17.1	42.1	42.0		8.8				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	6.0	50.0		16.0	18.0	38.0		22.0				
Max Q Clear Time (g_c+I1), s	3.1	30.0		12.9	11.1	26.8		5.2				
Green Ext Time (p_c), s	0.2	3.4		0.2	0.3	2.0		0.2				
Intersection Summary												
HCM 2010 Ctrl Delay			37.5									
HCM 2010 LOS			D									



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	165	52	199	584	22	470
v/c Ratio	0.76	0.30	0.77	0.49	0.23	0.51
Control Delay	67.7	41.2	64.9	15.3	53.2	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.7	41.2	64.9	15.3	53.2	9.5
Queue Length 50th (ft)	112	29	134	178	16	87
Queue Length 95th (ft)	#190	51	#227	451	m21	m294
Internal Link Dist (ft)	707	720		358		558
Turn Bay Length (ft)			430		300	
Base Capacity (vph)	241	359	289	1189	96	920
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.14	0.69	0.49	0.23	0.51

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	4	0	68	6	0	34
Future Vol, veh/h	4	0	68	6	0	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	0	74	7	0	37
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	114	77	0	0	80	0
Stage 1	77	-	-	-	-	-
Stage 2	37	-	-	-	-	-
Critical Hdwy	7.12	6.22	-	-	4.12	-
Critical Hdwy Stg 1	6.12	-	-	-	-	-
Critical Hdwy Stg 2	6.12	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	863	984	-	-	1518	-
Stage 1	932	-	-	-	-	-
Stage 2	978	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	863	984	-	-	1518	-
Mov Cap-2 Maneuver	863	-	-	-	-	-
Stage 1	932	-	-	-	-	-
Stage 2	978	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	9.2		0		0	
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	- 863	1518	-		
HCM Lane V/C Ratio	-	- 0.005	-	-		
HCM Control Delay (s)	-	- 9.2	0	-		
HCM Lane LOS	-	- A	A	-		
HCM 95th %tile Q(veh)	-	- 0	0	-		

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	13	23	134	94	1
Future Vol, veh/h	0	13	23	134	94	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	14	25	146	102	1
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	299	103	103	0	0	
Stage 1	103	-	-	-	-	
Stage 2	196	-	-	-	-	
Critical Hdwy	6.42	6.22	4.12	-	-	
Critical Hdwy Stg 1	5.42	-	-	-	-	
Critical Hdwy Stg 2	5.42	-	-	-	-	
Follow-up Hdwy	3.518	3.318	2.218	-	-	
Pot Cap-1 Maneuver	692	952	1489	-	-	
Stage 1	921	-	-	-	-	
Stage 2	837	-	-	-	-	
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	680	952	1489	-	-	
Mov Cap-2 Maneuver	680	-	-	-	-	
Stage 1	921	-	-	-	-	
Stage 2	822	-	-	-	-	
Approach	EB	NB		SB		
HCM Control Delay, s	8.8	1.1		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1489	-	952	-	-	
HCM Lane V/C Ratio	0.017	-	0.015	-	-	
HCM Control Delay (s)	7.5	0	8.8	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0.1	-	0	-	-	

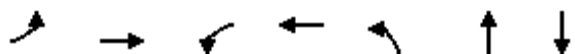
Near-term AM Peak Hour

1: Cambridge Road/Peridot Dr & Green Valley Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	433	88	47	596	10	225	5	53	12	9	34
Future Volume (veh/h)	12	433	88	47	596	10	225	5	53	12	9	34
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	17	628	128	57	718	12	331	7	78	20	15	58
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.69	0.69	0.69	0.83	0.83	0.83	0.68	0.68	0.68	0.59	0.59	0.59
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	165	744	152	75	812	14	368	32	360	0	26	101
Arrive On Green	0.09	0.50	0.50	0.04	0.44	0.44	0.21	0.24	0.24	0.04	0.08	0.08
Sat Flow, veh/h	1774	1502	306	1774	1827	31	1774	132	1471	0	336	1298
Grp Volume(v), veh/h	17	0	756	57	0	730	331	0	85	0	0	73
Grp Sat Flow(s),veh/h/ln	1774	0	1808	1774	0	1857	1774	0	1603	0	0	1634
Q Serve(g_s), s	0.8	0.0	32.7	2.9	0.0	32.4	16.4	0.0	3.8	0.0	0.0	3.9
Cycle Q Clear(g_c), s	0.8	0.0	32.7	2.9	0.0	32.4	16.4	0.0	3.8	0.0	0.0	3.9
Prop In Lane	1.00		0.17	1.00		0.02	1.00		0.92	0.00		0.79
Lane Grp Cap(c), veh/h	165	0	895	75	0	825	368	0	392	0	0	127
V/C Ratio(X)	0.10	0.00	0.84	0.76	0.00	0.88	0.90	0.00	0.22	0.00	0.00	0.57
Avail Cap(c_a), veh/h	165	0	895	118	0	825	414	0	392	0	0	127
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	37.4	0.0	19.7	42.7	0.0	22.9	34.8	0.0	27.1	0.0	0.0	40.1
Incr Delay (d2), s/veh	0.3	0.0	9.6	14.6	0.0	13.3	20.8	0.0	1.3	0.0	0.0	17.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	18.6	1.7	0.0	19.5	10.1	0.0	1.8	0.0	0.0	2.4
LnGrp Delay(d),s/veh	37.7	0.0	29.3	57.3	0.0	36.2	55.6	0.0	28.4	0.0	0.0	57.6
LnGrp LOS	D		C	E		D	E		C			E
Approach Vol, veh/h		773			787			416			73	
Approach Delay, s/veh		29.5			37.7			50.0			57.6	
Approach LOS		C			D			D			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.6	26.0	7.8	48.6	22.6	11.0	12.4	44.0				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	6.0	22.0	6.0	40.0	21.0	7.0	6.0	40.0				
Max Q Clear Time (g_c+I1), s	0.0	5.8	4.9	34.7	18.4	5.9	2.8	34.4				
Green Ext Time (p_c), s	0.0	0.3	0.0	2.2	0.3	0.0	1.5	2.1				
Intersection Summary												
HCM 2010 Ctrl Delay			37.8									
HCM 2010 LOS			D									

Near-term AM Peak Hour

1: Cambridge Road/Peridot Dr & Green Valley Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	17	756	57	730	331	85	93
v/c Ratio	0.15	0.86	0.47	0.75	0.86	0.14	1.60
Control Delay	42.8	34.4	55.1	18.4	55.9	6.3	355.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.8	34.4	55.1	18.4	55.9	6.3	355.4
Queue Length 50th (ft)	9	388	33	248	178	3	-42
Queue Length 95th (ft)	23	356	m52	m323	194	17	#67
Internal Link Dist (ft)		606		1376		1198	195
Turn Bay Length (ft)	130		135		120		
Base Capacity (vph)	118	875	122	979	413	598	58
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.86	0.47	0.75	0.80	0.14	1.60

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Intersection

Int Delay, s/veh 3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	436	10	3	574	2	24	0	8	3	0	76
Future Vol, veh/h	24	436	10	3	574	2	24	0	8	3	0	76
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	195	-	-	190	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	87	87	87	68	68	68	62	62	62
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	581	13	3	660	2	35	0	12	5	0	123

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	662	0	0	595	0	0	1381	1321	588	1326	1327	661
Stage 1	-	-	-	-	-	-	652	652	-	668	668	-
Stage 2	-	-	-	-	-	-	729	669	-	658	659	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	927	-	-	981	-	-	121	157	509	133	155	462
Stage 1	-	-	-	-	-	-	457	464	-	448	456	-
Stage 2	-	-	-	-	-	-	414	456	-	453	461	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	927	-	-	981	-	-	86	151	509	126	149	462
Mov Cap-2 Maneuver	-	-	-	-	-	-	86	151	-	126	149	-
Stage 1	-	-	-	-	-	-	441	448	-	433	455	-
Stage 2	-	-	-	-	-	-	303	455	-	427	445	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0	61	17.3
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	109	927	-	-	981	-	-	420
HCM Lane V/C Ratio	0.432	0.035	-	-	0.004	-	-	0.303
HCM Control Delay (s)	61	9	-	-	8.7	-	-	17.3
HCM Lane LOS	F	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.8	0.1	-	-	0	-	-	1.3

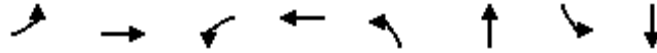
Near-term AM Peak Hour

3: Cameron Park Dr/Starbuck Rd & Green Valley Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	207	252	111	324	4	222	32	98	20	53	32
Future Volume (veh/h)	16	207	252	111	324	4	222	32	98	20	53	32
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	22	280	341	139	405	5	255	37	113	25	66	40
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.74	0.74	0.74	0.80	0.80	0.80	0.87	0.87	0.87	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	42	392	477	138	1040	13	256	49	149	200	96	58
Arrive On Green	0.02	0.51	0.51	0.08	0.57	0.57	0.14	0.12	0.12	0.11	0.09	0.09
Sat Flow, veh/h	1774	765	932	1774	1836	23	1774	406	1239	1774	1086	658
Grp Volume(v), veh/h	22	0	621	139	0	410	255	0	150	25	0	106
Grp Sat Flow(s),veh/h/ln	1774	0	1697	1774	0	1859	1774	0	1644	1774	0	1744
Q Serve(g_s), s	1.1	0.0	25.3	7.0	0.0	11.1	12.9	0.0	8.0	1.1	0.0	5.3
Cycle Q Clear(g_c), s	1.1	0.0	25.3	7.0	0.0	11.1	12.9	0.0	8.0	1.1	0.0	5.3
Prop In Lane	1.00		0.55	1.00		0.01	1.00		0.75	1.00		0.38
Lane Grp Cap(c), veh/h	42	0	869	138	0	1052	256	0	197	200	0	154
V/C Ratio(X)	0.53	0.00	0.71	1.01	0.00	0.39	1.00	0.00	0.76	0.13	0.00	0.69
Avail Cap(c_a), veh/h	118	0	869	138	0	1052	256	0	585	200	0	484
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	43.4	0.0	16.9	41.5	0.0	10.9	38.5	0.0	38.4	35.9	0.0	39.8
Incr Delay (d2), s/veh	10.0	0.0	5.0	78.6	0.0	1.1	55.0	0.0	5.9	0.3	0.0	5.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	12.9	6.4	0.0	5.9	10.2	0.0	4.0	0.6	0.0	2.8
LnGrp Delay(d),s/veh	53.4	0.0	21.9	120.1	0.0	12.0	93.5	0.0	44.3	36.2	0.0	45.3
LnGrp LOS	D		C	F		B	F		D	D		D
Approach Vol, veh/h		643			549			405			131	
Approach Delay, s/veh		23.0			39.3			75.3			43.5	
Approach LOS		C			D			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	14.1	14.8	11.0	50.1	17.0	11.9	6.1	55.0				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	6.0	32.0	7.0	29.0	13.0	25.0	6.0	30.0				
Max Q Clear Time (g_c+I1), s	3.1	10.0	9.0	27.3	14.9	7.3	3.1	13.1				
Green Ext Time (p_c), s	0.1	0.7	0.0	1.0	0.0	0.4	0.0	5.8				
Intersection Summary												
HCM 2010 Ctrl Delay			42.0									
HCM 2010 LOS			D									

Near-term AM Peak Hour

3: Cameron Park Dr/Starbuck Rd & Green Valley Rd





















Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	22	621	139	410	255	150	25	106
v/c Ratio	0.18	0.81	0.56	0.39	1.00	0.37	0.11	0.42
Control Delay	55.9	15.5	48.0	16.2	88.9	6.3	31.5	27.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.9	15.5	48.0	16.2	88.9	6.3	31.5	27.9
Queue Length 50th (ft)	13	28	73	102	149	15	14	39
Queue Length 95th (ft)	m16	m#371	#169	254	m#261	m10	26	60
Internal Link Dist (ft)		281		789		653		251
Turn Bay Length (ft)	270		155		200		50	
Base Capacity (vph)	125	765	250	1055	255	660	225	510
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.81	0.56	0.39	1.00	0.23	0.11	0.21

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	5	167	51	14	22	68	280	8	4	402	17
Future Volume (veh/h)	23	5	167	51	14	22	68	280	8	4	402	17
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	29	6	211	60	16	26	76	315	9	5	515	22
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.79	0.79	0.79	0.85	0.85	0.85	0.89	0.89	0.89	0.78	0.78	0.78
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	33	7	238	79	21	34	424	601	17	424	591	25
Arrive On Green	0.17	0.17	0.17	0.08	0.08	0.08	0.24	0.33	0.33	0.24	0.33	0.33
Sat Flow, veh/h	190	39	1381	1020	272	442	1774	1802	51	1774	1774	76
Grp Volume(v), veh/h	246	0	0	102	0	0	76	0	324	5	0	537
Grp Sat Flow(s),veh/h/ln	1610	0	0	1734	0	0	1774	0	1854	1774	0	1849
Q Serve(g_s), s	13.4	0.0	0.0	5.2	0.0	0.0	3.1	0.0	12.7	0.2	0.0	24.6
Cycle Q Clear(g_c), s	13.4	0.0	0.0	5.2	0.0	0.0	3.1	0.0	12.7	0.2	0.0	24.6
Prop In Lane	0.12		0.86	0.59		0.25	1.00		0.03	1.00		0.04
Lane Grp Cap(c), veh/h	277	0	0	135	0	0	424	0	618	424	0	616
V/C Ratio(X)	0.89	0.00	0.00	0.76	0.00	0.00	0.18	0.00	0.52	0.01	0.00	0.87
Avail Cap(c_a), veh/h	286	0	0	424	0	0	424	0	618	424	0	616
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	36.4	0.0	0.0	40.7	0.0	0.0	27.2	0.0	24.2	26.1	0.0	28.2
Incr Delay (d2), s/veh	26.3	0.0	0.0	8.3	0.0	0.0	0.2	0.0	3.2	0.0	0.0	15.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.0	0.0	0.0	2.8	0.0	0.0	1.5	0.0	7.0	0.1	0.0	15.2
LnGrp Delay(d),s/veh	62.7	0.0	0.0	49.0	0.0	0.0	27.4	0.0	27.4	26.1	0.0	43.7
LnGrp LOS	E			D			C		C	C		D
Approach Vol, veh/h		246			102			400				542
Approach Delay, s/veh		62.7			49.0			27.4				43.6
Approach LOS		E			D			C				D
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	25.5	34.0		19.5	25.5	34.0		11.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	6.0	30.0		16.0	6.0	30.0		22.0				
Max Q Clear Time (g_c+I1), s	2.2	14.7		15.4	5.1	26.6		7.2				
Green Ext Time (p_c), s	0.0	1.5		0.1	0.0	1.0		0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			42.6									
HCM 2010 LOS			D									



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	246	102	76	324	5	537
v/c Ratio	0.88	0.50	0.64	0.30	0.04	0.56
Control Delay	67.1	38.7	66.8	12.6	32.5	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.1	38.7	66.8	12.6	32.5	10.2
Queue Length 50th (ft)	137	46	43	86	3	142
Queue Length 95th (ft)	#212	85	#108	191	m5	85
Internal Link Dist (ft)	707	720		358		558
Turn Bay Length (ft)			430		300	
Base Capacity (vph)	291	440	118	1087	118	962
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.23	0.64	0.30	0.04	0.56

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	6	1	54	115	0
Future Vol, veh/h	0	6	1	54	115	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	7	1	59	125	0

Major/Minor	Minor2	Major1		Major2
Conflicting Flow All	186	125	125	0
Stage 1	125	-	-	-
Stage 2	61	-	-	-
Critical Hdwy	7.12	6.22	4.12	-
Critical Hdwy Stg 1	6.12	-	-	-
Critical Hdwy Stg 2	6.12	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-
Pot Cap-1 Maneuver	775	926	1462	-
Stage 1	879	-	-	-
Stage 2	950	-	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	774	926	1462	-
Mov Cap-2 Maneuver	774	-	-	-
Stage 1	878	-	-	-
Stage 2	949	-	-	-

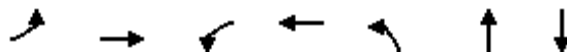
Approach	EB	NB	SB
HCM Control Delay, s	8.9	0.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1462	-	926	-	-
HCM Lane V/C Ratio	0.001	-	0.007	-	-
HCM Control Delay (s)	7.5	0	8.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	667	137	61	436	8	102	14	78	8	4	7
Future Volume (veh/h)	14	667	137	61	436	8	102	14	78	8	4	7
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		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	15	725	149	64	459	8	119	16	91	10	5	9
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.95	0.95	0.95	0.86	0.86	0.86	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	29	862	177	180	1205	21	145	44	251	0	65	117
Arrive On Green	0.02	0.57	0.57	0.10	0.66	0.66	0.08	0.18	0.18	0.01	0.11	0.11
Sat Flow, veh/h	1774	1500	308	1774	1825	32	1774	241	1371	0	597	1075
Grp Volume(v), veh/h	15	0	874	64	0	467	119	0	107	0	0	14
Grp Sat Flow(s),veh/h/ln	1774	0	1808	1774	0	1857	1774	0	1612	0	0	1673
Q Serve(g_s), s	1.0	0.0	47.7	4.0	0.0	13.7	7.9	0.0	7.0	0.0	0.0	0.9
Cycle Q Clear(g_c), s	1.0	0.0	47.7	4.0	0.0	13.7	7.9	0.0	7.0	0.0	0.0	0.9
Prop In Lane	1.00		0.17	1.00		0.02	1.00		0.85	0.00		0.64
Lane Grp Cap(c), veh/h	29	0	1040	180	0	1226	145	0	296	0	0	181
V/C Ratio(X)	0.52	0.00	0.84	0.36	0.00	0.38	0.82	0.00	0.36	0.00	0.00	0.08
Avail Cap(c_a), veh/h	89	0	1040	180	0	1226	222	0	296	0	0	181
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	58.5	0.0	21.0	50.3	0.0	9.3	54.2	0.0	42.9	0.0	0.0	48.1
Incr Delay (d2), s/veh	13.4	0.0	8.2	1.2	0.0	0.9	13.1	0.0	3.4	0.0	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	25.9	2.0	0.0	7.3	4.4	0.0	3.4	0.0	0.0	0.5
LnGrp Delay(d),s/veh	72.0	0.0	29.2	51.5	0.0	10.2	67.3	0.0	46.3	0.0	0.0	48.9
LnGrp LOS	E		C	D		B	E		D			D
Approach Vol, veh/h		889			531			226			14	
Approach Delay, s/veh		29.9			15.1			57.4			48.9	
Approach LOS		C			B			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	4.8	26.0	16.2	73.0	13.8	17.0	6.0	83.2				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	6.0	22.0	7.0	69.0	15.0	13.0	6.0	70.0				
Max Q Clear Time (g_c+I1), s	0.0	9.0	6.0	49.7	9.9	2.9	3.0	15.7				
Green Ext Time (p_c), s	0.0	0.4	0.0	5.8	0.1	0.0	0.0	2.9				
Intersection Summary												
HCM 2010 Ctrl Delay			29.1									
HCM 2010 LOS			C									

Near-term PM Peak Hour

1: Cambridge Road/Peridot Dr & Green Valley Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	15	874	64	467	119	107	24
v/c Ratio	0.17	0.78	0.63	0.38	0.64	0.23	2.67
Control Delay	59.3	24.8	72.6	7.7	67.3	10.8	1008.2
Queue Delay	0.0	3.7	0.0	0.0	0.0	0.0	0.0
Total Delay	59.3	28.5	72.6	7.7	67.3	10.8	1008.2
Queue Length 50th (ft)	11	499	42	73	89	9	-24
Queue Length 95th (ft)	35	730	m#91	145	144	49	#73
Internal Link Dist (ft)		606		1376		1198	195
Turn Bay Length (ft)	130		135		120		
Base Capacity (vph)	89	1114	103	1213	221	460	9
Starvation Cap Reductn	0	161	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.92	0.62	0.38	0.54	0.23	2.67

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Intersection

Int Delay, s/veh 1.6

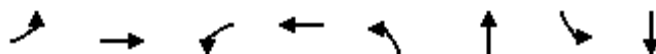
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↕			↕		
Traffic Vol, veh/h	66	672	19	5	485	8	4	0	2	7	0	31
Future Vol, veh/h	66	672	19	5	485	8	4	0	2	7	0	31
Conflicting Peds, #/hr	0	0	3	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	195	-	-	190	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	89	89	89	50	50	50	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	88	896	25	6	545	9	8	0	4	9	0	40

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	554	0	0	924	0	0	1669	1653	912	1648	1661	549
Stage 1	-	-	-	-	-	-	1088	1088	-	561	561	-
Stage 2	-	-	-	-	-	-	581	565	-	1087	1100	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1016	-	-	739	-	-	76	98	332	79	97	535
Stage 1	-	-	-	-	-	-	261	292	-	512	510	-
Stage 2	-	-	-	-	-	-	499	508	-	262	288	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1016	-	-	739	-	-	65	89	331	72	88	535
Mov Cap-2 Maneuver	-	-	-	-	-	-	65	89	-	72	88	-
Stage 1	-	-	-	-	-	-	238	266	-	468	506	-
Stage 2	-	-	-	-	-	-	458	504	-	236	262	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0.1	51.7	23.4
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	89	1016	-	-	739	-	-	245
HCM Lane V/C Ratio	0.135	0.087	-	-	0.008	-	-	0.201
HCM Control Delay (s)	51.7	8.9	-	-	9.9	-	-	23.4
HCM Lane LOS	F	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.4	0.3	-	-	0	-	-	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	311	337	91	201	18	289	88	148	23	55	21
Future Volume (veh/h)	40	311	337	91	201	18	289	88	148	23	55	21
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		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	43	334	362	111	245	22	348	106	178	27	65	25
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.93	0.93	0.93	0.82	0.82	0.82	0.83	0.83	0.83	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	56	432	468	118	949	85	355	144	242	74	91	35
Arrive On Green	0.03	0.53	0.53	0.07	0.56	0.56	0.20	0.23	0.23	0.04	0.07	0.07
Sat Flow, veh/h	1774	817	886	1774	1685	151	1774	626	1051	1774	1273	490
Grp Volume(v), veh/h	43	0	696	111	0	267	348	0	284	27	0	90
Grp Sat Flow(s),veh/h/ln	1774	0	1703	1774	0	1836	1774	0	1677	1774	0	1763
Q Serve(g_s), s	2.9	0.0	39.1	7.5	0.0	8.9	23.4	0.0	18.8	1.8	0.0	6.0
Cycle Q Clear(g_c), s	2.9	0.0	39.1	7.5	0.0	8.9	23.4	0.0	18.8	1.8	0.0	6.0
Prop In Lane	1.00		0.52	1.00		0.08	1.00		0.63	1.00		0.28
Lane Grp Cap(c), veh/h	56	0	899	118	0	1034	355	0	386	74	0	126
V/C Ratio(X)	0.76	0.00	0.77	0.94	0.00	0.26	0.98	0.00	0.74	0.37	0.00	0.71
Avail Cap(c_a), veh/h	103	0	899	118	0	1034	355	0	601	89	0	367
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	57.7	0.0	22.6	55.8	0.0	13.4	47.8	0.0	42.8	56.0	0.0	54.5
Incr Delay (d2), s/veh	19.0	0.0	6.4	63.6	0.0	0.6	43.2	0.0	2.7	3.0	0.0	7.2
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	20.0	5.8	0.0	4.7	15.8	0.0	9.1	0.9	0.0	3.2
LnGrp Delay(d),s/veh	76.6	0.0	29.0	119.4	0.0	14.0	91.0	0.0	45.6	59.0	0.0	61.7
LnGrp LOS	E		C	F		B	F		D	E		E
Approach Vol, veh/h		739			378			632			117	
Approach Delay, s/veh		31.8			44.9			70.6			61.0	
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	9.0	31.6	12.0	67.4	28.0	12.6	7.8	71.6				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	6.0	43.0	8.0	47.0	24.0	25.0	7.0	48.0				
Max Q Clear Time (g_c+I1), s	3.8	20.8	9.5	41.1	25.4	8.0	4.9	10.9				
Green Ext Time (p_c), s	0.0	2.6	0.0	2.8	0.0	0.3	0.0	6.9				
Intersection Summary												
HCM 2010 Ctrl Delay			49.4									
HCM 2010 LOS			D									



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	43	696	111	267	348	284	27	90
v/c Ratio	0.43	1.00	0.94	0.35	0.65	0.40	0.31	0.45
Control Delay	82.7	56.2	124.3	25.8	31.6	8.2	64.7	47.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	82.7	56.2	124.3	25.8	31.6	8.2	64.7	47.2
Queue Length 50th (ft)	33	~509	87	141	232	124	21	56
Queue Length 95th (ft)	m52	#766	#177	188	#396	7	48	88
Internal Link Dist (ft)		281		789		653		251
Turn Bay Length (ft)	270		155		200		50	
Base Capacity (vph)	103	693	118	771	538	709	88	382
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	1.00	0.94	0.35	0.65	0.40	0.31	0.24

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	12	122	24	11	9	194	525	41	22	440	35
Future Volume (veh/h)	19	12	122	24	11	9	194	525	41	22	440	35
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	22	14	140	30	14	11	216	583	46	23	463	37
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.87	0.87	0.87	0.79	0.79	0.79	0.90	0.90	0.90	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	25	16	162	44	20	16	597	808	64	390	609	49
Arrive On Green	0.13	0.13	0.13	0.05	0.05	0.05	0.34	0.47	0.47	0.22	0.36	0.36
Sat Flow, veh/h	203	129	1292	952	444	349	1774	1701	134	1774	1699	136
Grp Volume(v), veh/h	176	0	0	55	0	0	216	0	629	23	0	500
Grp Sat Flow(s),veh/h/ln	1625	0	0	1744	0	0	1774	0	1835	1774	0	1835
Q Serve(g_s), s	12.8	0.0	0.0	3.7	0.0	0.0	11.0	0.0	32.8	1.2	0.0	28.8
Cycle Q Clear(g_c), s	12.8	0.0	0.0	3.7	0.0	0.0	11.0	0.0	32.8	1.2	0.0	28.8
Prop In Lane	0.12		0.80	0.55		0.20	1.00		0.07	1.00		0.07
Lane Grp Cap(c), veh/h	204	0	0	80	0	0	597	0	872	390	0	657
V/C Ratio(X)	0.86	0.00	0.00	0.68	0.00	0.00	0.36	0.00	0.72	0.06	0.00	0.76
Avail Cap(c_a), veh/h	257	0	0	320	0	0	597	0	872	390	0	657
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	51.5	0.0	0.0	56.4	0.0	0.0	30.1	0.0	25.2	37.0	0.0	34.0
Incr Delay (d2), s/veh	21.0	0.0	0.0	9.8	0.0	0.0	0.4	0.0	5.1	0.1	0.0	8.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.9	0.0	0.0	2.0	0.0	0.0	5.5	0.0	17.8	0.6	0.0	16.1
LnGrp Delay(d),s/veh	72.4	0.0	0.0	66.2	0.0	0.0	30.4	0.0	30.3	37.0	0.0	42.0
LnGrp LOS	E			E			C		C	D		D
Approach Vol, veh/h		176			55			845			523	
Approach Delay, s/veh		72.4			66.2			30.3			41.8	
Approach LOS		E			E			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	30.4	61.0		19.1	44.4	47.0		9.5				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	6.0	57.0		19.0	20.0	43.0		22.0				
Max Q Clear Time (g_c+I1), s	3.2	34.8		14.8	13.0	30.8		5.7				
Green Ext Time (p_c), s	0.2	3.9		0.4	0.4	2.3		0.2				
Intersection Summary												
HCM 2010 Ctrl Delay			40.0									
HCM 2010 LOS			D									



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	176	55	216	629	23	500
v/c Ratio	0.77	0.34	0.81	0.53	0.26	0.54
Control Delay	71.7	47.2	71.6	17.6	59.6	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.7	47.2	71.6	17.6	59.6	9.7
Queue Length 50th (ft)	131	35	161	280	19	112
Queue Length 95th (ft)	202	59	#267	521	m22	m315
Internal Link Dist (ft)	707	720		358		558
Turn Bay Length (ft)			430		300	
Base Capacity (vph)	261	329	295	1176	88	929
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.17	0.73	0.53	0.26	0.54



















Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

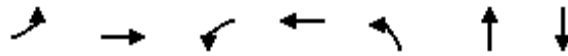
m Volume for 95th percentile queue is metered by upstream signal.

Intersection							
Int Delay, s/veh	0.2						
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	W			4	4		
Traffic Vol, veh/h	0	2	5	153	105	0	
Future Vol, veh/h	0	2	5	153	105	0	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Stop	Stop	Free	Free	Free	Free	
RT Channelized	-	None	-	None	-	None	
Storage Length	0	-	-	-	-	-	
Veh in Median Storage, #	0	-	-	0	0	-	
Grade, %	0	-	-	0	0	-	
Peak Hour Factor	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	
Mvmt Flow	0	2	5	166	114	0	
Major/Minor	Minor2	Major1		Major2			
Conflicting Flow All	291	114	114	0	-	0	
Stage 1	114	-	-	-	-	-	
Stage 2	177	-	-	-	-	-	
Critical Hdwy	6.42	6.22	4.12	-	-	-	
Critical Hdwy Stg 1	5.42	-	-	-	-	-	
Critical Hdwy Stg 2	5.42	-	-	-	-	-	
Follow-up Hdwy	3.518	3.318	2.218	-	-	-	
Pot Cap-1 Maneuver	700	939	1475	-	-	-	
Stage 1	911	-	-	-	-	-	
Stage 2	854	-	-	-	-	-	
Platoon blocked, %				-	-	-	
Mov Cap-1 Maneuver	697	939	1475	-	-	-	
Mov Cap-2 Maneuver	697	-	-	-	-	-	
Stage 1	911	-	-	-	-	-	
Stage 2	851	-	-	-	-	-	
Approach	EB	NB		SB			
HCM Control Delay, s	8.8	0.2		0			
HCM LOS	A						
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	1475	-	939	-	-		
HCM Lane V/C Ratio	0.004	-	0.002	-	-		
HCM Control Delay (s)	7.5	0	8.8	-	-		
HCM Lane LOS	A	A	A	-	-		
HCM 95th %tile Q(veh)	0	-	0	-	-		

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	435	88	48	602	10	225	5	54	12	9	34
Future Volume (veh/h)	12	435	88	48	602	10	225	5	54	12	9	34
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	17	630	128	58	725	12	331	7	79	20	15	58
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.69	0.69	0.69	0.83	0.83	0.83	0.68	0.68	0.68	0.59	0.59	0.59
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	165	744	151	75	812	13	368	32	360	0	26	101
Arrive On Green	0.09	0.49	0.49	0.04	0.44	0.44	0.21	0.24	0.24	0.04	0.08	0.08
Sat Flow, veh/h	1774	1503	305	1774	1827	30	1774	130	1472	0	336	1298
Grp Volume(v), veh/h	17	0	758	58	0	737	331	0	86	0	0	73
Grp Sat Flow(s),veh/h/ln	1774	0	1808	1774	0	1857	1774	0	1603	0	0	1634
Q Serve(g_s), s	0.8	0.0	32.8	2.9	0.0	32.9	16.4	0.0	3.9	0.0	0.0	3.9
Cycle Q Clear(g_c), s	0.8	0.0	32.8	2.9	0.0	32.9	16.4	0.0	3.9	0.0	0.0	3.9
Prop In Lane	1.00		0.17	1.00		0.02	1.00		0.92	0.00		0.79
Lane Grp Cap(c), veh/h	165	0	895	75	0	826	368	0	392	0	0	127
V/C Ratio(X)	0.10	0.00	0.85	0.77	0.00	0.89	0.90	0.00	0.22	0.00	0.00	0.57
Avail Cap(c_a), veh/h	165	0	895	118	0	826	414	0	392	0	0	127
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	37.4	0.0	19.8	42.6	0.0	23.0	34.8	0.0	27.1	0.0	0.0	40.1
Incr Delay (d2), s/veh	0.3	0.0	9.8	15.0	0.0	14.1	20.8	0.0	1.3	0.0	0.0	17.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	18.6	1.7	0.0	20.0	10.1	0.0	1.8	0.0	0.0	2.4
LnGrp Delay(d),s/veh	37.7	0.0	29.6	57.6	0.0	37.1	55.6	0.0	28.4	0.0	0.0	57.6
LnGrp LOS	D		C	E		D	E		C			E
Approach Vol, veh/h		775			795			417			73	
Approach Delay, s/veh		29.7			38.6			50.0			57.6	
Approach LOS		C			D			D			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.6	26.0	7.8	48.5	22.6	11.0	12.4	44.0				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	6.0	22.0	6.0	40.0	21.0	7.0	6.0	40.0				
Max Q Clear Time (g_c+I1), s	0.0	5.9	4.9	34.8	18.4	5.9	2.8	34.9				
Green Ext Time (p_c), s	0.0	0.3	0.0	2.2	0.3	0.0	1.5	2.0				
Intersection Summary												
HCM 2010 Ctrl Delay			38.2									
HCM 2010 LOS			D									

Near-term plus Project AM Peak Hour

1: Cambridge Road/Peridot Dr & Green Valley Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	17	758	58	737	331	86	93
v/c Ratio	0.15	0.87	0.48	0.75	0.86	0.14	1.60
Control Delay	42.8	34.6	55.4	19.4	55.9	6.3	355.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.8	34.6	55.4	19.4	55.9	6.3	355.4
Queue Length 50th (ft)	9	390	34	250	178	3	-42
Queue Length 95th (ft)	23	357	m53	m331	194	17	#67
Internal Link Dist (ft)		606		1376		1198	195
Turn Bay Length (ft)	130		135		120		
Base Capacity (vph)	118	875	122	979	413	598	58
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.87	0.48	0.75	0.80	0.14	1.60

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Near-term plus Project AM Peak Hour 2: Winterhaven Drive/Hastings Dr & Green Valley Rd

Intersection

Int Delay, s/veh 3.9





















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↕			↕		
Traffic Vol, veh/h	27	436	10	3	575	2	24	0	8	3	0	82
Future Vol, veh/h	27	436	10	3	575	2	24	0	8	3	0	82
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	195	-	-	190	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	87	87	87	68	68	68	62	62	62
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	581	13	3	661	2	35	0	12	5	0	132

Major/Minor	Major1	Major2	Minor1	Minor2								
Conflicting Flow All	663	0	0	595	0	0	1395	1330	588	1335	1336	662
Stage 1	-	-	-	-	-	-	660	660	-	669	669	-
Stage 2	-	-	-	-	-	-	735	670	-	666	667	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	926	-	-	981	-	-	119	155	509	131	153	462
Stage 1	-	-	-	-	-	-	452	460	-	447	456	-
Stage 2	-	-	-	-	-	-	411	455	-	449	457	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	926	-	-	981	-	-	82	149	509	124	147	462
Mov Cap-2 Maneuver	-	-	-	-	-	-	82	149	-	124	147	-
Stage 1	-	-	-	-	-	-	434	442	-	430	455	-
Stage 2	-	-	-	-	-	-	292	454	-	422	439	-

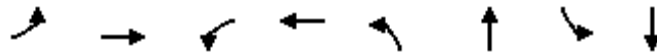
Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0	65.5	17.6
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	104	926	-	-	981	-	-	421
HCM Lane V/C Ratio	0.452	0.039	-	-	0.004	-	-	0.326
HCM Control Delay (s)	65.5	9	-	-	8.7	-	-	17.6
HCM Lane LOS	F	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.9	0.1	-	-	0	-	-	1.4

Near-term plus Project AM Peak Hour 3: Cameron Park Dr/Starbuck Rd & Green Valley Rd

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	207	252	111	324	5	222	37	98	22	66	33
Future Volume (veh/h)	16	207	252	111	324	5	222	37	98	22	66	33
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	22	280	341	139	405	6	255	43	113	28	82	41
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.74	0.74	0.74	0.80	0.80	0.80	0.87	0.87	0.87	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	42	384	468	138	1019	15	256	56	147	211	114	57
Arrive On Green	0.02	0.50	0.50	0.08	0.56	0.56	0.14	0.12	0.12	0.12	0.10	0.10
Sat Flow, veh/h	1774	765	932	1774	1831	27	1774	455	1196	1774	1172	586
Grp Volume(v), veh/h	22	0	621	139	0	411	255	0	156	28	0	123
Grp Sat Flow(s),veh/h/ln	1774	0	1697	1774	0	1858	1774	0	1652	1774	0	1757
Q Serve(g_s), s	1.1	0.0	25.8	7.0	0.0	11.3	12.9	0.0	8.2	1.3	0.0	6.1
Cycle Q Clear(g_c), s	1.1	0.0	25.8	7.0	0.0	11.3	12.9	0.0	8.2	1.3	0.0	6.1
Prop In Lane	1.00		0.55	1.00		0.01	1.00		0.72	1.00		0.33
Lane Grp Cap(c), veh/h	42	0	852	138	0	1034	256	0	204	211	0	172
V/C Ratio(X)	0.53	0.00	0.73	1.01	0.00	0.40	1.00	0.00	0.77	0.13	0.00	0.72
Avail Cap(c_a), veh/h	118	0	852	138	0	1034	256	0	587	211	0	488
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	43.4	0.0	17.6	41.5	0.0	11.4	38.5	0.0	38.2	35.5	0.0	39.4
Incr Delay (d2), s/veh	10.0	0.0	5.4	78.6	0.0	1.1	55.0	0.0	5.9	0.3	0.0	5.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	13.4	6.4	0.0	6.2	10.2	0.0	4.1	0.6	0.0	3.2
LnGrp Delay(d),s/veh	53.4	0.0	23.0	120.1	0.0	12.5	93.5	0.0	44.1	35.8	0.0	44.9
LnGrp LOS	D		C	F		B	F		D	D		D
Approach Vol, veh/h		643			550			411			151	
Approach Delay, s/veh		24.0			39.7			74.7			43.2	
Approach LOS		C			D			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	14.7	15.1	11.0	49.2	17.0	12.8	6.1	54.1				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	6.0	32.0	7.0	29.0	13.0	25.0	6.0	30.0				
Max Q Clear Time (g_c+I1), s	3.3	10.2	9.0	27.8	14.9	8.1	3.1	13.3				
Green Ext Time (p_c), s	0.2	0.8	0.0	0.7	0.0	0.5	0.0	5.7				
Intersection Summary												
HCM 2010 Ctrl Delay			42.5									
HCM 2010 LOS			D									

Near-term plus Project AM Peak Hour 3: Cameron Park Dr/Starbuck Rd & Green Valley Rd





















Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	22	621	139	411	255	156	28	124
v/c Ratio	0.18	0.87	0.56	0.41	1.00	0.34	0.12	0.47
Control Delay	56.4	20.0	48.0	17.2	89.0	6.1	31.7	31.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.4	20.0	48.0	17.2	89.0	6.1	31.7	31.6
Queue Length 50th (ft)	13	29	73	108	149	16	15	53
Queue Length 95th (ft)	m16	m#371	#169	255	m#261	m11	28	75
Internal Link Dist (ft)		281		789		653		251
Turn Bay Length (ft)	270		155		200		50	
Base Capacity (vph)	125	716	250	999	255	663	228	508
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.87	0.56	0.41	1.00	0.24	0.12	0.24

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	5	167	51	14	22	68	285	8	4	415	17
Future Volume (veh/h)	23	5	167	51	14	22	68	285	8	4	415	17
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	29	6	211	60	16	26	76	320	9	5	532	22
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.79	0.79	0.79	0.85	0.85	0.85	0.89	0.89	0.89	0.78	0.78	0.78
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	33	7	238	79	21	34	424	601	17	424	592	24
Arrive On Green	0.17	0.17	0.17	0.08	0.08	0.08	0.24	0.33	0.33	0.24	0.33	0.33
Sat Flow, veh/h	190	39	1381	1020	272	442	1774	1803	51	1774	1776	73
Grp Volume(v), veh/h	246	0	0	102	0	0	76	0	329	5	0	554
Grp Sat Flow(s),veh/h/ln	1610	0	0	1734	0	0	1774	0	1854	1774	0	1850
Q Serve(g_s), s	13.4	0.0	0.0	5.2	0.0	0.0	3.1	0.0	12.9	0.2	0.0	25.7
Cycle Q Clear(g_c), s	13.4	0.0	0.0	5.2	0.0	0.0	3.1	0.0	12.9	0.2	0.0	25.7
Prop In Lane	0.12		0.86	0.59		0.25	1.00		0.03	1.00		0.04
Lane Grp Cap(c), veh/h	277	0	0	135	0	0	424	0	618	424	0	617
V/C Ratio(X)	0.89	0.00	0.00	0.76	0.00	0.00	0.18	0.00	0.53	0.01	0.00	0.90
Avail Cap(c_a), veh/h	286	0	0	424	0	0	424	0	618	424	0	617
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	36.4	0.0	0.0	40.7	0.0	0.0	27.2	0.0	24.3	26.1	0.0	28.6
Incr Delay (d2), s/veh	26.3	0.0	0.0	8.3	0.0	0.0	0.2	0.0	3.3	0.0	0.0	18.4
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	8.0	0.0	0.0	2.8	0.0	0.0	1.5	0.0	7.1	0.1	0.0	16.2
LnGrp Delay(d),s/veh	62.7	0.0	0.0	49.0	0.0	0.0	27.4	0.0	27.6	26.1	0.0	47.0
LnGrp LOS	E			D			C		C	C		D
Approach Vol, veh/h		246			102			405				559
Approach Delay, s/veh		62.7			49.0			27.6				46.8
Approach LOS		E			D			C				D
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	25.5	34.0		19.5	25.5	34.0		11.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	6.0	30.0		16.0	6.0	30.0		22.0				
Max Q Clear Time (g_c+I1), s	2.2	14.9		15.4	5.1	27.7		7.2				
Green Ext Time (p_c), s	0.0	1.5		0.1	0.0	0.8		0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			44.0									
HCM 2010 LOS			D									



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	246	102	76	329	5	554
v/c Ratio	0.88	0.50	0.64	0.30	0.04	0.58
Control Delay	67.1	38.7	66.8	12.6	33.8	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.1	38.7	66.8	12.6	33.8	10.8
Queue Length 50th (ft)	137	46	43	87	3	155
Queue Length 95th (ft)	#212	85	#108	194	m5	198
Internal Link Dist (ft)	707	720		358		558
Turn Bay Length (ft)			430		300	
Base Capacity (vph)	291	440	118	1087	118	962
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.23	0.64	0.30	0.04	0.58

Intersection Summary




















95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

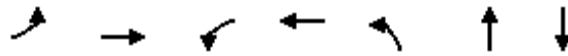
m Volume for 95th percentile queue is metered by upstream signal.

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	6	0	24	3	0	77
Future Vol, veh/h	6	0	24	3	0	77
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	0	26	3	0	84
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	112	28	0	0	29	0
Stage 1	28	-	-	-	-	-
Stage 2	84	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	885	1047	-	-	1584	-
Stage 1	995	-	-	-	-	-
Stage 2	939	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	885	1047	-	-	1584	-
Mov Cap-2 Maneuver	885	-	-	-	-	-
Stage 1	995	-	-	-	-	-
Stage 2	939	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	9.1		0		0	
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	- 885	1584	-		
HCM Lane V/C Ratio	-	- 0.007	-	-		
HCM Control Delay (s)	-	- 9.1	0	-		
HCM Lane LOS	-	- A	A	-		
HCM 95th %tile Q(veh)	-	- 0	0	-		

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Vol, veh/h	1	22	7	54	115	0
Future Vol, veh/h	1	22	7	54	115	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	24	8	59	125	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	199	125	125	0	-	0
Stage 1	125	-	-	-	-	-
Stage 2	74	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	790	926	1462	-	-	-
Stage 1	901	-	-	-	-	-
Stage 2	949	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	785	926	1462	-	-	-
Mov Cap-2 Maneuver	785	-	-	-	-	-
Stage 1	901	-	-	-	-	-
Stage 2	943	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9	0.9		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1462	-	919	-	-	
HCM Lane V/C Ratio	0.005	-	0.027	-	-	
HCM Control Delay (s)	7.5	0	9	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	0.1	-	-	

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	673	137	62	440	8	102	14	79	8	4	7
Future Volume (veh/h)	14	673	137	62	440	8	102	14	79	8	4	7
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		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	15	732	149	65	463	8	119	16	92	10	5	9
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.95	0.95	0.95	0.86	0.86	0.86	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	29	864	176	180	1205	21	145	44	252	0	65	117
Arrive On Green	0.02	0.57	0.57	0.10	0.66	0.66	0.08	0.18	0.18	0.01	0.11	0.11
Sat Flow, veh/h	1774	1503	306	1774	1826	32	1774	239	1373	0	597	1075
Grp Volume(v), veh/h	15	0	881	65	0	471	119	0	108	0	0	14
Grp Sat Flow(s),veh/h/ln	1774	0	1808	1774	0	1857	1774	0	1612	0	0	1673
Q Serve(g_s), s	1.0	0.0	48.4	4.1	0.0	13.9	7.9	0.0	7.0	0.0	0.0	0.9
Cycle Q Clear(g_c), s	1.0	0.0	48.4	4.1	0.0	13.9	7.9	0.0	7.0	0.0	0.0	0.9
Prop In Lane	1.00		0.17	1.00		0.02	1.00		0.85	0.00		0.64
Lane Grp Cap(c), veh/h	29	0	1040	180	0	1226	145	0	295	0	0	181
V/C Ratio(X)	0.52	0.00	0.85	0.36	0.00	0.38	0.82	0.00	0.37	0.00	0.00	0.08
Avail Cap(c_a), veh/h	89	0	1040	180	0	1226	222	0	295	0	0	181
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	58.5	0.0	21.1	50.3	0.0	9.3	54.2	0.0	42.9	0.0	0.0	48.1
Incr Delay (d2), s/veh	13.4	0.0	8.5	1.2	0.0	0.9	13.1	0.0	3.5	0.0	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	26.4	2.1	0.0	7.4	4.4	0.0	3.4	0.0	0.0	0.5
LnGrp Delay(d),s/veh	72.0	0.0	29.7	51.5	0.0	10.2	67.3	0.0	46.4	0.0	0.0	48.9
LnGrp LOS	E		C	D		B	E		D			D
Approach Vol, veh/h		896			536			227			14	
Approach Delay, s/veh		30.4			15.2			57.3			48.9	
Approach LOS		C			B			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	4.8	26.0	16.2	73.0	13.8	17.0	6.0	83.2				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	6.0	22.0	7.0	69.0	15.0	13.0	6.0	70.0				
Max Q Clear Time (g_c+I1), s	0.0	9.0	6.1	50.4	9.9	2.9	3.0	15.9				
Green Ext Time (p_c), s	0.0	0.4	0.0	5.8	0.1	0.0	0.0	3.0				
Intersection Summary												
HCM 2010 Ctrl Delay			29.3									
HCM 2010 LOS			C									

Near-term plus Project PM Peak Hour 1: Cambridge Road/Peridot Dr & Green Valley Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	15	881	65	471	119	108	24
v/c Ratio	0.17	0.79	0.64	0.39	0.64	0.23	2.67
Control Delay	59.3	25.1	73.6	7.8	67.3	10.7	1008.2
Queue Delay	0.0	4.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.3	29.1	73.6	7.8	67.3	10.7	1008.2
Queue Length 50th (ft)	11	508	43	75	89	9	-24
Queue Length 95th (ft)	35	741	m#96	149	144	49	#73
Internal Link Dist (ft)		606		1376		1198	195
Turn Bay Length (ft)	130		135		120		
Base Capacity (vph)	89	1115	103	1213	221	460	9
Starvation Cap Reductn	0	160	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.92	0.63	0.39	0.54	0.23	2.67

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Near-term plus Project PM Peak Hour 2: Winterhaven Drive/Hastings Dr & Green Valley Rd

Intersection

Int Delay, s/veh 1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↕				↕	
Traffic Vol, veh/h	72	673	19	5	486	8	4	0	2	7	0	35
Future Vol, veh/h	72	673	19	5	486	8	4	0	2	7	0	35
Conflicting Peds, #/hr	0	0	3	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	195	-	-	190	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	89	89	89	50	50	50	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	96	897	25	6	546	9	8	0	4	9	0	45

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	555	0	0	926	0	0	1690	1671	913	1666	1680	551
Stage 1	-	-	-	-	-	-	1105	1105	-	562	562	-
Stage 2	-	-	-	-	-	-	585	566	-	1104	1118	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1015	-	-	738	-	-	74	96	331	77	95	534
Stage 1	-	-	-	-	-	-	256	286	-	512	510	-
Stage 2	-	-	-	-	-	-	497	507	-	256	282	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1015	-	-	738	-	-	62	86	330	70	85	534
Mov Cap-2 Maneuver	-	-	-	-	-	-	62	86	-	70	85	-
Stage 1	-	-	-	-	-	-	231	258	-	464	506	-
Stage 2	-	-	-	-	-	-	451	503	-	229	255	-

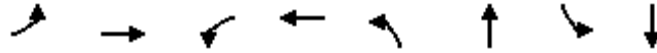
Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0.1	54.2	23
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	85	1015	-	-	738	-	-	254
HCM Lane V/C Ratio	0.141	0.095	-	-	0.008	-	-	0.215
HCM Control Delay (s)	54.2	8.9	-	-	9.9	-	-	23
HCM Lane LOS	F	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.5	0.3	-	-	0	-	-	0.8

Near-term plus Project PM Peak Hour 3: Cameron Park Dr/Starbuck Rd & Green Valley Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	311	337	91	201	21	289	102	148	25	63	22
Future Volume (veh/h)	41	311	337	91	201	21	289	102	148	25	63	22
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		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	44	334	362	111	245	26	348	123	178	30	75	26
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.93	0.93	0.93	0.82	0.82	0.82	0.83	0.83	0.83	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	57	427	462	118	922	98	355	140	203	133	102	35
Arrive On Green	0.03	0.52	0.52	0.07	0.56	0.56	0.20	0.20	0.20	0.07	0.08	0.08
Sat Flow, veh/h	1774	817	885	1774	1656	176	1774	689	997	1774	1315	456
Grp Volume(v), veh/h	44	0	696	111	0	271	348	0	301	30	0	101
Grp Sat Flow(s),veh/h/ln	1774	0	1702	1774	0	1832	1774	0	1687	1774	0	1771
Q Serve(g_s), s	3.0	0.0	39.7	7.5	0.0	9.2	23.4	0.0	20.8	1.9	0.0	6.7
Cycle Q Clear(g_c), s	3.0	0.0	39.7	7.5	0.0	9.2	23.4	0.0	20.8	1.9	0.0	6.7
Prop In Lane	1.00		0.52	1.00		0.10	1.00		0.59	1.00		0.26
Lane Grp Cap(c), veh/h	57	0	889	118	0	1020	355	0	343	133	0	138
V/C Ratio(X)	0.77	0.00	0.78	0.94	0.00	0.27	0.98	0.00	0.88	0.23	0.00	0.73
Avail Cap(c_a), veh/h	103	0	889	118	0	1020	355	0	604	133	0	369
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	57.6	0.0	23.2	55.8	0.0	13.8	47.8	0.0	46.4	52.2	0.0	54.1
Incr Delay (d2), s/veh	19.6	0.0	6.8	63.6	0.0	0.6	43.2	0.0	7.3	0.9	0.0	7.3
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	1.8	0.0	20.2	5.8	0.0	4.8	15.8	0.0	10.4	1.0	0.0	3.6
LnGrp Delay(d),s/veh	77.3	0.0	30.0	119.4	0.0	14.5	91.0	0.0	53.6	53.1	0.0	61.4
LnGrp LOS	E		C	F		B	F		D	D		E
Approach Vol, veh/h		740			382			649			131	
Approach Delay, s/veh		32.8			45.0			73.7			59.5	
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	13.0	28.4	12.0	66.7	28.0	13.3	7.8	70.8				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	6.0	43.0	8.0	47.0	24.0	25.0	7.0	48.0				
Max Q Clear Time (g_c+I1), s	3.9	22.8	9.5	41.7	25.4	8.7	5.0	11.2				
Green Ext Time (p_c), s	0.3	1.6	0.0	2.7	0.0	0.4	0.0	7.0				
Intersection Summary												
HCM 2010 Ctrl Delay			51.0									
HCM 2010 LOS			D									

Near-term plus Project PM Peak Hour 3: Cameron Park Dr/Starbuck Rd & Green Valley Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	44	696	111	271	348	301	30	101
v/c Ratio	0.44	1.00	0.94	0.35	0.66	0.52	0.13	0.49
Control Delay	83.5	56.1	124.3	25.8	32.4	24.2	44.6	49.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.5	56.1	124.3	25.8	32.4	24.2	44.6	49.9
Queue Length 50th (ft)	33	~512	87	143	233	136	19	66
Queue Length 95th (ft)	m53	#763	#177	191	#395	127	46	100
Internal Link Dist (ft)		281		789		653		251
Turn Bay Length (ft)	270		155		200		50	
Base Capacity (vph)	103	693	118	769	529	705	230	381
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	1.00	0.94	0.35	0.66	0.43	0.13	0.27

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	12	122	24	11	9	194	539	41	22	448	35
Future Volume (veh/h)	19	12	122	24	11	9	194	539	41	22	448	35
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	22	14	140	30	14	11	216	599	46	23	472	37
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.87	0.87	0.87	0.79	0.79	0.79	0.90	0.90	0.90	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	25	16	162	44	20	16	597	810	62	390	610	48
Arrive On Green	0.13	0.13	0.13	0.05	0.05	0.05	0.34	0.47	0.47	0.22	0.36	0.36
Sat Flow, veh/h	203	129	1292	952	444	349	1774	1705	131	1774	1702	133
Grp Volume(v), veh/h	176	0	0	55	0	0	216	0	645	23	0	509
Grp Sat Flow(s),veh/h/ln	1625	0	0	1744	0	0	1774	0	1836	1774	0	1835
Q Serve(g_s), s	12.8	0.0	0.0	3.7	0.0	0.0	11.0	0.0	34.1	1.2	0.0	29.6
Cycle Q Clear(g_c), s	12.8	0.0	0.0	3.7	0.0	0.0	11.0	0.0	34.1	1.2	0.0	29.6
Prop In Lane	0.12		0.80	0.55		0.20	1.00		0.07	1.00		0.07
Lane Grp Cap(c), veh/h	204	0	0	80	0	0	597	0	872	390	0	658
V/C Ratio(X)	0.86	0.00	0.00	0.68	0.00	0.00	0.36	0.00	0.74	0.06	0.00	0.77
Avail Cap(c_a), veh/h	257	0	0	320	0	0	597	0	872	390	0	658
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	51.5	0.0	0.0	56.4	0.0	0.0	30.1	0.0	25.5	37.0	0.0	34.2
Incr Delay (d2), s/veh	21.0	0.0	0.0	9.8	0.0	0.0	0.4	0.0	5.6	0.1	0.0	8.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.9	0.0	0.0	2.0	0.0	0.0	5.5	0.0	18.6	0.6	0.0	16.6
LnGrp Delay(d),s/veh	72.4	0.0	0.0	66.2	0.0	0.0	30.4	0.0	31.1	37.0	0.0	42.8
LnGrp LOS	E			E			C		C	D		D
Approach Vol, veh/h		176			55			861			532	
Approach Delay, s/veh		72.4			66.2			30.9			42.6	
Approach LOS		E			E			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	30.4	61.0		19.1	44.4	47.0		9.5				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	6.0	57.0		19.0	20.0	43.0		22.0				
Max Q Clear Time (g_c+I1), s	3.2	36.1		14.8	13.0	31.6		5.7				
Green Ext Time (p_c), s	0.2	4.0		0.4	0.4	2.3		0.2				
Intersection Summary												
HCM 2010 Ctrl Delay			40.4									
HCM 2010 LOS			D									






Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	176	55	216	645	23	509
v/c Ratio	0.77	0.34	0.81	0.55	0.26	0.55
Control Delay	71.7	47.2	71.6	17.9	58.9	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.7	47.2	71.6	17.9	58.9	10.5
Queue Length 50th (ft)	131	35	161	292	19	118
Queue Length 95th (ft)	202	59	#267	541	m23	m329
Internal Link Dist (ft)	707	720		358		558
Turn Bay Length (ft)			430		300	
Base Capacity (vph)	261	329	295	1176	88	929
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.17	0.73	0.55	0.26	0.55




Intersection Summary




















95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

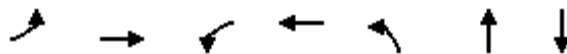
Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	0	68	6	0	35
Future Vol, veh/h	4	0	68	6	0	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	0	74	7	0	38
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	115	77	0	0	80	0
Stage 1	77	-	-	-	-	-
Stage 2	38	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	881	984	-	-	1518	-
Stage 1	946	-	-	-	-	-
Stage 2	984	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	881	984	-	-	1518	-
Mov Cap-2 Maneuver	881	-	-	-	-	-
Stage 1	946	-	-	-	-	-
Stage 2	984	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	9.1		0		0	
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	- 881	1518	-		
HCM Lane V/C Ratio	-	- 0.005	-	-		
HCM Control Delay (s)	-	- 9.1	0	-		
HCM Lane LOS	-	- A	A	-		
HCM 95th %tile Q(veh)	-	- 0	0	-		

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	13	23	153	105	1
Future Vol, veh/h	0	13	23	153	105	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	14	25	166	114	1
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	331	115	115	0	-	0
Stage 1	115	-	-	-	-	-
Stage 2	216	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	664	937	1474	-	-	-
Stage 1	910	-	-	-	-	-
Stage 2	820	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	651	937	1474	-	-	-
Mov Cap-2 Maneuver	651	-	-	-	-	-
Stage 1	910	-	-	-	-	-
Stage 2	804	-	-	-	-	-
Approach	EB		NB		SB	
HCM Control Delay, s	8.9		1		0	
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1474	-	937	-	-	
HCM Lane V/C Ratio	0.017	-	0.015	-	-	
HCM Control Delay (s)	7.5	0	8.9	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0.1	-	0	-	-	

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	471	103	54	608	11	235	5	56	13	11	38
Future Volume (veh/h)	14	471	103	54	608	11	235	5	56	13	11	38
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	20	683	149	65	733	13	346	7	82	22	19	64
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.69	0.69	0.69	0.83	0.83	0.83	0.68	0.68	0.68	0.59	0.59	0.59
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	121	741	162	121	912	16	376	28	325	0	23	76
Arrive On Green	0.07	0.50	0.50	0.07	0.50	0.50	0.21	0.22	0.22	0.05	0.06	0.06
Sat Flow, veh/h	1774	1482	323	1774	1825	32	1774	126	1476	0	375	1264
Grp Volume(v), veh/h	20	0	832	65	0	746	346	0	89	0	0	83
Grp Sat Flow(s),veh/h/ln	1774	0	1805	1774	0	1857	1774	0	1602	0	0	1640
Q Serve(g_s), s	1.1	0.0	42.8	3.5	0.0	33.6	19.1	0.0	4.6	0.0	0.0	5.0
Cycle Q Clear(g_c), s	1.1	0.0	42.8	3.5	0.0	33.6	19.1	0.0	4.6	0.0	0.0	5.0
Prop In Lane	1.00		0.18	1.00		0.02	1.00		0.92	0.00		0.77
Lane Grp Cap(c), veh/h	121	0	902	121	0	929	376	0	352	0	0	98
V/C Ratio(X)	0.17	0.00	0.92	0.54	0.00	0.80	0.92	0.00	0.25	0.00	0.00	0.84
Avail Cap(c_a), veh/h	121	0	902	121	0	929	390	0	352	0	0	98
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	43.9	0.0	23.2	45.1	0.0	20.9	38.6	0.0	32.2	0.0	0.0	46.5
Incr Delay (d2), s/veh	0.6	0.0	16.1	4.7	0.0	7.3	26.2	0.0	1.7	0.0	0.0	55.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	25.1	1.9	0.0	18.9	12.1	0.0	2.2	0.0	0.0	3.8
LnGrp Delay(d),s/veh	44.6	0.0	39.3	49.8	0.0	28.2	64.7	0.0	33.9	0.0	0.0	101.8
LnGrp LOS	D		D	D		C	E		C			F
Approach Vol, veh/h		852			811			435			83	
Approach Delay, s/veh		39.4			29.9			58.4			101.8	
Approach LOS		D			C			E			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	9.2	26.0	10.8	54.0	25.2	10.0	10.8	54.0				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	6.0	22.0	6.0	50.0	22.0	6.0	6.0	50.0				
Max Q Clear Time (g_c+I1), s	0.0	6.6	5.5	44.8	21.1	7.0	3.1	35.6				
Green Ext Time (p_c), s	0.0	0.3	0.0	2.4	0.1	0.0	0.0	4.0				
Intersection Summary												
HCM 2010 Ctrl Delay			42.1									
HCM 2010 LOS			D									

Cumulative Base AM Peak Hour

1: Cambridge Road/Peridot Dr & Green Valley Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	20	832	65	746	346	89	105
v/c Ratio	0.19	0.90	0.61	0.73	0.92	0.15	1.75
Control Delay	49.3	37.3	70.1	19.7	68.8	7.3	413.9
Queue Delay	0.0	1.1	0.0	0.0	0.0	0.0	0.0
Total Delay	49.3	38.4	70.1	19.7	68.8	7.3	413.9
Queue Length 50th (ft)	12	462	37	176	215	3	-60
Queue Length 95th (ft)	28	402	m72	m533	226	19	#83
Internal Link Dist (ft)		606		1376		1198	195
Turn Bay Length (ft)	130		135		120		
Base Capacity (vph)	106	921	106	1015	389	590	60
Starvation Cap Reductn	0	18	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.92	0.61	0.73	0.89	0.15	1.75

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Intersection





















Int Delay, s/veh 4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	27	464	10	3	590	2	25	0	8	3	0	82
Future Vol, veh/h	27	464	10	3	590	2	25	0	8	3	0	82
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	195	-	-	190	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	87	87	87	68	68	68	62	62	62
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	619	13	3	678	2	37	0	12	5	0	132

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	680	0	0	632	0	0	1449	1384	625	1389	1390	679
Stage 1	-	-	-	-	-	-	697	697	-	686	686	-
Stage 2	-	-	-	-	-	-	752	687	-	703	704	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	912	-	-	951	-	-	109	143	485	120	142	452
Stage 1	-	-	-	-	-	-	431	443	-	438	448	-
Stage 2	-	-	-	-	-	-	402	447	-	428	440	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	912	-	-	951	-	-	75	137	485	113	136	452
Mov Cap-2 Maneuver	-	-	-	-	-	-	75	137	-	113	136	-
Stage 1	-	-	-	-	-	-	414	426	-	421	447	-
Stage 2	-	-	-	-	-	-	283	446	-	401	423	-

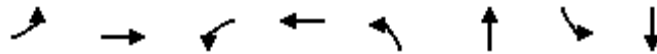
Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0	78.5	18.2
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	94	912	-	-	951	-	-	409
HCM Lane V/C Ratio	0.516	0.039	-	-	0.004	-	-	0.335
HCM Control Delay (s)	78.5	9.1	-	-	8.8	-	-	18.2
HCM Lane LOS	F	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	2.3	0.1	-	-	0	-	-	1.5

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	227	272	121	346	4	230	32	107	22	54	34
Future Volume (veh/h)	17	227	272	121	346	4	230	32	107	22	54	34
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	23	307	368	151	432	5	264	37	123	28	68	42
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.74	0.74	0.74	0.80	0.80	0.80	0.87	0.87	0.87	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	42	396	474	160	1063	12	266	47	156	203	95	58
Arrive On Green	0.02	0.51	0.51	0.09	0.58	0.58	0.15	0.12	0.12	0.11	0.09	0.09
Sat Flow, veh/h	1774	772	926	1774	1838	21	1774	379	1261	1774	1077	665
Grp Volume(v), veh/h	23	0	675	151	0	437	264	0	160	28	0	110
Grp Sat Flow(s),veh/h/ln	1774	0	1698	1774	0	1859	1774	0	1640	1774	0	1743
Q Serve(g_s), s	1.3	0.0	32.2	8.5	0.0	13.0	14.9	0.0	9.5	1.4	0.0	6.1
Cycle Q Clear(g_c), s	1.3	0.0	32.2	8.5	0.0	13.0	14.9	0.0	9.5	1.4	0.0	6.1
Prop In Lane	1.00		0.55	1.00		0.01	1.00		0.77	1.00		0.38
Lane Grp Cap(c), veh/h	42	0	870	160	0	1075	266	0	203	203	0	153
V/C Ratio(X)	0.55	0.00	0.78	0.95	0.00	0.41	0.99	0.00	0.79	0.14	0.00	0.72
Avail Cap(c_a), veh/h	106	0	870	160	0	1075	266	0	558	203	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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	48.3	0.0	19.8	45.3	0.0	11.6	42.4	0.0	42.5	39.9	0.0	44.4
Incr Delay (d2), s/veh	10.7	0.0	6.7	55.2	0.0	1.1	53.2	0.0	6.7	0.3	0.0	6.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	16.6	6.6	0.0	6.9	11.2	0.0	4.7	0.7	0.0	3.2
LnGrp Delay(d),s/veh	59.0	0.0	26.5	100.4	0.0	12.8	95.6	0.0	49.2	40.2	0.0	50.6
LnGrp LOS	E		C	F		B	F		D	D		D
Approach Vol, veh/h		698			588			424			138	
Approach Delay, s/veh		27.6			35.3			78.1			48.5	
Approach LOS		C			D			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	15.4	16.4	13.0	55.2	19.0	12.8	6.4	61.8				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	6.0	34.0	9.0	35.0	15.0	25.0	6.0	38.0				
Max Q Clear Time (g_c+I1), s	3.4	11.5	10.5	34.2	16.9	8.1	3.3	15.0				
Green Ext Time (p_c), s	0.1	0.8	0.0	0.5	0.0	0.4	0.0	7.2				
Intersection Summary												
HCM 2010 Ctrl Delay			43.2									
HCM 2010 LOS			D									

Cumulative Base AM Peak Hour

3: Cameron Park Dr/Starbuck Rd & Green Valley Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	23	675	151	438	264	160	28	111
v/c Ratio	0.21	0.88	0.62	0.42	1.00	0.36	0.13	0.47
Control Delay	61.9	21.0	54.1	16.9	88.8	6.4	35.9	33.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.9	21.0	54.1	16.9	88.8	6.4	35.9	33.9
Queue Length 50th (ft)	16	166	90	124	172	34	17	50
Queue Length 95th (ft)	m19	m#445	#185	277	m#306	m11	31	74
Internal Link Dist (ft)		281		789		653		251
Turn Bay Length (ft)	270		155		200		50	
Base Capacity (vph)	114	765	243	1051	265	641	216	459
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.88	0.62	0.42	1.00	0.25	0.13	0.24

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	5	178	55	14	22	72	297	8	4	437	18
Future Volume (veh/h)	23	5	178	55	14	22	72	297	8	4	437	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	29	6	225	65	16	26	81	334	9	5	560	23
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.79	0.79	0.79	0.85	0.85	0.85	0.89	0.89	0.89	0.78	0.78	0.78
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	32	7	250	85	21	34	372	668	18	372	657	27
Arrive On Green	0.18	0.18	0.18	0.08	0.08	0.08	0.21	0.37	0.37	0.21	0.37	0.37
Sat Flow, veh/h	179	37	1392	1054	260	422	1774	1806	49	1774	1777	73
Grp Volume(v), veh/h	260	0	0	107	0	0	81	0	343	5	0	583
Grp Sat Flow(s),veh/h/ln	1608	0	0	1736	0	0	1774	0	1854	1774	0	1850
Q Serve(g_s), s	15.8	0.0	0.0	6.0	0.0	0.0	3.8	0.0	14.3	0.2	0.0	29.0
Cycle Q Clear(g_c), s	15.8	0.0	0.0	6.0	0.0	0.0	3.8	0.0	14.3	0.2	0.0	29.0
Prop In Lane	0.11		0.87	0.61		0.24	1.00		0.03	1.00		0.04
Lane Grp Cap(c), veh/h	289	0	0	139	0	0	372	0	686	372	0	684
V/C Ratio(X)	0.90	0.00	0.00	0.77	0.00	0.00	0.22	0.00	0.50	0.01	0.00	0.85
Avail Cap(c_a), veh/h	306	0	0	382	0	0	372	0	686	372	0	684
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	40.1	0.0	0.0	45.1	0.0	0.0	32.7	0.0	24.3	31.3	0.0	29.0
Incr Delay (d2), s/veh	26.6	0.0	0.0	8.5	0.0	0.0	0.3	0.0	2.6	0.0	0.0	12.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.1	0.0	0.0	3.2	0.0	0.0	1.9	0.0	7.8	0.1	0.0	17.2
LnGrp Delay(d),s/veh	66.8	0.0	0.0	53.6	0.0	0.0	33.0	0.0	26.9	31.3	0.0	41.7
LnGrp LOS	E			D			C		C	C		D
Approach Vol, veh/h		260			107			424				588
Approach Delay, s/veh		66.8			53.6			28.1				41.6
Approach LOS		E			D			C				D
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	25.0	41.0		22.0	25.0	41.0		12.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	6.0	37.0		19.0	6.0	37.0		22.0				
Max Q Clear Time (g_c+I1), s	2.2	16.3		17.8	5.8	31.0		8.0				
Green Ext Time (p_c), s	0.0	1.8		0.2	0.0	1.8		0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			43.1									
HCM 2010 LOS			D									



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	260	107	81	343	5	583
v/c Ratio	0.88	0.54	0.76	0.32	0.05	0.64
Control Delay	68.9	45.5	88.0	14.0	40.0	11.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.9	45.5	88.0	14.0	40.0	11.2
Queue Length 50th (ft)	161	56	52	103	3	166
Queue Length 95th (ft)	#234	99	#131	217	m5	188
Internal Link Dist (ft)	707	720		358		558
Turn Bay Length (ft)			430		300	
Base Capacity (vph)	310	396	106	1060	106	911
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.27	0.76	0.32	0.05	0.64

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	6	1	59	128	0
Future Vol, veh/h	0	6	1	59	128	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	7	1	64	139	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	205	139	139	0	-	0
Stage 1	139	-	-	-	-	-
Stage 2	66	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	783	909	1445	-	-	-
Stage 1	888	-	-	-	-	-
Stage 2	957	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	782	909	1445	-	-	-
Mov Cap-2 Maneuver	782	-	-	-	-	-
Stage 1	888	-	-	-	-	-
Stage 2	956	-	-	-	-	-

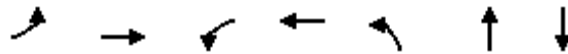
Approach	EB	NB	SB
HCM Control Delay, s	9	0.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1445	-	909	-	-
HCM Lane V/C Ratio	0.001	-	0.007	-	-
HCM Control Delay (s)	7.5	0	9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	687	148	66	466	9	117	17	87	9	4	8
Future Volume (veh/h)	15	687	148	66	466	9	117	17	87	9	4	8
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	16	747	161	69	491	9	136	20	101	11	5	10
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.95	0.95	0.95	0.86	0.86	0.86	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	176	854	184	191	1064	19	164	49	247	0	51	102
Arrive On Green	0.10	0.57	0.57	0.11	0.58	0.58	0.09	0.18	0.18	0.00	0.09	0.09
Sat Flow, veh/h	1774	1486	320	1774	1823	33	1774	267	1349	0	556	1111
Grp Volume(v), veh/h	16	0	908	69	0	500	136	0	121	0	0	15
Grp Sat Flow(s),veh/h/ln	1774	0	1806	1774	0	1857	1774	0	1616	0	0	1667
Q Serve(g_s), s	1.0	0.0	51.6	4.3	0.0	18.4	9.0	0.0	7.9	0.0	0.0	1.0
Cycle Q Clear(g_c), s	1.0	0.0	51.6	4.3	0.0	18.4	9.0	0.0	7.9	0.0	0.0	1.0
Prop In Lane	1.00		0.18	1.00		0.02	1.00		0.83	0.00		0.67
Lane Grp Cap(c), veh/h	176	0	1038	191	0	1083	164	0	296	0	0	153
V/C Ratio(X)	0.09	0.00	0.87	0.36	0.00	0.46	0.83	0.00	0.41	0.00	0.00	0.10
Avail Cap(c_a), veh/h	176	0	1038	191	0	1083	251	0	296	0	0	153
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	49.1	0.0	21.8	49.7	0.0	14.3	53.5	0.0	43.3	0.0	0.0	50.0
Incr Delay (d2), s/veh	0.2	0.0	10.2	1.1	0.0	1.4	12.9	0.0	4.1	0.0	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	28.4	2.2	0.0	9.9	5.0	0.0	3.9	0.0	0.0	0.5
LnGrp Delay(d),s/veh	49.3	0.0	32.0	50.9	0.0	15.7	66.5	0.0	47.4	0.0	0.0	51.2
LnGrp LOS	D		C	D		B	E		D			D
Approach Vol, veh/h		924			569			257			15	
Approach Delay, s/veh		32.3			19.9			57.5			51.2	
Approach LOS		C			B			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	4.1	26.0	16.9	73.0	15.1	15.0	15.9	74.0				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	6.0	22.0	7.0	69.0	17.0	11.0	6.0	70.0				
Max Q Clear Time (g_c+I1), s	0.0	9.9	6.3	53.6	11.0	3.0	3.0	20.4				
Green Ext Time (p_c), s	0.0	0.4	0.0	5.6	0.2	0.0	0.0	3.0				
Intersection Summary												
HCM 2010 Ctrl Delay			32.2									
HCM 2010 LOS			C									

Cumulative Base PM Peak Hour

1: Cambridge Road/Peridot Dr & Green Valley Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	16	908	69	500	136	121	26
v/c Ratio	0.19	0.83	0.68	0.42	0.67	0.25	2.60
Control Delay	59.9	27.7	80.5	8.9	66.3	10.8	959.8
Queue Delay	0.0	8.3	0.0	0.0	0.0	0.0	0.0
Total Delay	59.9	36.1	80.5	8.9	66.3	10.8	959.8
Queue Length 50th (ft)	12	529	48	77	102	12	-26
Queue Length 95th (ft)	36	#826	m81	m181	158	53	#77
Internal Link Dist (ft)		606		1376		1198	195
Turn Bay Length (ft)	130		135		120		
Base Capacity (vph)	88	1093	103	1193	250	485	10
Starvation Cap Reductn	0	158	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.97	0.67	0.42	0.54	0.25	2.60

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Intersection





















Int Delay, s/veh 1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	70	695	20	5	513	9	4	0	2	8	0	34
Future Vol, veh/h	70	695	20	5	513	9	4	0	2	8	0	34
Conflicting Peds, #/hr	0	0	3	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	195	-	-	190	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	89	89	89	50	50	50	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	93	927	27	6	576	10	8	0	4	10	0	44

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	587	0	0	956	0	0	1745	1728	943	1722	1736	581
Stage 1	-	-	-	-	-	-	1130	1130	-	593	593	-
Stage 2	-	-	-	-	-	-	615	598	-	1129	1143	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	988	-	-	719	-	-	68	88	318	70	87	514
Stage 1	-	-	-	-	-	-	248	279	-	492	493	-
Stage 2	-	-	-	-	-	-	479	491	-	248	275	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	988	-	-	719	-	-	57	79	317	64	78	514
Mov Cap-2 Maneuver	-	-	-	-	-	-	57	79	-	64	78	-
Stage 1	-	-	-	-	-	-	224	252	-	446	489	-
Stage 2	-	-	-	-	-	-	434	487	-	222	248	-

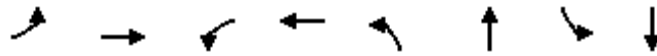
Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0.1	59.4	26.7
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	78	988	-	-	719	-	-	220
HCM Lane V/C Ratio	0.154	0.094	-	-	0.008	-	-	0.248
HCM Control Delay (s)	59.4	9	-	-	10	-	-	26.7
HCM Lane LOS	F	A	-	-	B	-	-	D
HCM 95th %tile Q(veh)	0.5	0.3	-	-	0	-	-	0.9

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	332	352	99	218	19	309	91	160	24	56	22
Future Volume (veh/h)	43	332	352	99	218	19	309	91	160	24	56	22
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		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	46	357	378	121	266	23	372	110	193	29	67	26
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.93	0.93	0.93	0.82	0.82	0.82	0.83	0.83	0.83	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	59	436	462	118	947	82	355	125	219	120	93	36
Arrive On Green	0.03	0.53	0.53	0.07	0.56	0.56	0.20	0.21	0.21	0.07	0.07	0.07
Sat Flow, veh/h	1774	828	876	1774	1691	146	1774	608	1067	1774	1270	493
Grp Volume(v), veh/h	46	0	735	121	0	289	372	0	303	29	0	93
Grp Sat Flow(s),veh/h/ln	1774	0	1704	1774	0	1837	1774	0	1675	1774	0	1763
Q Serve(g_s), s	3.1	0.0	43.1	8.0	0.0	9.9	24.0	0.0	21.1	1.9	0.0	6.2
Cycle Q Clear(g_c), s	3.1	0.0	43.1	8.0	0.0	9.9	24.0	0.0	21.1	1.9	0.0	6.2
Prop In Lane	1.00		0.51	1.00		0.08	1.00		0.64	1.00		0.28
Lane Grp Cap(c), veh/h	59	0	898	118	0	1029	355	0	344	120	0	129
V/C Ratio(X)	0.78	0.00	0.82	1.02	0.00	0.28	1.05	0.00	0.88	0.24	0.00	0.72
Avail Cap(c_a), veh/h	118	0	898	118	0	1029	355	0	600	120	0	367
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	57.6	0.0	23.6	56.0	0.0	13.8	48.0	0.0	46.2	53.0	0.0	54.4
Incr Delay (d2), s/veh	19.3	0.0	8.2	89.1	0.0	0.7	61.0	0.0	7.5	1.0	0.0	7.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.3	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	22.3	6.8	0.0	5.2	17.7	0.0	10.5	0.9	0.0	3.3
LnGrp Delay(d),s/veh	76.8	0.0	31.9	145.3	0.0	14.5	109.0	0.0	53.8	54.0	0.0	61.7
LnGrp LOS	E		C	F		B	F		D	D		E
Approach Vol, veh/h		781			410			675			122	
Approach Delay, s/veh		34.5			53.1			84.2			59.9	
Approach LOS		C			D			F			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	12.1	28.7	12.0	67.2	28.0	12.8	8.0	71.2				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	6.0	43.0	8.0	47.0	24.0	25.0	8.0	47.0				
Max Q Clear Time (g_c+I1), s	3.9	23.1	10.0	45.1	26.0	8.2	5.1	11.9				
Green Ext Time (p_c), s	0.1	1.6	0.0	1.2	0.0	0.3	0.0	7.5				
Intersection Summary												
HCM 2010 Ctrl Delay			56.8									
HCM 2010 LOS			E									
Notes												

Cumulative Base PM Peak Hour

3: Cameron Park Dr/Starbuck Rd & Green Valley Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	46	735	121	289	372	303	29	93
v/c Ratio	0.40	0.94	0.58	0.31	1.05	0.63	0.19	0.47
Control Delay	73.8	37.2	62.8	20.2	95.3	21.8	51.2	47.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.8	37.2	62.8	20.2	95.3	21.8	51.2	47.7
Queue Length 50th (ft)	34	512	88	125	-317	170	21	59
Queue Length 95th (ft)	m49	m#825	#195	207	#434	127	46	91
Internal Link Dist (ft)		281		789		653		251
Turn Bay Length (ft)	270		155		200		50	
Base Capacity (vph)	125	779	208	942	354	656	156	382
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.94	0.58	0.31	1.05	0.46	0.19	0.24

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	12	129	25	11	9	205	566	44	23	468	37
Future Volume (veh/h)	20	12	129	25	11	9	205	566	44	23	468	37
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	23	14	148	32	14	11	228	629	49	24	493	39
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.87	0.87	0.87	0.79	0.79	0.79	0.90	0.90	0.90	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	26	16	169	47	20	16	256	823	64	365	926	73
Arrive On Green	0.13	0.13	0.13	0.05	0.05	0.05	0.14	0.48	0.48	0.21	0.54	0.54
Sat Flow, veh/h	202	123	1299	980	429	337	1774	1703	133	1774	1701	135
Grp Volume(v), veh/h	185	0	0	57	0	0	228	0	678	24	0	532
Grp Sat Flow(s),veh/h/ln	1623	0	0	1746	0	0	1774	0	1836	1774	0	1835
Q Serve(g_s), s	13.4	0.0	0.0	3.9	0.0	0.0	15.1	0.0	36.3	1.3	0.0	22.3
Cycle Q Clear(g_c), s	13.4	0.0	0.0	3.9	0.0	0.0	15.1	0.0	36.3	1.3	0.0	22.3
Prop In Lane	0.12		0.80	0.56		0.19	1.00		0.07	1.00		0.07
Lane Grp Cap(c), veh/h	212	0	0	83	0	0	256	0	887	365	0	999
V/C Ratio(X)	0.87	0.00	0.00	0.69	0.00	0.00	0.89	0.00	0.76	0.07	0.00	0.53
Avail Cap(c_a), veh/h	244	0	0	320	0	0	310	0	887	365	0	999
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	51.2	0.0	0.0	56.3	0.0	0.0	50.4	0.0	25.4	38.4	0.0	17.5
Incr Delay (d2), s/veh	25.5	0.0	0.0	9.6	0.0	0.0	22.6	0.0	6.2	0.1	0.0	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	7.5	0.0	0.0	2.1	0.0	0.0	9.0	0.0	19.8	0.6	0.0	11.8
LnGrp Delay(d),s/veh	76.7	0.0	0.0	65.9	0.0	0.0	73.0	0.0	31.6	38.5	0.0	19.6
LnGrp LOS	E			E			E		C	D		B
Approach Vol, veh/h		185			57			906			556	
Approach Delay, s/veh		76.7			65.9			42.0			20.4	
Approach LOS		E			E			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	28.7	62.0		19.6	21.4	69.3		9.7				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	6.0	58.0		18.0	21.0	43.0		22.0				
Max Q Clear Time (g_c+I1), s	3.3	38.3		15.4	17.1	24.3		5.9				
Green Ext Time (p_c), s	0.5	4.2		0.2	0.2	3.0		0.2				
Intersection Summary												
HCM 2010 Ctrl Delay			39.5									
HCM 2010 LOS			D									



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	185	57	228	678	24	532
v/c Ratio	0.81	0.35	0.79	0.58	0.28	0.59
Control Delay	76.8	47.4	67.8	18.4	55.2	21.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.8	47.4	67.8	18.4	55.2	21.5
Queue Length 50th (ft)	139	36	169	316	20	318
Queue Length 95th (ft)	#232	61	#279	575	m27	m494
Internal Link Dist (ft)	707	720		358		558
Turn Bay Length (ft)			430		300	
Base Capacity (vph)	247	329	317	1175	88	906
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.17	0.72	0.58	0.27	0.59

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Intersection




















Int Delay, s/veh 0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	5	168	114	0
Future Vol, veh/h	0	2	5	168	114	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2	5	183	124	0

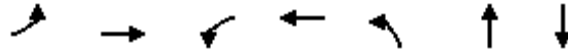
Major/Minor	Minor2	Major1		Major2
Conflicting Flow All	317	124	124	0
Stage 1	124	-	-	-
Stage 2	193	-	-	-
Critical Hdwy	6.42	6.22	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-
Pot Cap-1 Maneuver	676	927	1463	-
Stage 1	902	-	-	-
Stage 2	840	-	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	673	927	1463	-
Mov Cap-2 Maneuver	673	-	-	-
Stage 1	902	-	-	-
Stage 2	837	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.9	0.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1463	-	927	-	-
HCM Lane V/C Ratio	0.004	-	0.002	-	-
HCM Control Delay (s)	7.5	0	8.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	473	103	55	614	11	235	5	57	13	11	38
Future Volume (veh/h)	14	473	103	55	614	11	235	5	57	13	11	38
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	20	686	149	66	740	13	346	7	84	22	19	64
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.69	0.69	0.69	0.83	0.83	0.83	0.68	0.68	0.68	0.59	0.59	0.59
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	121	742	161	121	913	16	376	27	325	0	23	76
Arrive On Green	0.07	0.50	0.50	0.07	0.50	0.50	0.21	0.22	0.22	0.05	0.06	0.06
Sat Flow, veh/h	1774	1483	322	1774	1825	32	1774	123	1479	0	375	1264
Grp Volume(v), veh/h	20	0	835	66	0	753	346	0	91	0	0	83
Grp Sat Flow(s),veh/h/ln	1774	0	1805	1774	0	1857	1774	0	1602	0	0	1640
Q Serve(g_s), s	1.1	0.0	43.0	3.6	0.0	34.1	19.1	0.0	4.7	0.0	0.0	5.0
Cycle Q Clear(g_c), s	1.1	0.0	43.0	3.6	0.0	34.1	19.1	0.0	4.7	0.0	0.0	5.0
Prop In Lane	1.00		0.18	1.00		0.02	1.00		0.92	0.00		0.77
Lane Grp Cap(c), veh/h	121	0	903	121	0	929	376	0	352	0	0	98
V/C Ratio(X)	0.17	0.00	0.93	0.55	0.00	0.81	0.92	0.00	0.26	0.00	0.00	0.84
Avail Cap(c_a), veh/h	121	0	903	121	0	929	390	0	352	0	0	98
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	43.9	0.0	23.3	45.1	0.0	21.0	38.6	0.0	32.3	0.0	0.0	46.5
Incr Delay (d2), s/veh	0.6	0.0	16.5	5.1	0.0	7.6	26.2	0.0	1.8	0.0	0.0	55.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	25.5	1.9	0.0	19.3	12.1	0.0	2.2	0.0	0.0	3.8
LnGrp Delay(d),s/veh	44.6	0.0	39.8	50.2	0.0	28.7	64.7	0.0	34.0	0.0	0.0	101.8
LnGrp LOS	D		D	D		C	E		C			F
Approach Vol, veh/h		855			819			437				83
Approach Delay, s/veh		39.9			30.4			58.3				101.8
Approach LOS		D			C			E				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	9.2	26.0	10.8	54.0	25.2	10.0	10.8	54.0				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	6.0	22.0	6.0	50.0	22.0	6.0	6.0	50.0				
Max Q Clear Time (g_c+I1), s	0.0	6.7	5.6	45.0	21.1	7.0	3.1	36.1				
Green Ext Time (p_c), s	0.0	0.3	0.0	2.3	0.1	0.0	0.0	4.0				
Intersection Summary												
HCM 2010 Ctrl Delay			42.4									
HCM 2010 LOS			D									

Cumulative plus Project AM Peak Hour 1: Cambridge Road/Peridot Dr & Green Valley Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	20	835	66	753	346	91	105
v/c Ratio	0.19	0.91	0.62	0.74	0.92	0.15	1.75
Control Delay	49.3	37.7	70.7	20.2	68.8	7.1	413.9
Queue Delay	0.0	1.1	0.0	0.0	0.0	0.0	0.0
Total Delay	49.3	38.9	70.7	20.2	68.8	7.1	413.9
Queue Length 50th (ft)	12	465	37	194	215	3	-60
Queue Length 95th (ft)	28	404	m#73	m536	226	19	#83
Internal Link Dist (ft)		606		1376		1198	195
Turn Bay Length (ft)	130		135		120		
Base Capacity (vph)	106	921	106	1015	389	592	60
Starvation Cap Reductn	0	18	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.92	0.62	0.74	0.89	0.15	1.75

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Cumulative plus Project AM Peak Hour 2: Winterhaven Drive/Hastings Dr & Green Valley Rd

Intersection

Int Delay, s/veh 4.4






















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↕			↕		
Traffic Vol, veh/h	27	467	10	3	597	2	25	0	8	3	0	82
Future Vol, veh/h	27	467	10	3	597	2	25	0	8	3	0	82
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	195	-	-	190	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	87	87	87	68	68	68	62	62	62
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	623	13	3	686	2	37	0	12	5	0	132

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	689	0	0	636	0	0	1461	1396	629	1401	1402	687
Stage 1	-	-	-	-	-	-	701	701	-	694	694	-
Stage 2	-	-	-	-	-	-	760	695	-	707	708	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	905	-	-	947	-	-	107	141	482	118	140	447
Stage 1	-	-	-	-	-	-	429	441	-	433	444	-
Stage 2	-	-	-	-	-	-	398	444	-	426	438	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	905	-	-	947	-	-	73	135	482	111	134	447
Mov Cap-2 Maneuver	-	-	-	-	-	-	73	135	-	111	134	-
Stage 1	-	-	-	-	-	-	412	423	-	416	443	-
Stage 2	-	-	-	-	-	-	279	443	-	399	421	-

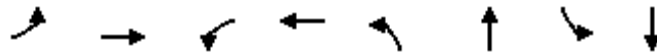
Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0	81.3	18.4
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	92	905	-	-	947	-	-	404
HCM Lane V/C Ratio	0.527	0.04	-	-	0.004	-	-	0.339
HCM Control Delay (s)	81.3	9.1	-	-	8.8	-	-	18.4
HCM Lane LOS	F	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	2.3	0.1	-	-	0	-	-	1.5

Cumulative plus Project AM Peak Hour 3: Cameron Park Dr/Starbuck Rd & Green Valley Rd

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	17	227	272	121	346	5	230	37	107	24	67	35	
Future Volume (veh/h)	17	227	272	121	346	5	230	37	107	24	67	35	
Number	7	4	14	3	8	18	5	2	12	1	6	16	
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900	
Adj Flow Rate, veh/h	23	307	368	151	432	6	264	43	123	30	84	44	
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0	
Peak Hour Factor	0.74	0.74	0.74	0.80	0.80	0.80	0.87	0.87	0.87	0.80	0.80	0.80	
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2	
Cap, veh/h	42	388	465	160	1042	14	266	54	155	215	113	59	
Arrive On Green	0.02	0.50	0.50	0.09	0.57	0.57	0.15	0.13	0.13	0.12	0.10	0.10	
Sat Flow, veh/h	1774	772	926	1774	1833	25	1774	427	1221	1774	1151	603	
Grp Volume(v), veh/h	23	0	675	151	0	438	264	0	166	30	0	128	
Grp Sat Flow(s),veh/h/ln	1774	0	1698	1774	0	1858	1774	0	1647	1774	0	1754	
Q Serve(g_s), s	1.3	0.0	32.9	8.5	0.0	13.3	14.9	0.0	9.8	1.5	0.0	7.1	
Cycle Q Clear(g_c), s	1.3	0.0	32.9	8.5	0.0	13.3	14.9	0.0	9.8	1.5	0.0	7.1	
Prop In Lane	1.00		0.55	1.00		0.01	1.00		0.74	1.00		0.34	
Lane Grp Cap(c), veh/h	42	0	852	160	0	1056	266	0	209	215	0	172	
V/C Ratio(X)	0.55	0.00	0.79	0.95	0.00	0.41	0.99	0.00	0.79	0.14	0.00	0.74	
Avail Cap(c_a), veh/h	106	0	852	160	0	1056	266	0	560	215	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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	
Uniform Delay (d), s/veh	48.3	0.0	20.6	45.3	0.0	12.2	42.4	0.0	42.4	39.3	0.0	43.9	
Incr Delay (d2), s/veh	10.7	0.0	7.4	55.2	0.0	1.2	53.2	0.0	6.6	0.3	0.0	6.2	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	0.8	0.0	17.1	6.6	0.0	7.2	11.2	0.0	4.8	0.8	0.0	3.7	
LnGrp Delay(d),s/veh	59.0	0.0	28.0	100.4	0.0	13.4	95.6	0.0	49.0	39.6	0.0	50.1	
LnGrp LOS	E		C	F		B	F		D	D		D	
Approach Vol, veh/h		698			589			430				158	
Approach Delay, s/veh		29.0			35.7			77.6				48.1	
Approach LOS		C			D			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	16.1	16.7	13.0	54.2	19.0	13.8	6.4	60.8					
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0					
Max Green Setting (Gmax), s	6.0	34.0	9.0	35.0	15.0	25.0	6.0	38.0					
Max Q Clear Time (g_c+I1), s	3.5	11.8	10.5	34.9	16.9	9.1	3.3	15.3					
Green Ext Time (p_c), s	0.1	0.8	0.0	0.1	0.0	0.5	0.0	7.2					
Intersection Summary													
HCM 2010 Ctrl Delay			43.9										
HCM 2010 LOS			D										

Cumulative plus Project AM Peak Hour 3: Cameron Park Dr/Starbuck Rd & Green Valley Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	23	675	151	439	264	166	30	128
v/c Ratio	0.21	0.90	0.62	0.42	1.00	0.36	0.14	0.51
Control Delay	62.5	23.0	54.1	17.4	88.7	6.6	36.0	37.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.5	23.0	54.1	17.4	88.7	6.6	36.0	37.9
Queue Length 50th (ft)	15	206	90	129	172	36	18	63
Queue Length 95th (ft)	m19	m#444	#185	278	m#303	m12	33	89
Internal Link Dist (ft)		281		789		653		251
Turn Bay Length (ft)	270		155		200		50	
Base Capacity (vph)	114	751	243	1035	265	644	219	458
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.90	0.62	0.42	1.00	0.26	0.14	0.28

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	5	178	55	14	22	72	302	8	4	450	18
Future Volume (veh/h)	23	5	178	55	14	22	72	302	8	4	450	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	29	6	225	65	16	26	81	339	9	5	577	23
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.79	0.79	0.79	0.85	0.85	0.85	0.89	0.89	0.89	0.78	0.78	0.78
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	32	7	250	85	21	34	372	668	18	372	658	26
Arrive On Green	0.18	0.18	0.18	0.08	0.08	0.08	0.21	0.37	0.37	0.21	0.37	0.37
Sat Flow, veh/h	179	37	1392	1054	260	422	1774	1806	48	1774	1779	71
Grp Volume(v), veh/h	260	0	0	107	0	0	81	0	348	5	0	600
Grp Sat Flow(s),veh/h/ln	1608	0	0	1736	0	0	1774	0	1854	1774	0	1850
Q Serve(g_s), s	15.8	0.0	0.0	6.0	0.0	0.0	3.8	0.0	14.6	0.2	0.0	30.2
Cycle Q Clear(g_c), s	15.8	0.0	0.0	6.0	0.0	0.0	3.8	0.0	14.6	0.2	0.0	30.2
Prop In Lane	0.11		0.87	0.61		0.24	1.00		0.03	1.00		0.04
Lane Grp Cap(c), veh/h	289	0	0	139	0	0	372	0	686	372	0	685
V/C Ratio(X)	0.90	0.00	0.00	0.77	0.00	0.00	0.22	0.00	0.51	0.01	0.00	0.88
Avail Cap(c_a), veh/h	306	0	0	382	0	0	372	0	686	372	0	685
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	40.1	0.0	0.0	45.1	0.0	0.0	32.7	0.0	24.4	31.3	0.0	29.4
Incr Delay (d2), s/veh	26.6	0.0	0.0	8.5	0.0	0.0	0.3	0.0	2.7	0.0	0.0	14.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.1	0.0	0.0	3.2	0.0	0.0	1.9	0.0	8.0	0.1	0.0	18.1
LnGrp Delay(d),s/veh	66.8	0.0	0.0	53.6	0.0	0.0	33.0	0.0	27.1	31.3	0.0	44.1
LnGrp LOS	E			D			C		C	C		D
Approach Vol, veh/h		260			107			429			605	
Approach Delay, s/veh		66.8			53.6			28.2			44.0	
Approach LOS		E			D			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	25.0	41.0		22.0	25.0	41.0		12.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	6.0	37.0		19.0	6.0	37.0		22.0				
Max Q Clear Time (g_c+I1), s	2.2	16.6		17.8	5.8	32.2		8.0				
Green Ext Time (p_c), s	0.0	1.8		0.2	0.0	1.5		0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			44.1									
HCM 2010 LOS			D									



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	260	107	81	348	5	600
v/c Ratio	0.88	0.54	0.76	0.33	0.05	0.66
Control Delay	68.9	45.5	88.0	14.0	40.0	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.9	45.5	88.0	14.0	40.0	12.2
Queue Length 50th (ft)	161	56	52	105	3	177
Queue Length 95th (ft)	#234	99	#131	220	m4	201
Internal Link Dist (ft)	707	720		358		558
Turn Bay Length (ft)			430		300	
Base Capacity (vph)	310	396	106	1060	106	911
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.27	0.76	0.33	0.05	0.66

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	6	0	25	3	0	81
Future Vol, veh/h	6	0	25	3	0	81
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	0	27	3	0	88
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	117	29	0	0	30	0
Stage 1	29	-	-	-	-	-
Stage 2	88	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	879	1046	-	-	1583	-
Stage 1	994	-	-	-	-	-
Stage 2	935	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	879	1046	-	-	1583	-
Mov Cap-2 Maneuver	879	-	-	-	-	-
Stage 1	994	-	-	-	-	-
Stage 2	935	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	9.1		0		0	
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	- 879	1583	-		
HCM Lane V/C Ratio	-	- 0.007	-	-		
HCM Control Delay (s)	-	- 9.1	0	-		
HCM Lane LOS	-	- A	A	-		
HCM 95th %tile Q(veh)	-	- 0	0	-		

Intersection

Int Delay, s/veh 1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	22	7	59	128	0
Future Vol, veh/h	1	22	7	59	128	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	24	8	64	139	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	218	139	139	0	0
Stage 1	139	-	-	-	-
Stage 2	79	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	770	909	1445	-	-
Stage 1	888	-	-	-	-
Stage 2	944	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	765	909	1445	-	-
Mov Cap-2 Maneuver	765	-	-	-	-
Stage 1	888	-	-	-	-
Stage 2	938	-	-	-	-

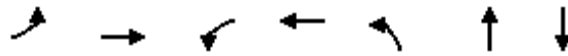
Approach	EB	NB	SB
HCM Control Delay, s	9.1	0.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1445	-	902	-	-
HCM Lane V/C Ratio	0.005	-	0.028	-	-
HCM Control Delay (s)	7.5	0	9.1	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Cumulative plus Project PM Peak Hour 1: Cambridge Road/Peridot Dr & Green Valley Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	693	148	67	470	9	117	17	88	9	4	8
Future Volume (veh/h)	15	693	148	67	470	9	117	17	88	9	4	8
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	16	753	161	71	495	9	136	20	102	11	5	10
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.95	0.95	0.95	0.86	0.86	0.86	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	176	856	183	191	1064	19	164	49	248	0	51	102
Arrive On Green	0.10	0.57	0.57	0.11	0.58	0.58	0.09	0.18	0.18	0.00	0.09	0.09
Sat Flow, veh/h	1774	1488	318	1774	1824	33	1774	265	1351	0	556	1111
Grp Volume(v), veh/h	16	0	914	71	0	504	136	0	122	0	0	15
Grp Sat Flow(s),veh/h/ln	1774	0	1806	1774	0	1857	1774	0	1616	0	0	1667
Q Serve(g_s), s	1.0	0.0	52.2	4.5	0.0	18.6	9.0	0.0	8.0	0.0	0.0	1.0
Cycle Q Clear(g_c), s	1.0	0.0	52.2	4.5	0.0	18.6	9.0	0.0	8.0	0.0	0.0	1.0
Prop In Lane	1.00		0.18	1.00		0.02	1.00		0.84	0.00		0.67
Lane Grp Cap(c), veh/h	176	0	1039	191	0	1083	164	0	296	0	0	153
V/C Ratio(X)	0.09	0.00	0.88	0.37	0.00	0.47	0.83	0.00	0.41	0.00	0.00	0.10
Avail Cap(c_a), veh/h	176	0	1039	191	0	1083	251	0	296	0	0	153
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	49.1	0.0	21.9	49.8	0.0	14.3	53.5	0.0	43.3	0.0	0.0	50.0
Incr Delay (d2), s/veh	0.2	0.0	10.6	1.2	0.0	1.4	12.9	0.0	4.2	0.0	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	29.0	2.3	0.0	10.0	5.0	0.0	3.9	0.0	0.0	0.5
LnGrp Delay(d),s/veh	49.3	0.0	32.6	51.0	0.0	15.7	66.5	0.0	47.5	0.0	0.0	51.2
LnGrp LOS	D		C	D		B	E		D			D
Approach Vol, veh/h		930			575			258			15	
Approach Delay, s/veh		32.8			20.1			57.5			51.2	
Approach LOS		C			C			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	4.1	26.0	16.9	73.0	15.1	15.0	15.9	74.0				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	6.0	22.0	7.0	69.0	17.0	11.0	6.0	70.0				
Max Q Clear Time (g_c+I1), s	0.0	10.0	6.5	54.2	11.0	3.0	3.0	20.6				
Green Ext Time (p_c), s	0.0	0.4	0.0	5.5	0.2	0.0	0.0	3.1				
Intersection Summary												
HCM 2010 Ctrl Delay			32.5									
HCM 2010 LOS			C									

Cumulative plus Project PM Peak Hour 1: Cambridge Road/Peridot Dr & Green Valley Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	16	914	71	504	136	122	26
v/c Ratio	0.19	0.84	0.70	0.42	0.67	0.25	2.60
Control Delay	59.9	28.1	82.8	9.0	66.3	10.8	959.8
Queue Delay	0.0	8.9	0.0	0.0	0.0	0.0	0.0
Total Delay	59.9	36.9	82.8	9.0	66.3	10.8	959.8
Queue Length 50th (ft)	12	536	50	86	102	12	-26
Queue Length 95th (ft)	36	#873	m82	m182	158	54	#77
Internal Link Dist (ft)		606		1376		1198	195
Turn Bay Length (ft)	130		135		120		
Base Capacity (vph)	88	1094	103	1193	250	486	10
Starvation Cap Reductn	0	157	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.98	0.69	0.42	0.54	0.25	2.60

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Cumulative plus Project PM Peak Hour 2: Winterhaven Drive/Hastings Dr & Green Valley Rd

Intersection

Int Delay, s/veh 1.8





















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↕			↕		
Traffic Vol, veh/h	70	702	20	5	518	9	4	0	2	8	0	34
Future Vol, veh/h	70	702	20	5	518	9	4	0	2	8	0	34
Conflicting Peds, #/hr	0	0	3	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	195	-	-	190	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	89	89	89	50	50	50	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	93	936	27	6	582	10	8	0	4	10	0	44

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	592	0	0	966	0	0	1759	1742	952	1736	1750	587
Stage 1	-	-	-	-	-	-	1139	1139	-	598	598	-
Stage 2	-	-	-	-	-	-	620	603	-	1138	1152	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	984	-	-	713	-	-	66	87	315	69	86	510
Stage 1	-	-	-	-	-	-	245	276	-	489	491	-
Stage 2	-	-	-	-	-	-	476	488	-	245	272	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	984	-	-	713	-	-	55	78	314	63	77	510
Mov Cap-2 Maneuver	-	-	-	-	-	-	55	78	-	63	77	-
Stage 1	-	-	-	-	-	-	221	249	-	443	487	-
Stage 2	-	-	-	-	-	-	431	484	-	219	246	-

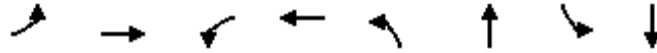
Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0.1	61.1	27.1
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	76	984	-	-	713	-	-	217
HCM Lane V/C Ratio	0.158	0.095	-	-	0.008	-	-	0.251
HCM Control Delay (s)	61.1	9	-	-	10.1	-	-	27.1
HCM Lane LOS	F	A	-	-	B	-	-	D
HCM 95th %tile Q(veh)	0.5	0.3	-	-	0	-	-	1

Cumulative plus Project PM Peak Hour 3: Cameron Park Dr/Starbuck Rd & Green Valley Rd

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	332	352	99	218	22	309	105	160	26	64	23
Future Volume (veh/h)	44	332	352	99	218	22	309	105	160	26	64	23
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		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	47	357	378	121	266	27	372	127	193	31	76	27
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.93	0.93	0.93	0.82	0.82	0.82	0.83	0.83	0.83	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	60	431	457	118	921	94	355	144	218	113	103	37
Arrive On Green	0.03	0.52	0.52	0.07	0.55	0.55	0.20	0.21	0.21	0.06	0.08	0.08
Sat Flow, veh/h	1774	828	876	1774	1664	169	1774	668	1015	1774	1305	464
Grp Volume(v), veh/h	47	0	735	121	0	293	372	0	320	31	0	103
Grp Sat Flow(s),veh/h/ln	1774	0	1704	1774	0	1833	1774	0	1684	1774	0	1769
Q Serve(g_s), s	3.2	0.0	43.6	8.0	0.0	10.2	24.0	0.0	22.1	2.0	0.0	6.8
Cycle Q Clear(g_c), s	3.2	0.0	43.6	8.0	0.0	10.2	24.0	0.0	22.1	2.0	0.0	6.8
Prop In Lane	1.00		0.51	1.00		0.09	1.00		0.60	1.00		0.26
Lane Grp Cap(c), veh/h	60	0	888	118	0	1015	355	0	362	113	0	140
V/C Ratio(X)	0.78	0.00	0.83	1.02	0.00	0.29	1.05	0.00	0.88	0.27	0.00	0.74
Avail Cap(c_a), veh/h	118	0	888	118	0	1015	355	0	603	113	0	369
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	57.5	0.0	24.2	56.0	0.0	14.2	48.0	0.0	45.7	53.5	0.0	54.1
Incr Delay (d2), s/veh	18.9	0.0	8.7	89.1	0.0	0.7	61.0	0.0	8.6	1.3	0.0	7.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	22.6	6.8	0.0	5.3	17.7	0.0	11.2	1.0	0.0	3.6
LnGrp Delay(d),s/veh	76.4	0.0	32.9	145.3	0.0	14.9	109.0	0.0	54.3	54.8	0.0	61.4
LnGrp LOS	E		C	F		B	F		D	D		E
Approach Vol, veh/h		782			414			692			134	
Approach Delay, s/veh		35.6			53.1			83.7			59.9	
Approach LOS		D			D			F			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	11.7	29.8	12.0	66.5	28.0	13.5	8.1	70.4				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	6.0	43.0	8.0	47.0	24.0	25.0	8.0	47.0				
Max Q Clear Time (g_c+I1), s	4.0	24.1	10.0	45.6	26.0	8.8	5.2	12.2				
Green Ext Time (p_c), s	0.1	1.7	0.0	0.9	0.0	0.4	0.0	7.6				
Intersection Summary												
HCM 2010 Ctrl Delay			57.2									
HCM 2010 LOS			E									
Notes												

Cumulative plus Project PM Peak Hour 3: Cameron Park Dr/Starbuck Rd & Green Valley Rd



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	47	735	121	293	372	320	31	103
v/c Ratio	0.41	0.95	0.58	0.31	1.05	0.64	0.22	0.50
Control Delay	73.5	39.3	62.8	20.5	95.2	23.1	53.3	50.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.5	39.3	62.8	20.5	95.2	23.1	53.3	50.2
Queue Length 50th (ft)	34	518	88	128	-317	190	23	68
Queue Length 95th (ft)	m50	m#823	#195	210	#436	139	48	101
Internal Link Dist (ft)		281		789		653		251
Turn Bay Length (ft)	270		155		200		50	
Base Capacity (vph)	125	771	208	932	354	652	144	381
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.95	0.58	0.31	1.05	0.49	0.22	0.27

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	12	129	25	11	9	205	580	44	23	476	37
Future Volume (veh/h)	20	12	129	25	11	9	205	580	44	23	476	37
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	23	14	148	32	14	11	228	644	49	24	501	39
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.87	0.87	0.87	0.79	0.79	0.79	0.90	0.90	0.90	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	26	16	169	47	20	16	256	825	63	365	927	72
Arrive On Green	0.13	0.13	0.13	0.05	0.05	0.05	0.14	0.48	0.48	0.21	0.54	0.54
Sat Flow, veh/h	202	123	1299	980	429	337	1774	1707	130	1774	1703	133
Grp Volume(v), veh/h	185	0	0	57	0	0	228	0	693	24	0	540
Grp Sat Flow(s),veh/h/ln	1623	0	0	1746	0	0	1774	0	1836	1774	0	1836
Q Serve(g_s), s	13.4	0.0	0.0	3.9	0.0	0.0	15.1	0.0	37.6	1.3	0.0	22.8
Cycle Q Clear(g_c), s	13.4	0.0	0.0	3.9	0.0	0.0	15.1	0.0	37.6	1.3	0.0	22.8
Prop In Lane	0.12		0.80	0.56		0.19	1.00		0.07	1.00		0.07
Lane Grp Cap(c), veh/h	212	0	0	83	0	0	256	0	888	365	0	999
V/C Ratio(X)	0.87	0.00	0.00	0.69	0.00	0.00	0.89	0.00	0.78	0.07	0.00	0.54
Avail Cap(c_a), veh/h	244	0	0	320	0	0	310	0	888	365	0	999
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	51.2	0.0	0.0	56.3	0.0	0.0	50.4	0.0	25.7	38.4	0.0	17.7
Incr Delay (d2), s/veh	25.5	0.0	0.0	9.6	0.0	0.0	22.6	0.0	6.8	0.1	0.0	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	0.0	0.0	2.1	0.0	0.0	9.0	0.0	20.5	0.6	0.0	12.1
LnGrp Delay(d),s/veh	76.7	0.0	0.0	65.9	0.0	0.0	73.0	0.0	32.5	38.5	0.0	19.8
LnGrp LOS	E			E			E		C	D		B
Approach Vol, veh/h		185			57			921			564	
Approach Delay, s/veh		76.7			65.9			42.5			20.6	
Approach LOS		E			E			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	28.7	62.0		19.6	21.4	69.3		9.7				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	6.0	58.0		18.0	21.0	43.0		22.0				
Max Q Clear Time (g_c+I1), s	3.3	39.6		15.4	17.1	24.8		5.9				
Green Ext Time (p_c), s	0.5	4.2		0.2	0.2	3.1		0.2				
Intersection Summary												
HCM 2010 Ctrl Delay			39.8									
HCM 2010 LOS			D									



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	185	57	228	693	24	540
v/c Ratio	0.81	0.35	0.79	0.59	0.28	0.60
Control Delay	76.8	47.4	67.8	18.7	55.2	22.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.8	47.4	67.8	18.7	55.2	22.2
Queue Length 50th (ft)	139	36	169	328	19	324
Queue Length 95th (ft)	#232	61	#279	595	m28	m499
Internal Link Dist (ft)	707	720		358		558
Turn Bay Length (ft)			430		300	
Base Capacity (vph)	247	329	317	1175	88	906
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.17	0.72	0.59	0.27	0.60

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Intersection

Int Delay, s/veh 0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	0	68	6	0	36
Future Vol, veh/h	4	0	68	6	0	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	0	74	7	0	39

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	116	77	0	0	80	0
Stage 1	77	-	-	-	-	-
Stage 2	39	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	880	984	-	-	1518	-
Stage 1	946	-	-	-	-	-
Stage 2	983	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	880	984	-	-	1518	-
Mov Cap-2 Maneuver	880	-	-	-	-	-
Stage 1	946	-	-	-	-	-
Stage 2	983	-	-	-	-	-

Approach	WB		NB		SB
HCM Control Delay, s	9.1		0		0
HCM LOS	A				

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	880	1518	-
HCM Lane V/C Ratio	-	-	0.005	-	-
HCM Control Delay (s)	-	-	9.1	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection

Int Delay, s/veh 0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	13	23	168	114	1
Future Vol, veh/h	0	13	23	168	114	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	14	25	183	124	1

Major/Minor	Minor2	Major1		Major2
Conflicting Flow All	357	124	125	0
Stage 1	124	-	-	-
Stage 2	233	-	-	-
Critical Hdwy	7.12	6.22	4.12	-
Critical Hdwy Stg 1	6.12	-	-	-
Critical Hdwy Stg 2	6.12	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-
Pot Cap-1 Maneuver	598	927	1462	-
Stage 1	880	-	-	-
Stage 2	770	-	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	589	927	1462	-
Mov Cap-2 Maneuver	589	-	-	-
Stage 1	863	-	-	-
Stage 2	755	-	-	-

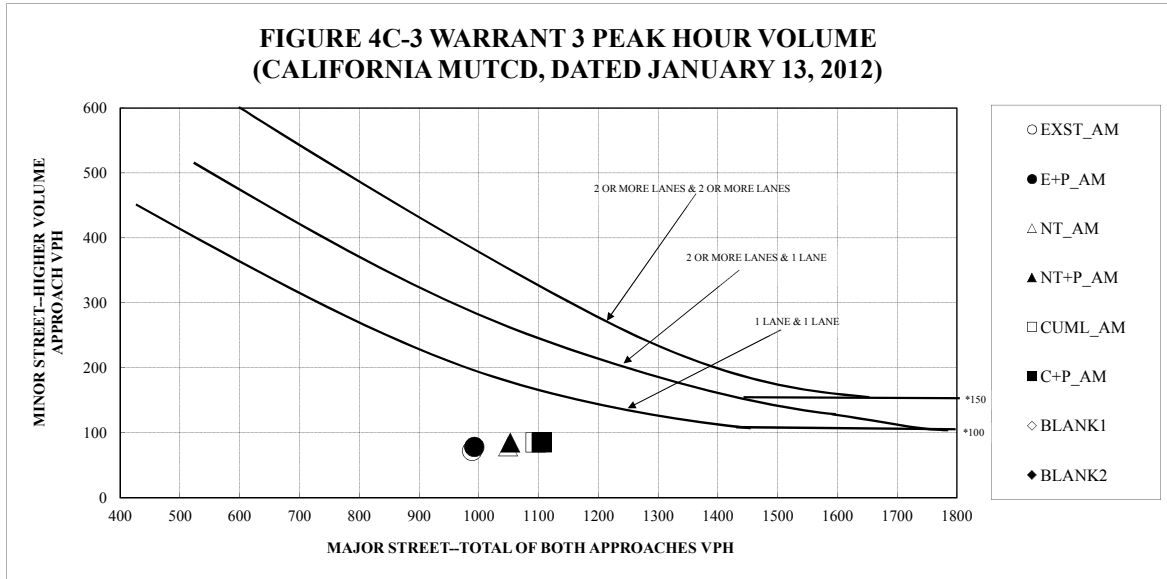
Approach	EB	NB	SB
HCM Control Delay, s	8.9	0.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1462	-	927	-	-
HCM Lane V/C Ratio	0.017	-	0.015	-	-
HCM Control Delay (s)	7.5	0	8.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0	-	-

Appendix C
CA MUTCD Peak Hour Signal Warrant 3 Worksheets

CA SIGNAL WARRANT 3 ANALYSIS

SCENARIOS: "AM PEAK HOUR" CONDITIONS



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

SCENARIO	APPROACH(ES)		WARRANT MET?
	MAJOR	MINOR	
EXST_AM	989	72	NO
E+P_AM	993	78	NO
NT_AM	1049	79	NO
NT+P_AM	1053	85	NO
CUML_AM	1096	85	NO
C+P_AM	1106	85	NO
BLANK1	0	0	
BLANK2	0	0	

Note: Major approach is the total of both approaches. Minor approach is the highest of both approaches.

Date: May 23, 2017

Intersection No.: 2

Intersection: Green Valley Road / Hastings Dr-Winterhaven Dr

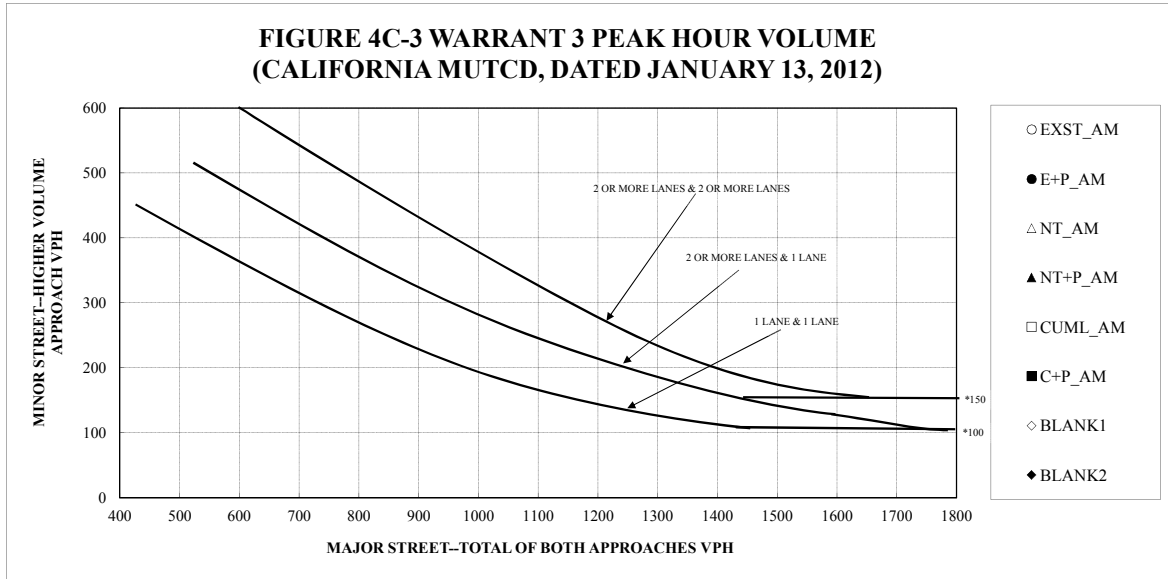
Number of lanes on MAJOR street: 1

Number of lanes on MINOR street: 1



CA SIGNAL WARRANT 3 ANALYSIS

SCENARIOS: "AM PEAK HOUR" CONDITIONS



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

SCENARIO	APPROACH(ES)		WARRANT MET?
	MAJOR	MINOR	
EXST_AM	95	0	NO
E+P_AM	98	6	NO
NT_AM	101	0	NO
NT+P_AM	104	6	NO
CUML_AM	106	0	NO
C+P_AM	109	6	NO
BLANK1	0	0	
BLANK2	0	0	

Note: Major approach is the total of both approaches. Minor approach is the highest of both approaches.

Date: May 23, 2017 Intersection No.: 5

Intersection: Project Driveway / Hastings Drive

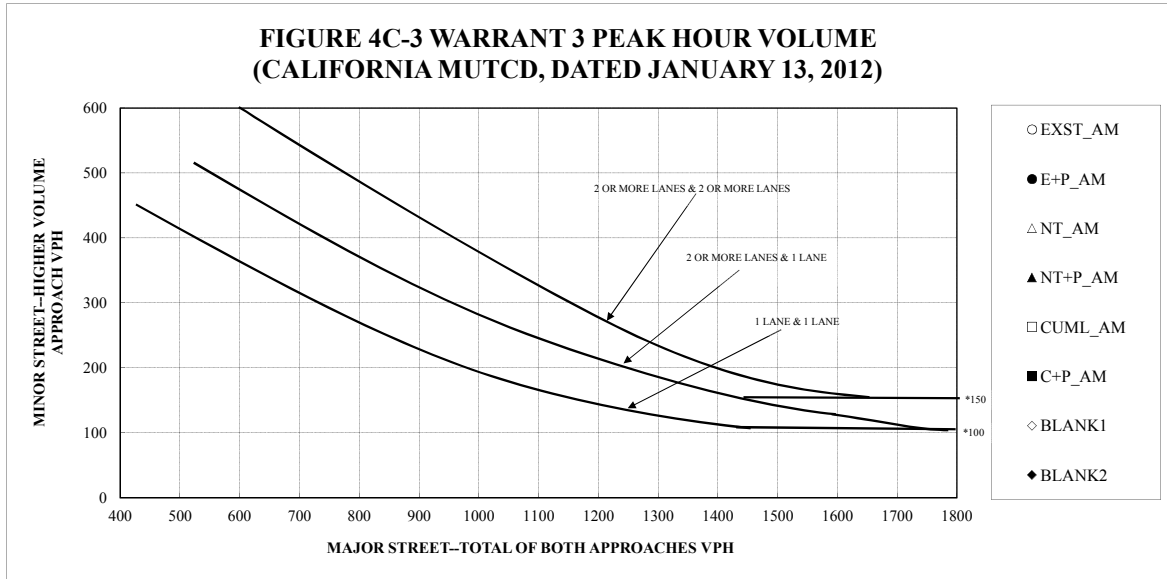
Number of lanes on MAJOR street: 1

Number of lanes on MINOR street: 1



CA SIGNAL WARRANT 3 ANALYSIS

SCENARIOS: "AM PEAK HOUR" CONDITIONS



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

SCENARIO	APPROACH(ES)		WARRANT MET?
	MAJOR	MINOR	
EXST_AM	149	6	NO
E+P_AM	155	23	NO
NT_AM	170	6	NO
NT+P_AM	176	23	NO
CUML_AM	188	6	NO
C+P_AM	194	23	NO
BLANK1	0	0	
BLANK2	0	0	

Note: Major approach is the total of both approaches. Minor approach is the highest of both approaches.

Date: May 23, 2017

Intersection No.: 6

Intersection: **Camarc Drive (Project Driveway) / Starbuck Road**

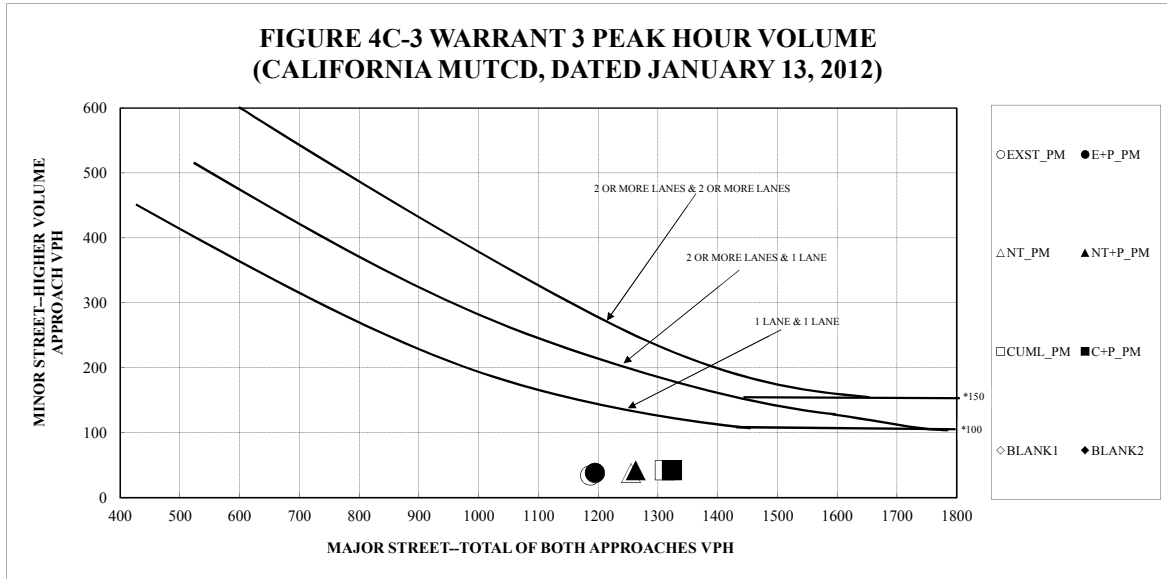
Number of lanes on MAJOR street: 1

Number of lanes on MINOR street: 1



CA SIGNAL WARRANT 3 ANALYSIS

SCENARIOS: "PM PEAK HOUR" CONDITIONS



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

SCENARIO	APPROACH(ES)		WARRANT MET?
	MAJOR	MINOR	
EXST_PM	1187	34	NO
E+P_PM	1195	38	NO
NT_PM	1255	38	NO
NT+P_PM	1263	42	NO
CUML_PM	1312	42	NO
C+P_PM	1324	42	NO
BLANK1	0	0	
BLANK2	0	0	

Note: Major approach is the total of both approaches. Minor approach is the highest of both approaches.

Date: May 23, 2017

Intersection No.: 2

Intersection: Green Valley Road / Hasting Dr-Winterhaven Dr

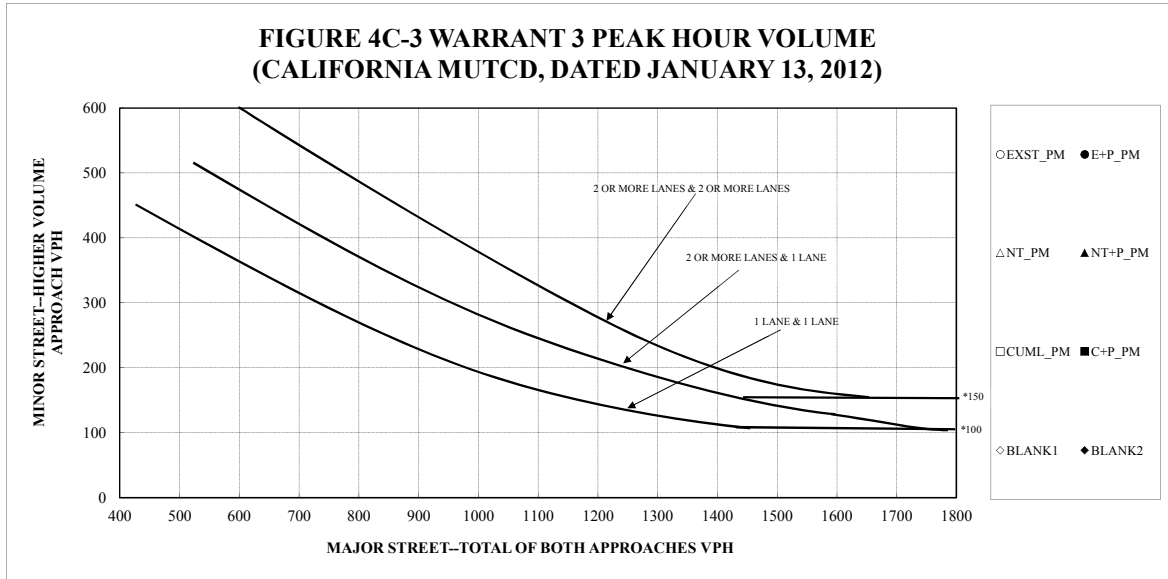
Number of lanes on MAJOR street: 1

Number of lanes on MINOR street: 1



CA SIGNAL WARRANT 3 ANALYSIS

SCENARIOS: "PM PEAK HOUR" CONDITIONS



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

SCENARIO	APPROACH(ES)		WARRANT MET?
	MAJOR	MINOR	
EXST_PM	102	0	NO
E+P_PM	108	4	NO
NT_PM	103	0	NO
NT+P_PM	109	4	NO
CUMM_PM	104	0	NO
C+P_PM	110	4	NO
BLANK1	0	0	
BLANK2	0	0	

Note: Major approach is the total of both approaches. Minor approach is the highest of both approaches.

Date: May 23, 2017 Intersection No.: 5

Intersection: Project Driveway / Hastings Drive

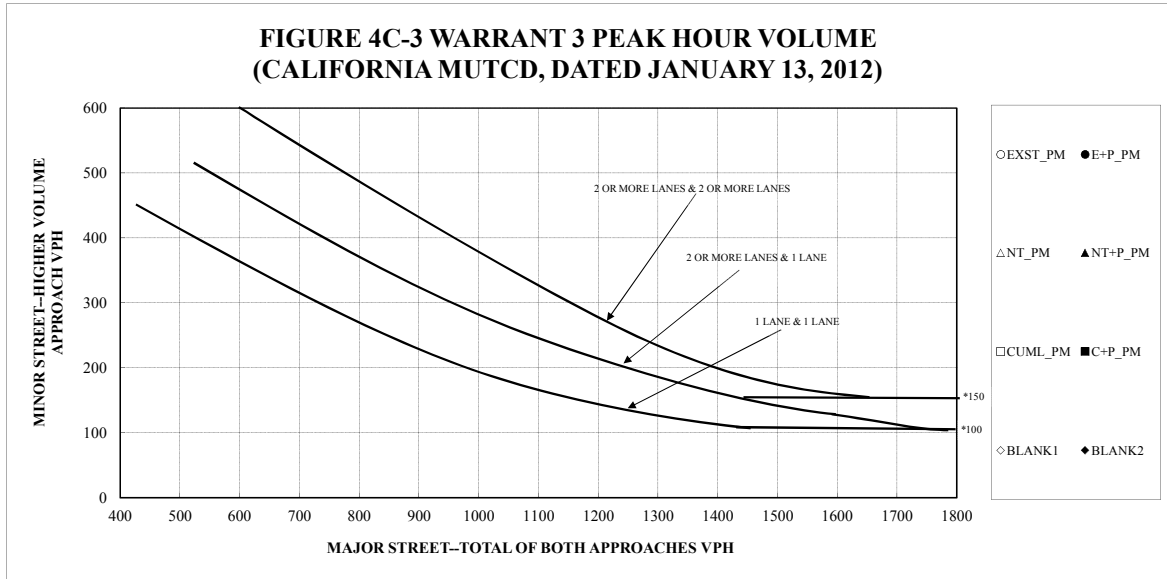
Number of lanes on MAJOR street: 1

Number of lanes on MINOR street: 1



CA SIGNAL WARRANT 3 ANALYSIS

SCENARIOS: "PM PEAK HOUR" CONDITIONS



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

SCENARIO	APPROACH(ES)		WARRANT MET?
	MAJOR	MINOR	
EXST_PM	233	2	NO
E+P_PM	252	13	NO
NT_PM	263	2	NO
NT+P_PM	282	13	NO
CUMM_PM	287	2	NO
C+P_PM	306	13	NO
BLANK1	0	0	
BLANK2	0	0	

Note: Major approach is the total of both approaches. Minor approach is the highest of both approaches.

Date: May 23, 2017

Intersection No.: 6

Intersection: Camarc Drive (Project Driveway) / Starbuck Road

Number of lanes on MAJOR street: 1

Number of lanes on MINOR street: 1



Appendix D
Project Fair-Share Estimates

APPENDIX ATTACHMENT D
Cameron Ranch Development Transportation Impact Study
PROJECT FAIR-SHARE PERCENTAGE ESTIMATES FOR CRITICAL STUDY INTERSECTIONS

#	Intersection	Volumes			Cumulative Fair Share Percentage
		Project Only Volumes (T)	Cumulative Volumes (T _B)	Existing Volumes (T _E)	
1	Cambridge Road/Peridot Dr & Green Valley Rd	12	1,646	1,416	5.2%
2	Winterhaven Drive/Hastings Dr & Green Valley Rd	12	1,372	1,227	8.3%
3	Cameron Park Dr/Starbuck Rd & Green Valley Rd	29	1,755	1,491	11.0%
4	Cameron Park Dr & La Canada Dr	22	1,571	1,334	9.3%
5	Hastings Dr & Project Dwy	10	114	102	100.0%
6	Starbuck Rd & Camarc Dr (Project Dwy)	30	319	235	100.0%

Notes: Caltrans Fair-Share Formula: Project Fair Share = $[T / (T_B - T_E)] * 100 \%$
T = Project only (Cameron Ranch), T_B = "Cumulative Base plus Project" Volumes, T_E = "Existing" Volumes
PM Peak Hour Volumes were used for fair-share computation purposes.
Project Impact significance determined based on agency significance thresholds policies

TECHNICAL MEMORANDUM

To: El Dorado County Community Development Agency
Long Range Planning

Attention: Katie Jackson, PE, TE

From: Mario Tambellini, PE

Date: March 15, 2018

Subject: Cameron Ranch Development Traffic Impact Study – Supplemental Memorandum

INTRODUCTION

This memorandum has been prepared in support of the Cameron Ranch Development (Project) as requested by El Dorado County (County). The Project site is located within the northwest quadrant of the Green Valley Road / Starbuck Road-Cameron Park Drive Intersection. The Project proposes to redevelop the site with 41 single-family homes. The *Cameron Ranch Development Traffic Impact Study* (Cameron Ranch TIS) (prepared by Wood Rodgers) was submitted to, and approved by, the County in July 2017.

The County requested this supplemental memorandum to address inconsistencies between impact criteria defined in Section 1.5 – Level of Service Standards and Impact Criteria of the Cameron Ranch TIS and policies contained in the *El Dorado County Adopted General Plan* (Amended October 2017) (GP). Section 1.5.1.2 of the Cameron Ranch TIS states that for unsignalized intersections:

Significant impacts are defined to occur when the addition of project generated traffic causes the average intersection delay for all-way stop controlled intersections, or worst-case movement delay for two-way stop controlled intersections, to degrade to unacceptable levels (LOS “F”) and the intersection satisfies the CA MUTCD peak hour volume signal warrant.

Per County comments, significance criteria for unsignalized intersections are to follow GP Policy TC-Xe and TC-Xf, which state:

Policy TC-Xe For the purposes of this Transportation and Circulation Element, “worsen” is defined as any of the following number of project trips using a road facility at the time of issuance of a use and occupancy permit for the development project:

- A. A 2 percent increase in traffic during the a.m. peak hour, p.m. peak hour, or daily, or*
- B. The addition of 100 or more daily trips, or*
- C. The addition of 10 or more trips during the a.m. peak hour or the p.m. peak hour.*

Policy TC-Xf At the time of approval of a tentative map for a single family residential subdivision of five or more parcels that worsens (defined as a project that triggers Policy TC-Xe [A] or [B] or [C]) traffic on the County road system, the County shall do one of the following: (1) condition the project to construct all road improvements necessary to maintain or attain Level of Service standards detailed in this Transportation and Circulation Element based on existing traffic plus traffic generated from the development plus forecasted traffic growth at 10-years from project submittal; or (2) ensure the

commencement of construction of the necessary road improvements are included in the County's 10-year CIP.

Under the new GP based impact criteria, and because the GP identifies level of service (LOS) "E" as the minimum acceptable LOS for the intersections analyzed by the Cameron Ranch TIS, the Project impact at the two-way stop-controlled intersection of Green Valley Road / Hastings Drive-Winterhaven Drive has been found to be "significant until mitigation". As such, this memorandum recommends re-striping of the Green Valley Road / Hastings Drive-Winterhaven Drive intersection to include a two-way left-turn median lane along Green Valley Road in place of the existing eastbound and westbound left-turn pockets. With implementation of the recommended mitigation, this memorandum finds Project impact at the Green Valley Road / Hastings Drive-Winterhaven Drive intersection to be "less than significant".

INTERSECTION OPERATIONS AND MITIGATIONS

The Cameron Ranch TIS analyzed three unisignalized intersections. Of those three intersections, only the Green Valley Road / Hastings Drive-Winterhaven Drive intersection was found to operate below County LOS standards under the scenarios analyzed. Table 1 summarizes the traffic operations of the two-way stop-controlled Green Valley Road / Hastings Drive-Winterhaven Drive intersection under all six study conditions analyzed in the Cameron Ranch TIS. All operations data in Table 1 was taken from the Cameron Ranch TIS and was calculated consistent with *Highway Capacity Manual, Fourth Edition, 2010* (HCM 2010) methodologies using *Synchro 9* software.

Table 1. Intersection LOS Summary

Intersection	Study Condition	AM Peak Hour			PM Peak Hour		
		Delay ¹	LOS	Warrant Met? ²	Delay ¹	LOS	Warrant Met? ²
Green Valley Road / Hastings Drive-Winterhaven Drive	Existing	47.2	E	No	43.7	E	No
	Existing plus Project	50.4	F	No	45.9	E	No
	Near-term	61.0	F	No	51.7	F	No
	Near-term plus Project	65.5	F	No	54.2	F	No
	Cumulative	78.5	F	No	59.4	F	No
	Cumulative plus Project	81.3	F	No	61.1	F	No

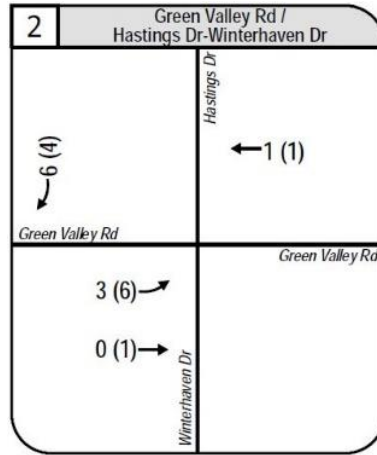
Notes: 1. "Worst-case" movement delay is indicated.
2. Warrant Met? = CA MUTCD Peak Hour Signal Warrant 3
BOLD indicates unacceptable level of service.

As shown in Table 1, the Green Valley Road / Hastings Drive-Winterhaven Drive intersection is projected to operate at unacceptable LOS "F" during the AM peak hour under "Existing plus Project" conditions and during the AM and PM peak hours under "Near-term", "Near-term plus Project", "Cumulative", and "Cumulative plus Project" conditions.

The following turning movement diagram, Figure 1, shows number of AM(PM) peak hour trips projected to be added to the Green Valley Road / Hastings Drive-Winterhaven Drive intersection by the Project. As shown in the diagram below, the Project is projected to add 10 AM peak hour

trips and 12 PM peak hour trips to the Green Valley Road / Hastings Drive-Winterhaven Drive intersection.

Figure 1. Project Volumes



Source: Cameron Ranch TIS, Figure 5

Per County General Plan Policy TC-Xe, the addition of Project trips will “worsen” traffic operations at the Green Valley Road / Hastings Drive-Winterhaven Drive intersection by adding 10 or more peak hour trips during the AM or PM peak hours. Therefore, the Project impact at the Green Valley Road / Hastings Drive-Winterhaven Drive intersection is projected to be “significant until mitigation” under “Existing plus Project”, “Near-term plus Project”, and “Cumulative plus Project” conditions.

RECOMMENDED MITIGATION

The recommended mitigation for Project impact at the Green Valley Road / Hastings Drive-Winterhaven Drive intersection is to re-stripe the intersection to include a two-way left-turn median lane along Green Valley Road in place of the existing eastbound and westbound left-turn pockets. Additional analyses, using HCM 2010 methodologies and *Synchro 9* software, with this mitigation in place were performed for all “plus Project” study conditions. Table 2 shows traffic operations at the Green Valley Road / Hastings Drive-Winterhaven Drive intersection with the addition of a two-way left-turn median lane on Green Valley Road.

Table 1. Mitigated Intersection LOS Summary

Intersection	Study Condition	AM Peak Hour		PM Peak Hour	
		Delay ¹	LOS	Delay ¹	LOS
Green Valley Road / Hastings Drive-Winterhaven Drive	Existing plus Project	23.4	C	-	-
	Near-term plus Project	26.3	D	25.6	D
	Cumulative plus Project	28.4	D	26.7	D

*Notes: 1. "Worst-case" movement delay is indicated.
BOLD indicates unacceptable level of service.*

As shown in Table 2, with the addition of a two-way left-turn median lane on Green Valley Road, the Green Valley Road / Hastings Drive-Winterhaven Drive intersection is projected to operate at acceptable LOS “D” or better under all “plus Project” scenarios. *Synchro 9* HCM 2010 outputs for the above mitigated “plus Project” conditions are provided in **Attachment A**. With the recommended mitigation in place, Project impact at the Green Valley Road / Hastings Drive-Winterhaven Drive intersection is projected to be “less than significant”.

**ATTACHMENT A – SYNCHRO 9 HCM 2010 OUTPUTS FOR
MITIGATED CONDITIONS**

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	401	9	3	554	2	23	0	7	3	0	75
Future Vol, veh/h	24	401	9	3	554	2	23	0	7	3	0	75
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	195	-	-	190	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	87	87	87	68	68	68	62	62	62
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	535	12	3	637	2	34	0	10	5	0	121

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	639	0	0	547	0	0	1310	1251	541	1255	1256	638
Stage 1	-	-	-	-	-	-	605	605	-	645	645	-
Stage 2	-	-	-	-	-	-	705	646	-	610	611	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	945	-	-	1022	-	-	136	172	541	148	171	477
Stage 1	-	-	-	-	-	-	485	487	-	461	467	-
Stage 2	-	-	-	-	-	-	427	467	-	482	484	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	945	-	-	1022	-	-	99	166	541	141	165	477
Mov Cap-2 Maneuver	-	-	-	-	-	-	204	282	-	269	288	-
Stage 1	-	-	-	-	-	-	469	471	-	445	466	-
Stage 2	-	-	-	-	-	-	318	466	-	457	468	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0	23.4	15.7
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	239	945	-	-	1022	-	-	463
HCM Lane V/C Ratio	0.185	0.034	-	-	0.003	-	-	0.272
HCM Control Delay (s)	23.4	8.9	-	-	8.5	-	-	15.7
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.7	0.1	-	-	0	-	-	1.1

Near-term plus Project AM Peak Hour 2: Winterhaven Drive/Hastings Dr & Green Valley Rd

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Traffic Vol, veh/h	27	436	10	3	575	2	24	0	8	3	0	82
Future Vol, veh/h	27	436	10	3	575	2	24	0	8	3	0	82
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	195	-	-	190	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	87	87	87	68	68	68	62	62	62
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	581	13	3	661	2	35	0	12	5	0	132
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	663	0	0	595	0	0	1395	1330	588	1335	1336	662
Stage 1	-	-	-	-	-	-	660	660	-	669	669	-
Stage 2	-	-	-	-	-	-	735	670	-	666	667	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	926	-	-	981	-	-	119	155	509	131	153	462
Stage 1	-	-	-	-	-	-	452	460	-	447	456	-
Stage 2	-	-	-	-	-	-	411	455	-	449	457	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	926	-	-	981	-	-	82	149	509	124	147	462
Mov Cap-2 Maneuver	-	-	-	-	-	-	181	264	-	250	270	-
Stage 1	-	-	-	-	-	-	434	442	-	430	455	-
Stage 2	-	-	-	-	-	-	292	454	-	422	439	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			0			26.3			16.5		
HCM LOS							D			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	216	926	-	-	981	-	-	449				
HCM Lane V/C Ratio	0.218	0.039	-	-	0.004	-	-	0.305				
HCM Control Delay (s)	26.3	9	-	-	8.7	-	-	16.5				
HCM Lane LOS	D	A	-	-	A	-	-	C				
HCM 95th %tile Q(veh)	0.8	0.1	-	-	0	-	-	1.3				

Near-term plus Project PM Peak Hour 2: Winterhaven Drive/Hastings Dr & Green Valley Rd

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↵	↵		↵	↵			↕			↕	
Traffic Vol, veh/h	72	673	19	5	486	8	4	0	2	7	0	35
Future Vol, veh/h	72	673	19	5	486	8	4	0	2	7	0	35
Conflicting Peds, #/hr	0	0	3	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	195	-	-	190	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	89	89	89	50	50	50	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	96	897	25	6	546	9	8	0	4	9	0	45

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	555	0	0	926	0	0	1690	1671	913	1666	1680	551
Stage 1	-	-	-	-	-	-	1105	1105	-	562	562	-
Stage 2	-	-	-	-	-	-	585	566	-	1104	1118	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1015	-	-	738	-	-	74	96	331	77	95	534
Stage 1	-	-	-	-	-	-	256	286	-	512	510	-
Stage 2	-	-	-	-	-	-	497	507	-	256	282	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1015	-	-	738	-	-	62	86	330	70	85	534
Mov Cap-2 Maneuver	-	-	-	-	-	-	154	181	-	164	185	-
Stage 1	-	-	-	-	-	-	231	258	-	464	506	-
Stage 2	-	-	-	-	-	-	451	503	-	229	255	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.8			0.1			25.6			15.8		
HCM LOS							D			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	187	1015	-	-	738	-	-	388
HCM Lane V/C Ratio	0.064	0.095	-	-	0.008	-	-	0.141
HCM Control Delay (s)	25.6	8.9	-	-	9.9	-	-	15.8
HCM Lane LOS	D	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.2	0.3	-	-	0	-	-	0.5

Cumulative plus Project AM Peak Hour 2: Winterhaven Drive/Hastings Dr & Green Valley Rd

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↵	↵		↵	↵			↕			↕	
Traffic Vol, veh/h	27	467	10	3	597	2	25	0	8	3	0	82
Future Vol, veh/h	27	467	10	3	597	2	25	0	8	3	0	82
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	195	-	-	190	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	87	87	87	68	68	68	62	62	62
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	623	13	3	686	2	37	0	12	5	0	132

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	689	0	0	636	0	0	1461	1396	629	1401	1402	687
Stage 1	-	-	-	-	-	-	701	701	-	694	694	-
Stage 2	-	-	-	-	-	-	760	695	-	707	708	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	905	-	-	947	-	-	107	141	482	118	140	447
Stage 1	-	-	-	-	-	-	429	441	-	433	444	-
Stage 2	-	-	-	-	-	-	398	444	-	426	438	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	905	-	-	947	-	-	73	135	482	111	134	447
Mov Cap-2 Maneuver	-	-	-	-	-	-	170	251	-	236	257	-
Stage 1	-	-	-	-	-	-	412	423	-	416	443	-
Stage 2	-	-	-	-	-	-	279	443	-	399	421	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0	28.4	17.1
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	202	905	-	-	947	-	-	433
HCM Lane V/C Ratio	0.24	0.04	-	-	0.004	-	-	0.317
HCM Control Delay (s)	28.4	9.1	-	-	8.8	-	-	17.1
HCM Lane LOS	D	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.9	0.1	-	-	0	-	-	1.3

Cumulative plus Project PM Peak Hour 2: Winterhaven Drive/Hastings Dr & Green Valley Rd

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↵	↵		↵	↵			↕			↕	
Traffic Vol, veh/h	70	702	20	5	518	9	4	0	2	8	0	34
Future Vol, veh/h	70	702	20	5	518	9	4	0	2	8	0	34
Conflicting Peds, #/hr	0	0	3	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	195	-	-	190	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	89	89	89	50	50	50	77	77	77
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	93	936	27	6	582	10	8	0	4	10	0	44

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	592	0	0	966	0	0	1759	1742	952	1736	1750	587
Stage 1	-	-	-	-	-	-	1139	1139	-	598	598	-
Stage 2	-	-	-	-	-	-	620	603	-	1138	1152	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	984	-	-	713	-	-	66	87	315	69	86	510
Stage 1	-	-	-	-	-	-	245	276	-	489	491	-
Stage 2	-	-	-	-	-	-	476	488	-	245	272	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	984	-	-	713	-	-	55	78	314	63	77	510
Mov Cap-2 Maneuver	-	-	-	-	-	-	146	172	-	156	177	-
Stage 1	-	-	-	-	-	-	221	249	-	443	487	-
Stage 2	-	-	-	-	-	-	431	484	-	219	246	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.8			0.1			26.7			16.9		
HCM LOS							D			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	178	984	-	-	713	-	-	356
HCM Lane V/C Ratio	0.067	0.095	-	-	0.008	-	-	0.153
HCM Control Delay (s)	26.7	9	-	-	10.1	-	-	16.9
HCM Lane LOS	D	A	-	-	B	-	-	C
HCM 95th %tile Q(veh)	0.2	0.3	-	-	0	-	-	0.5