

TRAFFIC STUDY

For

***KA Enterprises Mega Mart
(PDS2017-STP-17-028)***

Prepared For: The County of San Diego

Submitted To:

KA Enterprises
5820 Oberlin Drive, Suite 201
San Diego, CA. 92121

Prepared By:

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Signature: Billy Everett Darnell
Date Signed: 10/15/2019

Revised October 15, 2019

Revised April 12, 2019

Revised April 9, 2019

Revised November 15, 2018

Revised: April 30, 2018

Original: May 25, 2017

Darnell & ASSOCIATES

TRANSPORTATION PLANNING & TRAFFIC ENGINEERING

October 15, 2019

Eugene Marini
KA Enterprises
5820 Oberlin Drive, Suite 201
San Diego, CA. 92121

D&A Ref. No: 170405

Subject: Revised Traffic Impact Study for the KA Enterprises Mega Mart Project at I-15 and Deer Springs Road in the North County Metro Area of San Diego County, California.

Dear Mr. Marini:

In accordance with your authorization, Darnell & Associates, Inc. (D&A) has prepared this traffic impact study to assess the impacts associated with the proposed Mini Mart/Gas Station Project located at I-15 and Deer Springs Road in the North County Metro Area of County of San Diego. The report has been revised to respond to County Comments on October 23, 2017, Caltrans Comments dated November 7, 2017, Department of Transportation dated March 23, 2018, April 27, 2018 and October 8, 2019. The report has been updated to reflect the rerevised site plan and proposal to provide an IOD for the future widening of North Centre City Parkway.

The traffic study analyzes the traffic impacts related to the proposed project on the surrounding roadways and intersections under Existing Conditions, Existing Plus Project Conditions and Opening Day 2018 with and without the project Conditions.

If you have any questions, please feel free to contact this office.

Sincerely,

DARNELL & ASSOCIATES



Billy E. Darnell, P.E.
Principal Engineer
RCE: 22338



Date Signed: 10/15/2019

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170405 - KA Enterprises Mega Mart Traffic Analysis_ (Oct 2019)

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FOR

KA ENTERPRISES MEGA MART

IN THE
COUNTY OF SAN DIEGO

Submitted To:

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October 15, 2019

170405 - KA Enterprises Mega Mart Traffic Analysis_ (Oct 2019)

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SECTION I – INTRODUCTION

PROJECT DESCRIPTION

The applicant proposes to develop the Mini Mart/Gas Station Project on 1.67 acres. The Mini Mart/Gas Station is proposing 16 Vehicle Fueling positions with a 3,500 Convenience Store located at 26746 Mountain View Road in Escondido California. The project is located on the southwest corner of Deer Springs Road and N. Centre City Parkway-Champagne Boulevard in the North Metro Area of San Diego County. A vicinity map is provided on Figure 1. A schematic site plan is provided on Figure 2. The existing site is presently developed with a 2,696 square foot retail building for patio and outdoor furniture. Figure 3 is a Google Earth Map of the existing site. Review of Figure 2 shows that the project only has access to North Centre City Parkway. Access to Deer Springs Road and Interstate 15 is controlled and access restricted by Caltrans.

As detailed in this report, development of the proposed Mini Mart/Gas Station property is estimated to generate a total of 2,560 average daily driveway trips, 179 AM peak hour driveway trips, and 205 PM peak hour driveway trips. With credit for the existing traffic to/from the site, the project will add 1,735 daily, 126 AM peak hour trips and 138 PM peak hour trips to the surrounding roadways.

SCENARIOS STUDIED

The following traffic scenarios were analyzed in this report:

Existing Conditions refers to that condition which exists on the ground today (2017), including existing traffic volumes and existing lane configurations at intersections and on roadway segments.

Existing Plus Project Conditions refers to that condition which includes the project traffic added onto existing traffic volumes.

Opening Day (2018) Conditions refers to that condition which exists on the ground Opening Day (2018), including 2018 traffic volumes and lane configurations at intersections and on roadway segments.

Opening Day (2018) Plus Project Conditions refers to the (2018) Opening Day plus Project Traffic Conditions includes project traffic added onto the (2018) Opening Day traffic volumes.

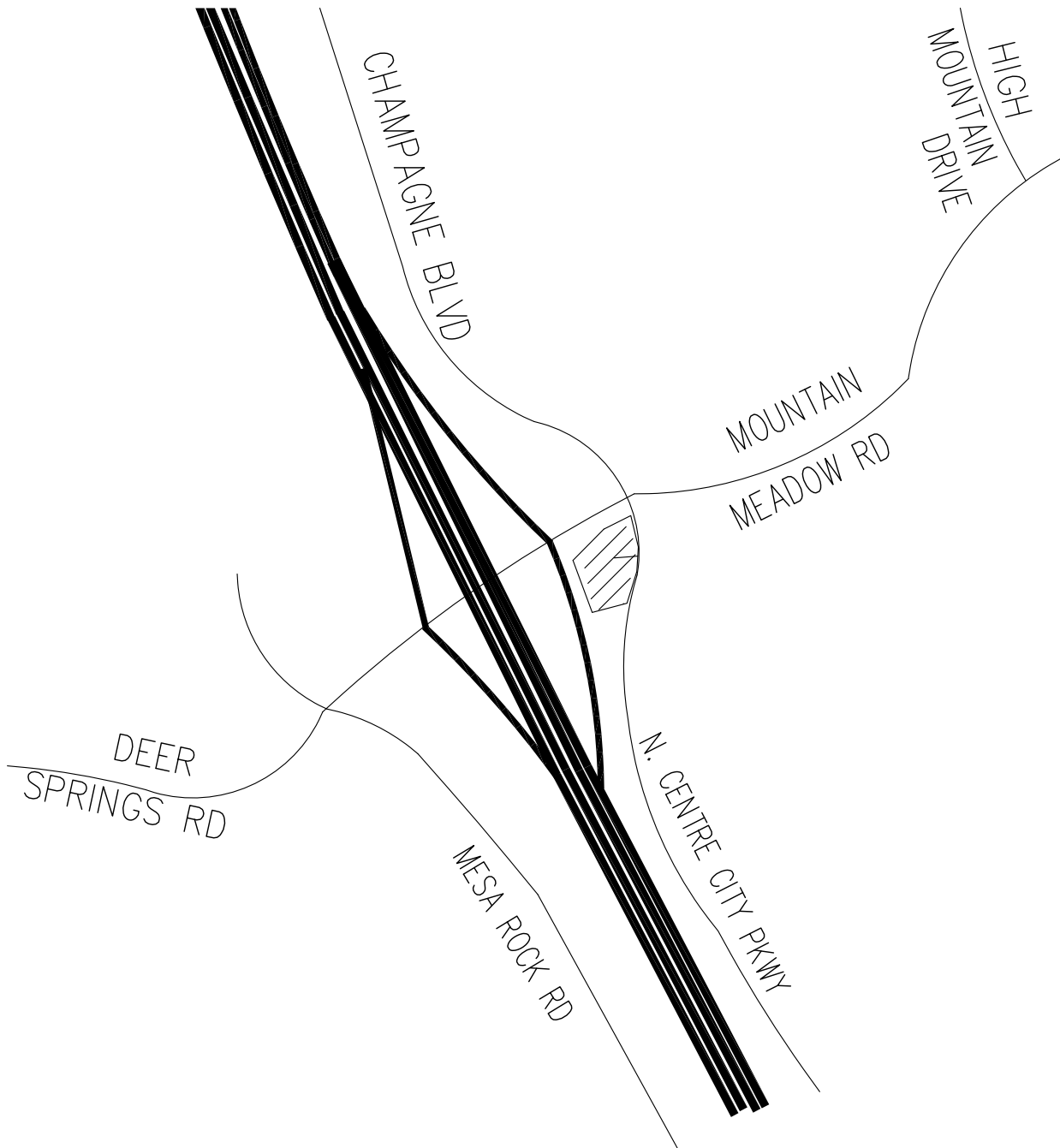
LEVEL OF SERVICE

Level of Service (LOS) is a professional industry standard by which the operating conditions of a given roadway segment or intersection is measured. Level of Service is defined on a scale of “A” to “F”; where LOS “A” represents the best operating conditions and LOS “F” represents the worst operating conditions. LOS “A” facilities are characterized as having free flowing traffic conditions with no restrictions on maneuvering or operating speeds; traffic volumes are low and travel speeds are high. LOS “F” facilities are characterized as having forced flow with many stoppages and low operating speeds. Table 1 shows the delay, miles per hour (mph), and ADT ranges that are equivalent to each Level of Service. In general, the region-wide goal for an acceptable Level of Service on all roadway segments and intersections is “D.”

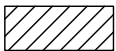
Table 1 - Level of Service Ranges			
Level of Service	Roadway Segments - Average Daily Traffic (ADT) Volume ¹	Signalized Intersections - Delay (Seconds/Vehicle) ²	Unsignalized Intersections - Delay (Seconds/Vehicle) ²
A	Less Than 1,900	Less Than or Equal to 10.0	Less Than or Equal to 10.0
B	1,901 to 4,100	10.1 to 20.0	10.1 to 15.0
C	4,101 to 7,100	20.1 to 35.0	15.1 to 25.0
D	7,101 to 10,900	35.1 to 55.0	25.1 to 35.0
E	10,901 to 16,200	55.1 to 80.0	35.1 to 50.0
F	Greater Than 16,200	Greater than 80.0	Greater than 50.0

¹ The volume ranges are based on the County of San Diego Circulation Element of a Light Collector

² The delay ranges shown are based on the 2010 Highway Capacity Manual (HCM).



LEGEND



— PROJECT SITE

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FIGURE 1
VICINITY MAP

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FIGURE 3
GOOGLE EARTH MAP of Existing Site

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ANALYSIS METHODOLOGY

The roadway segment daily LOS was determined by comparing the average daily traffic (ADT) volumes under all traffic conditions to the capacity of the roadway according to its roadway cross-section and classification. For the purpose of this report, the daily traffic volumes of the roadway segments in the vicinity of the project were compared to the County of San Diego Level of Service classification thresholds. The daily (24 hour) traffic count sheets, and the “Summary of County of San Diego Public Road Standards”.

Synchro, Version 8.0, was utilized to analyze the morning and afternoon peak hour conditions of the intersections in the project vicinity. The signalized intersection methodology defines LOS based on delay using variables such as lane configuration, traffic volumes, and signal timings. The unsignalized intersection methodology defines LOS based on the longest delay experienced by any single movement. Since the Synchro program calculates the average delay per vehicle, there may be instances where the Synchro analysis will show a reduction in delay with the addition of more traffic. This phenomenon occurs when the additional traffic is added to a movement that experiences a shorter amount of delay, thereby decreasing the intersection’s average delay per vehicle (i.e. a larger amount of vehicles will have to wait a shorter time while only a few vehicles have to wait an extended period of time). It should be noted that the Synchro program is based on the 2010 Highway Capacity Manual (HCM).

The signalized intersection methodology defines LOS based on delay using variables such as lane configuration, traffic volumes, and signal timings. The unsignalized intersection methodology defines LOS based on the longest delay experienced by any single movement. The Intersecting Lane Vehicle method determines the operating condition of an intersection based upon the number of intersecting vehicles that enter the intersection per lane during the hour (ILV/hr). Where less than 1200 ILV/hr represents stable flow, 1200 to 1500 ILV/hr represents unstable flow with considerable delays possible, and 1500 ILV/hr represents capacity, or stop-and-go operation with severe delay and heavy congestion. Since the upper limits of the ILV analysis is based on the premise of an operating condition of LOS C or better, and since LOS D was considered an acceptable level of service, the ILV analysis was not utilized to determine project significance.

REPORT ORGANIZATION

Following this section, Section II evaluates the existing roadway characteristics and traffic conditions surrounding the project area. Section III examines the project trip generation and distribution assumptions. Section IV analyzes the traffic for existing, existing plus project conditions, opening day (2018) conditions with and without the proposed project. Section V addresses project access and on-site circulation. Section VI provides recommended Impacts/Mitigation Measures and Section VII summarizes the report’s findings and conclusions.

SECTION II – EXISTING CONDITIONS

This section of the traffic study is intended to assess the existing conditions of the roadways and intersections within the vicinity of the project to determine travel flow and/or delay difficulties, if any, that exist prior to adding the traffic generated by the proposed project. The existing conditions analysis establishes a base condition which is used to assess the other scenarios discussed in this report.

Darnell & Associates, Inc. (D&A) conducted a field review of the area surrounding the project in April 2017. The existing roadway geometrics are illustrated in Figure 4.

EXISTING ROADWAY CHARACTERISTICS

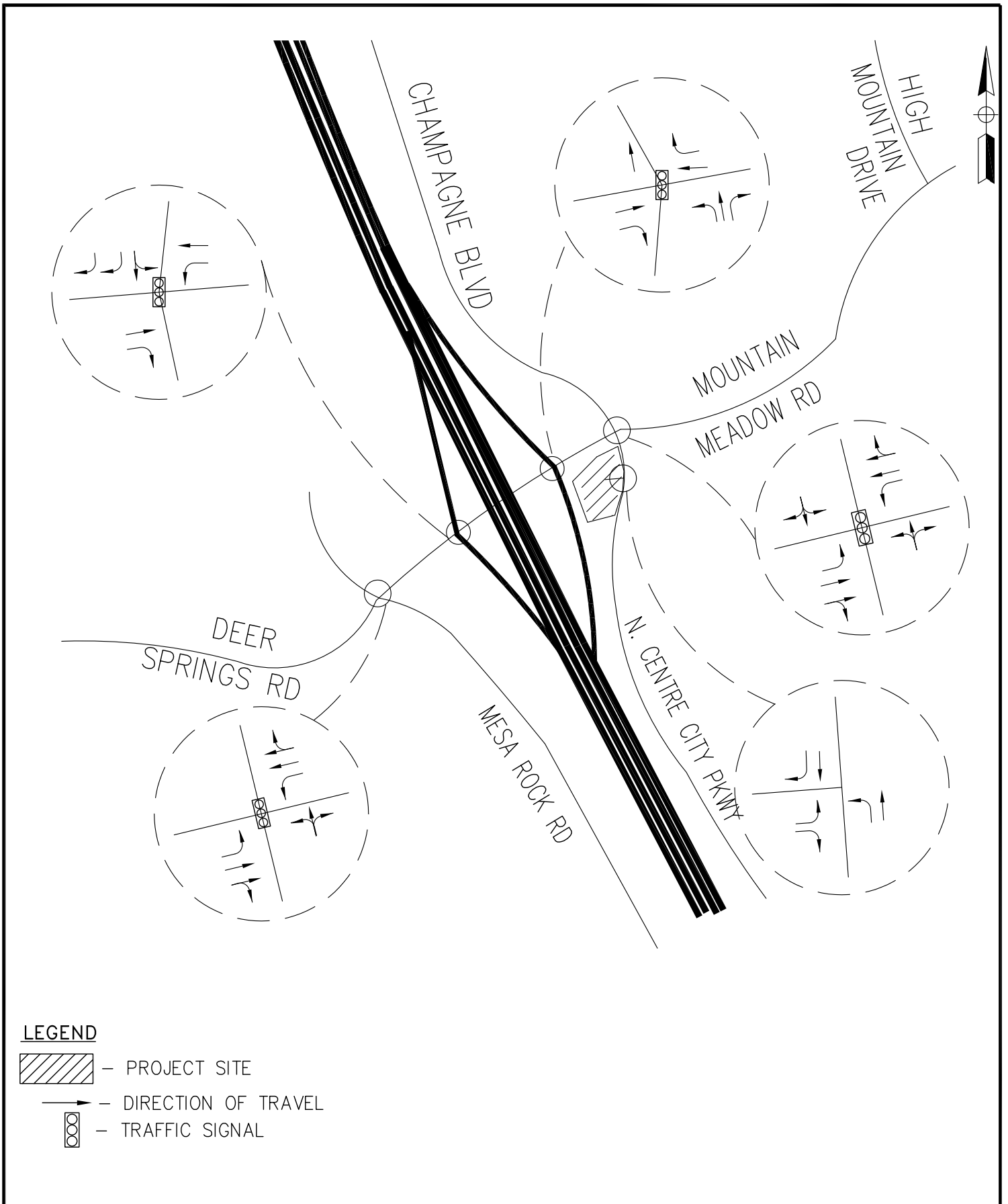
The key segments analyzed in the study area are identified below:

Interstate 15 (I-15) is a north/south eight (8)-lane freeway extending from Interstate 5 in Chula Vista through San Diego County and into Riverside County. The posted speed limit is 65 miles per hour (mph) south of Deer Springs Road and 70 mph north of Deer Springs Road. The Deer Springs Ramps are currently signalized.

Champagne Boulevard extends south from Gopher Canyon Road to Mountain Meadow Road as a north/south two (2)-lane undivided circulation element roadway with a posted speed limit of 55 mph. Champagne Boulevard flares at the intersections with Welk View Drive and Lawrence Welk Drive to provide acceleration and deceleration lanes. The current cross-section of Champagne Boulevard is equivalent to a Light Collector with a capacity of 16,200 ADT at LOS “E”. The ultimate Circulation Element Classification of Champagne Boulevard is a 4.1 B Major Road with intermittent turn lanes and a capacity of 30,800 ADT at LOS “D”.

North Centre City Parkway extends south of Mountain Meadow Road as a north/south two (2) lane undivided circulation element roadway with a posted speed limit of 55 mph. The current cross-section of North Centre City Parkway is equivalent to a Light Collector with a capacity of 16,200 ADT at LOS “E”. The ultimate Circulation Element Classification of North Centre City Parkway is a 4.1 B Major Road with intermittent turn lanes and a capacity of 34,200 ADT at LOS “E”.

Deer Springs Road (SF 1414) extends west of Champagne Boulevard as an east/west circulation element roadway. West of Mesa Rock Road, Deer Springs Road is a two (2)-lane undivided roadway with a current capacity equivalent to that of a Light Collector, 16,200 ADT at LOS “E”. The segment of Deer Springs Road between Mesa Rock Road and the I-15 southbound ramp is currently striped to provide two (2) travel lanes in each direction. Immediately east of Mesa Rock Road, the segment is striped to provide two (2) eastbound and two (2) westbound through lanes. On the bridge section between the I-15 northbound and southbound ramps, Deer Springs Road is striped with one (1) through lane and one (1) left turn lane in each direction and has a current capacity equivalent to that of a Town Collector, 19,000 ADT at LOS “E”. Between Champagne Boulevard and the I-15 northbound ramps, Deer Springs Road is improved to the standards of a four (4)-lane Collector Road in terms of pavement width. However, the westbound lanes are currently striped with one (1) through lane and one (1) right turn lane and the eastbound lanes are currently striped with one (1) left turn lane and two (2) through lanes. The current capacity of the segments of Deer Springs Road between Mesa Rock and the I-15 northbound ramp is equivalent to that of a Town Collector, with a capacity of 19,000 ADT at LOS “E”. Between the I-15 northbound on-off ramp and Champagne Boulevard the roadway is improved equivalent to a 4.2B Boulevard with a capacity of 28,000 ADT at LOS “E”. Project access to Deer Springs Road is restricted due to Caltrans right-of-way acquisition for construction of the I-15 Freeway and owns the land between the existing and future right-of-way for Deer Springs Road.



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FIGURE 4
EXISTING (2017) CONDITIONS

The ultimate Circulation Element Classification of Deer Springs Road between Twin Oaks Valley Road and I-15 northbound ramp is a 6.2 Prime Arterial (a six-lane divided roadway with a median and at-grade interchanges, 122 feet of ROW, and a capacity of 57,000 ADT at LOS “E”). East of the I-15 northbound ramp is designed a 4.1 B Major Road with intermittent turn lanes and a capacity of 34,200 ADT at LOS “E”.

Mountain Meadow Road (SC 990) extends east of Champagne Boulevard as an east/west four (4)-lane undivided circulation element roadway. The current and ultimate capacity of Mountain Meadow Road is equivalent to that of a 4.1 B Major Road with intermittent turn lanes and a capacity of 34,200 ADT at LOS “E”. The posted speed on Mountain Meadow Road is 50 mph.

ROADWAY SEGMENT DAILY TRAFFIC

Existing traffic volumes for I-15 were obtained from the Caltrans website and are representative of 2015 traffic volumes. For the remaining roadways in the study area, Figure 5 illustrates the existing traffic volumes of the roadways in the vicinity of the project. Figure 5 also presents the AM and PM peak hour traffic volumes at the four (4) intersections that were also collected in April 2017. Twenty-four hour count data for all other key roadway segments were collected in April 2017. Count summaries are included in Appendix A.

KEY INTERSECTIONS

Figure 3 provides intersection configurations and traffic control for the key intersections. The key intersections analyzed in the study area are identified below:

- Champagne Boulevard/Mountain Meadow Road/Deer Springs Road (signalized);
- Deer Springs Road/I-15 Northbound Ramps (signalized);
- Deer Springs Road/I-15 Southbound Ramps (signalized); and
- Deer Springs Road/Mesa Rock Road (signalized).

INTERSECTION TRAFFIC COUNTS

Morning and afternoon peak hour traffic counts for the key intersections were counted in April 2017. Figure 5 presents the existing conditions traffic volumes used in this analysis. A copy of the AM and PM peak hour turn counts can be found in Appendix A.

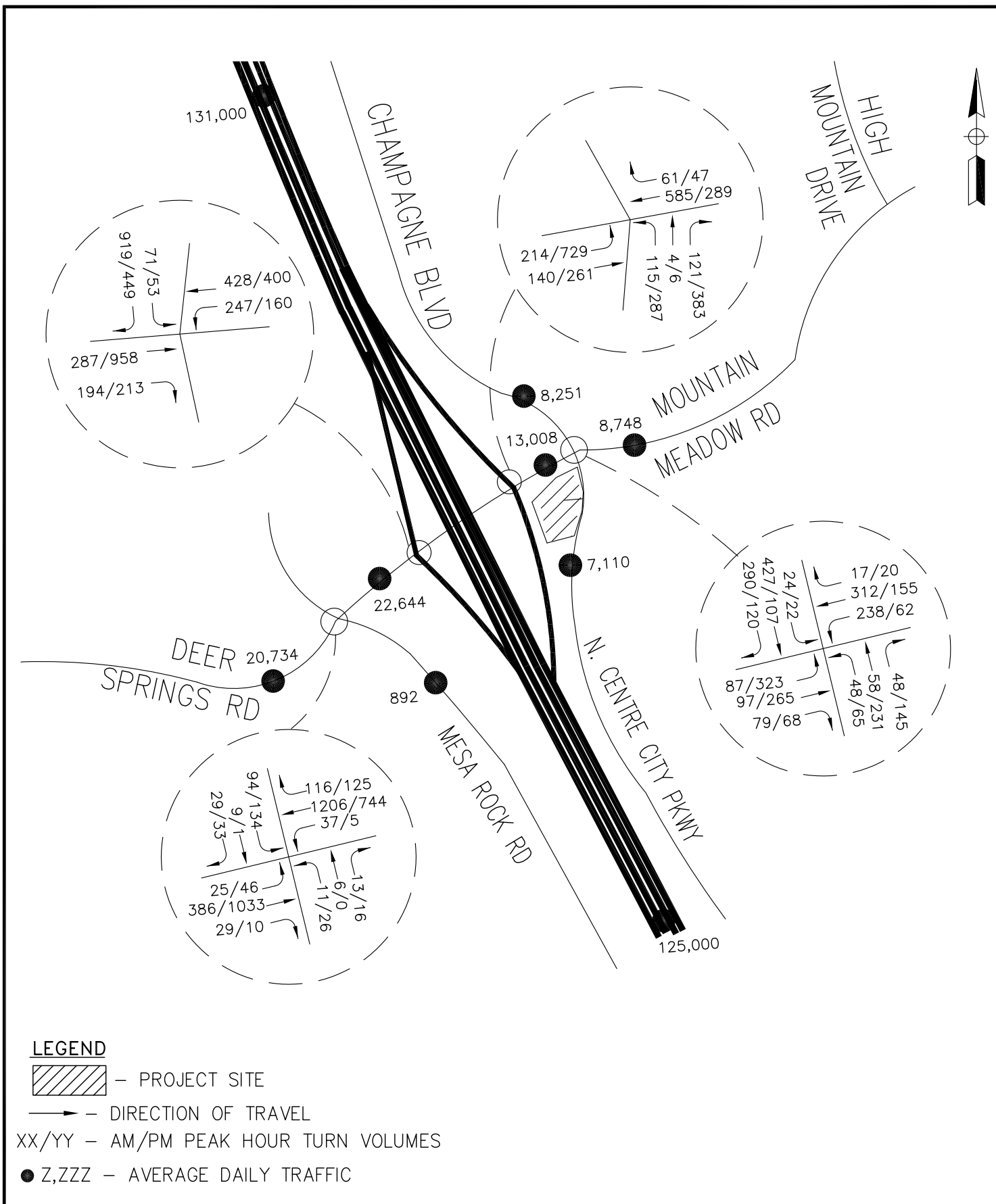
EXISTING LEVEL OF SERVICE CONDITIONS

Roadway Segments

The existing roadway segment levels of service are summarized in Table 2. As shown in Table 2, the following:

- Deer Springs Rd from Mesa Rock Rd to I-15 Southbound Ramp (operates at LOS “F”),
- Deer Springs Rd between I-15 Southbound & I-15 Northbound Ramp (operates at LOS “F), and
- Deer Springs Rd between I-15 Southbound & I-15 Northbound Ramp and N. Centre City Parkway (operates at LOS “F).

All other key roadway segments analyzed currently operate at LOS D (the lowest acceptable LOS within the County of San Diego) or better. A copy of the level of service calculations for Interstate 15 is provided in Appendix C.



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FIGURE 5
EXISTING (2017) TRAFFIC COUNTS

Table 2 - Existing Roadway Segment Level of Service Summary				
County of San Diego Roadway Segments				
Roadway Segment	Classification	LOS "E" Capacity (b)	ADT	LOS
North Centre City Parkway				
South of Mountain Meadow Rd	2.2 E LC	16,200	7,110	D
Deer Springs Road				
West of Mesa Rock Rd	2.2 E LC	16,200	20,734	F
Mesa Rock Rd to I-15 SB Ramp	2.2 C LC	19,000	22,644	F
I-15 NB Ramp to Champagne Blvd	4.2 B	28,000	13,008	A
Mountain Meadow Road				
Champagne Blvd to High Mountain Dr	4.1B	34,200	8,748	A
Champagne Boulevard				
North of Deer Springs Road	2.2 E LC	16,200	8,251	D
Mesa Rock Road				
South of Deer Springs Road	2.2 E LC	16,200	892	A
(a) The LOS for Interstate 15 were determined based on the Caltrans District 11 procedures. (b) Capacity is based on the upper limit of LOS D per the County of San Diego Level of Service Thresholds (c) Level of Service Thresholds are not typically applied to non-circulation element roads since their primary purpose is to serve abutting lots, not carry through traffic. The capacity shown here is the recommended upper limit of LOS C. < C = the traffic volume is less than the upper limit for LOS C; > C = the traffic volume is greater than the upper limit for LOS C ADT = Average Daily Traffic, V/C = Volume to Capacity Ratio, LOS = Level of Service 8F = 8-Lane Freeway; 2.2E LC = Light Collector; 4.1B= Major Road with intermittent turn lanes; 2.2C LC = Light Collector				

Intersections

The results of the Synchro Software condition analysis for the key intersections are summarized in Table 3, respectively. A copy of the Synchro worksheets for existing conditions can be found in Appendix C.

Table 3 shows that based on the Synchro analysis, shows all key intersections analyzed currently operate at an acceptable LOS "D" or better.

Table 3 - Existing Intersection Level of Service Summary						
Intersection	Traffic Control	Critical Movement	AM Peak		PM Peak	
			Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Deer Springs Road (E-W) @ Mesa Rock Road (N-S)	Signalized	Intersection	21.3	C	20.4	C
Deer Springs Rd (E-W) @ I-15 SB Ramps (N-S)	Signalized	Intersection	30.4	C	27.7	C
Deer Springs Rd (E-W) @ I-15 NB Ramps (N-S)	Signalized	Intersection	25.6	C	46.3	D
Deer Springs Rd (E-W) @ Champagne Blvd/ N. Centre City Parkway & Mountain Meadow Road (N-S)	Signalized	Intersection	32.4	C	26.2	C
sec/veh = seconds of delay per vehicle; LOS = Level of Service; E-W = East-West Roadway; N-S = North-South Roadway						

SECTION III – PROJECT RELATED CONDITIONS

TRIP GENERATION

Trip Generation Rate Calculations

The weekday trip generation potential for the proposed project is based on daily and peak hour trip generation rates obtained from the *(Not So) Brief Guide of Traffic Generators for the San Diego Region* published by the San Diego Association of Governments (SANDAG) in April 2002. Utilizing the SANDAG rates and the characteristics of the proposed project, estimates of daily and peak hour traffic volumes generated by the project can be calculated. Table 4 summarizes the weekday trip generation rates and calculations for the proposed project.

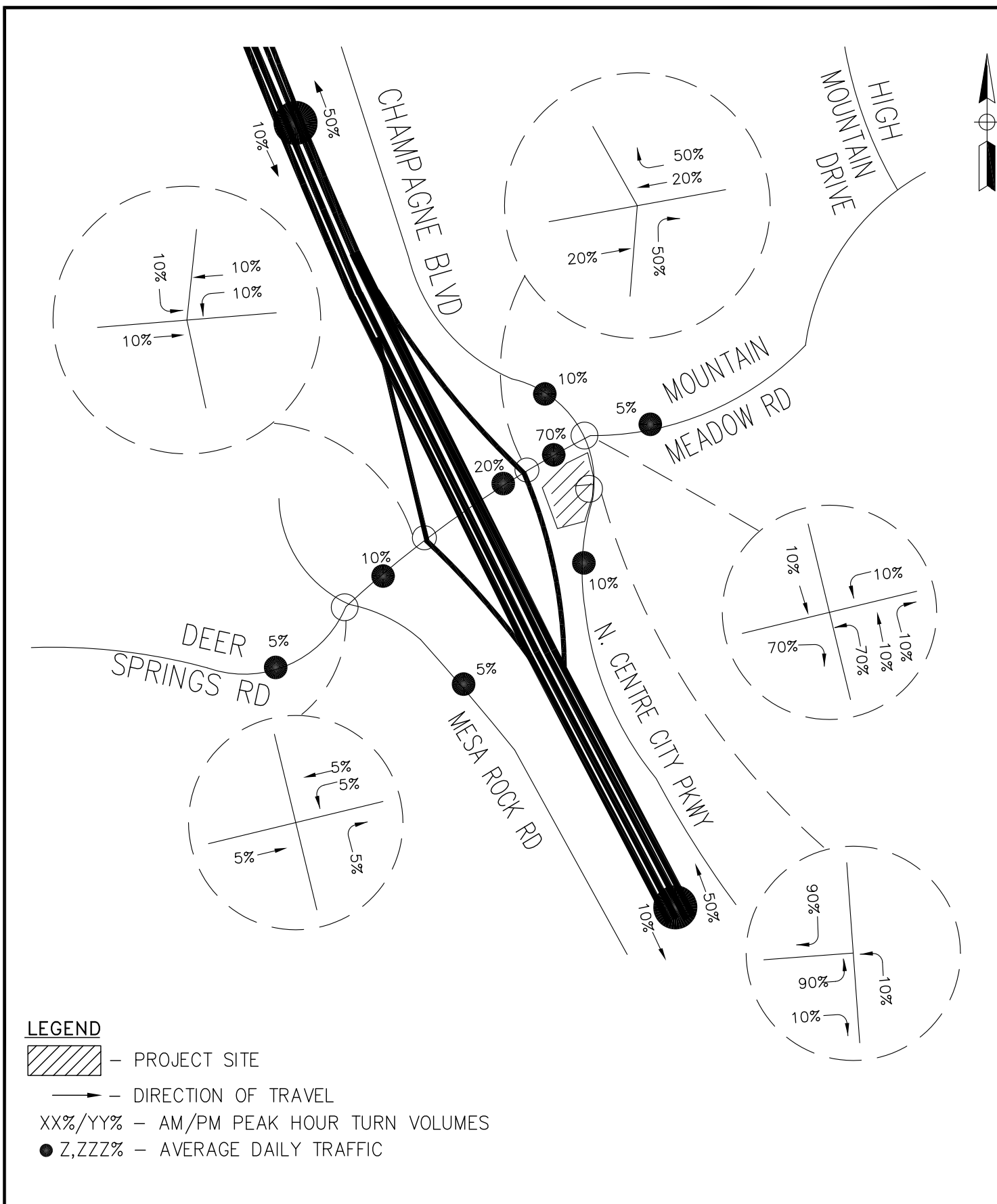
As shown in Table 5, the proposed project is estimated to generate 2,560 average weekday daily trips with 179 trips being generated during the morning peak hour and 205 trips being generated during the afternoon peak hour. Further review of Table 5 shows that the total cumulative trips with pass-by reductions and credit for the existing Patio Furniture Use on the site results in 1,735 Daily, 126 AM peak hour trips and 138 PM peak hour trips to be added to the surrounding roadways in the study area.

Table 4 - Trip Generation Rates and Calculations Summary							
Land Use	Daily	AM Peak Hour			PM Peak Hour		
		Percentage of Daily	% In	% Out	Percentage of Daily	% In	% Out
Gas Station with Food Mart (3,500 SF)	160 trips/ fueling station	7%	50%	50%	8%	50%	50%
Retail	40/KSF	3%	60%	40%	9%	50%	50%

Table 5 - Project Trip Generation Summary								
Land Use	Density	Daily	AM Peak Hour			PM Peak Hour		
			Total	In	Out	Total	In	Out
Project Trip Generation								
Proposed Gas Station with Food Mart	16 Fueling Stations	2,560	179	90	89	205	103	102
a) 28% Pass-by Trips		-717	-50	-25	-25	-57	-29	-28
Existing Land Use Trip Credits								
Land Use	Density	Daily	AM Peak Hour			PM Peak Hour		
Patio Furniture Store	2,696 S.F.	-108	-3	-2	-1	-10	-5	-5
New Driveways Trips								
Proposed Less Existing		1,735	126	63	63	138	69	69
Note: Trip generation rates are based on SANDAG’s (Not So) Brief guide to Vehicular Generation Rates for the San Diego Region (April 2002). Driveway trips reflect the total project traffic. Pass-By Trips: Typically, the SANDAG Publication identifies Pass-By reductions of 50%. (a) However due to the location of the project site and anticipated higher project demand from the south on the I-15 freeway, the pass-by reduction was reduced to 28%.								

TRIP DISTRIBUTION & ASSIGNMENT

The trip distribution percentages for the project were estimated based on the project location and Applicants anticipation that the location of the site will attract higher volumes from the existing traffic northbound on I-15. Figure 6 demonstrates the project trip distribution percentages. The project traffic presented on Table 5 was then assigned to the roadway network and is shown on Figure 7.

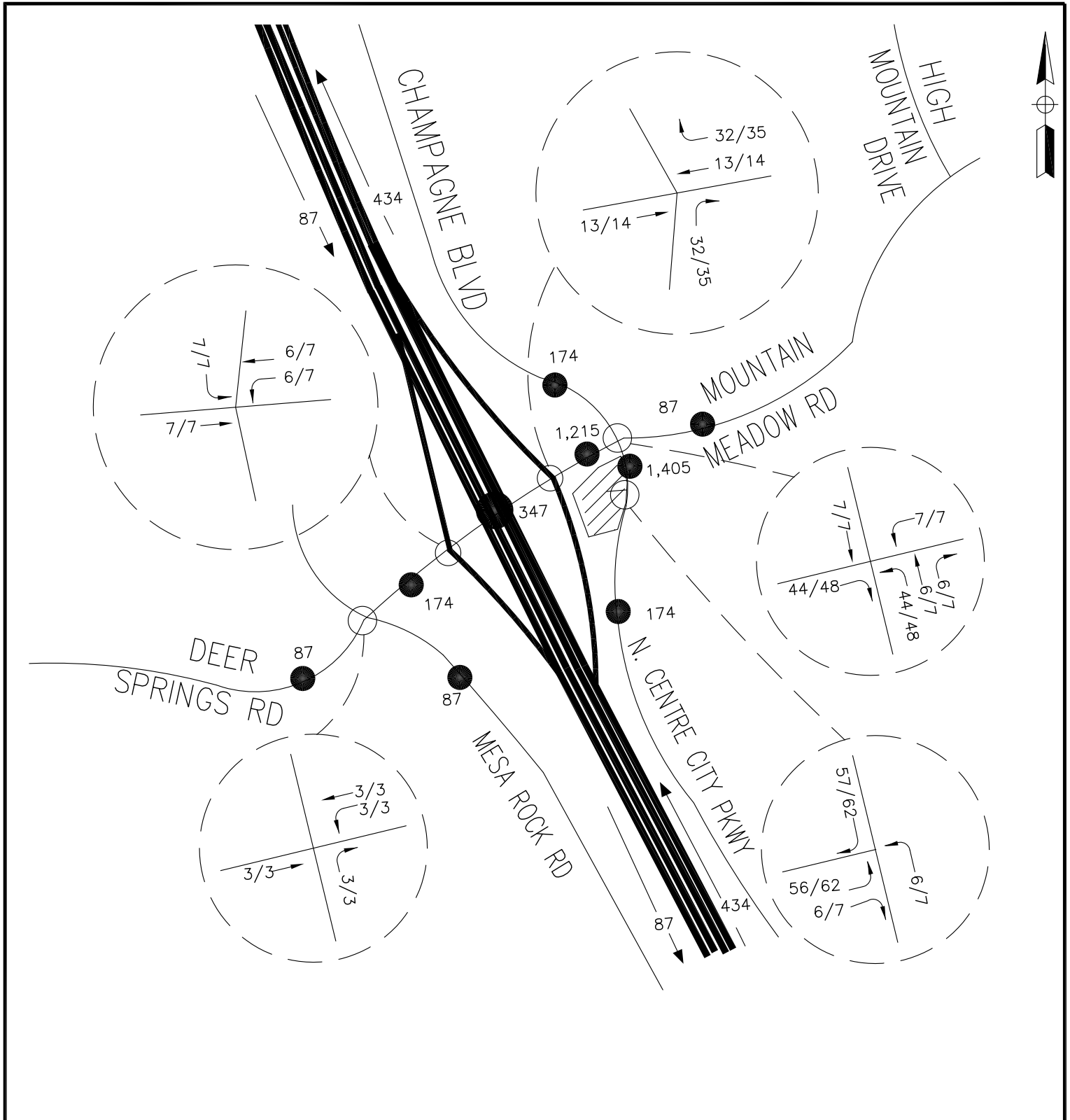


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FIGURE 6
PROJECT TRIP DISTRIBUTION



LEGEND



— PROJECT SITE

—>— DIRECTION OF TRAVEL

XX/YY — AM/PM PEAK HOUR TURN VOLUMES

● Z,ZZZ — AVERAGE DAILY TRAFFIC

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FIGURE 7
PROJECT TRAFFIC VOLUMES

SECTION IV – IMPACTS/MITIGATION MEASURES

POLICIES AND SIGNIFICANCE STANDARDS

The County of San Diego General Plan Mobility Element Policy M-2.1 requires development projects to provide associated road improvements necessary to achieve a level of service of “D” or higher on all Mobility Element roads except for those where a failing level of service has been accepted by the County pursuant to the criteria specifically identified in the accompany text box (Criteria for Accepting a Road Classification with Level of Service “E”/“F”). When development is proposed on roads where a failing level of service has been accepted the policy requires feasible mitigation in the form of road improvements or a fair share contribution to a road improvement program, consistent with the Mobility Element road network.

To address project impacts the County of San Diego Guidelines for Determining Significance and Report Format and Content Requirements for Transportation and Traffic dated August 24, 2011 identifies criteria, guidelines and standards to determine if, a discretionary project which has a significant impact on roadways will be required, as a condition of approval, to make “improvements or other measures necessary to mitigate traffic impacts to avoid reduction in the existing Level of Service below ‘D’ on off-site and on-site abutting County of San Diego’s Circulation Element roads. New development that would significantly impact congestion on roads at LOS ‘E’ or ‘F’, either currently or as a result of the project, will be denied unless improvements are scheduled to increase the LOS to ‘D’ or better or appropriate mitigation is provided. Appropriate mitigation would include a fair share contribution in the form of road improvements or a fair share contribution to an established program or project. If impacts cannot be mitigated, the project will be denied unless a specific statement of overriding findings is made pursuant to Section 15091(b) and 15093 of the State CEQA Guidelines.”

LEVELS OF SIGNIFICANCE STANDARDS

The *County of San Diego Guidelines for Determining Significance Transportation and Traffic, Second Modification August 24, 2011* was developed to evaluate the significance of traffic impacts on roadways and intersections which are currently operating at LOS E or F. A summary of the County’s Guidelines is provided in Table 6.

Table 6 - Measures of Significant Project Impacts					
LOS	Allowable Increase on Congested Roads and Intersections				
	Intersections		Road Segments		
	Signalized	Unsignalized	2-Lane Road	4-Lane Road	6-Lane Road
LOS E	Delay of 2 seconds or less	20 or less peak hour trips on a critical movement	200 ADT	400 ADT	600 ADT
LOS F	Either a Delay of 1 second, or 5 peak hour trips or less on a critical movement	5 or less peak hour trips on a critical movement	100 ADT	200 ADT	300 ADT
County Notes: – A critical movement is an intersection movement (right turn, left turn, and through-movement) that experiences excessive queues, which typically operate at LOS F. Also, if a project adds significant volume to a minor roadway approach, a gap study should be provided that details the headways between vehicles on the major roadway. – By adding proposed project trips to all other trips from a list of projects, this same table must be used to determine if total cumulative impacts are significant. If cumulative impacts are found to be significant, each project that contributes additional trips must mitigate a share of the cumulative impacts. – The County may also determine impacts have occurred on roads even when a project’s traffic or cumulative impacts do not trigger an unacceptable level of service, when such traffic uses a significant amount of remaining road capacity. – For determining significance at signalized intersection with LOS F conditions, the analysis must evaluate both the delay <u>and</u> the number of trips on a critical movement, exceedance of either criteria result in a significant impact.					
ADT = Average Daily Traffic; LOS = Level of Service, sec = Seconds of Delay per Vehicle					

Roadway Segments

As shown in Table 6, per the County's Guidelines, "traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant traffic volume or level of service traffic impact on a road segment:

- The additional or redistributed ADT generated by the proposed project will significantly increase congestion on a Circulation Element Road or State Highway currently operating at LOS E or LOS F, or will cause a Circulation Element Road or State Highway to operate at a LOS E or LOS F as a result of the proposed project as identified in Table 6, or
- The additional or redistributed ADT generated by the proposed project will cause a residential street to exceed its design capacity."

As discussed on pages 13 and 14 of the *County of San Diego Guidelines for Determining Significance, Second Modification August 24, 2011*, an increase of the daily thresholds established for roadway segments operating at LOS E would result in only one additional car every 2.4 minutes per lane while the thresholds established for roadway segments operating at LOS F would result in only one additional car every 4.8 minutes. Therefore, the thresholds identified in Table 6, in most cases, would result in changes to traffic flow that would not be noticeable to the average driver and would thus not constitute a significant impact on the roadway.

Two-Lane Highways

Intersection Spacing Over One (1) Mile

In the *County of San Diego Guidelines for Determining Significance Transportation and Traffic, Second Modification August 24, 2011* the County of San Diego established a higher capacity and a higher impact significance level for two-lane highways (such as State Route 76) with signalized intersection spacing over one mile. Table 7 provides a summary of the level of service criteria and guidelines for significance for two-lane highways with intersection spacing over one-mile.

Table 7 - Measures of Significance on 2-Ln Hwys		
Level of Service	LOS Criteria	Impact Significance Level
E	> 16,200 ADT	>325 ADT
F	> 22,900 ADT	>225 ADT
Note: Where detailed data is available, the Director of Public Works may also accept a detailed level of service analysis based upon the two-lane highway analysis procedures provided in the Chapter 20 Highway Capacity Manual		

Intersection Spacing Less Than One (1) Mile

"Similar to the experience of drivers in urban areas with closely spaced intersections, the functionality of two-lane highway conditions with signalized intersection spacing under one-mile becomes constrained not due to the segment capacity but the intersection operations. Therefore, the assessment of operates of intersection on two-lane highways shall be guided by a Level of Service standard. Level of Service for purposes of this significance guideline is based upon the overall intersection operations similar - to Urban Street analysis in Chapter 15 Highway Capacity Manual." Impacts for the two-lane highways with signalized intersection under one mile spacing will be determined by evaluating the intersection impact criteria identified in Table 8.

Table 8 - Measures of Significance on 2-Ln Hwys w/ Signalized Intersection Spacing < 1 Mile	
Level of Service	Adjacent Signalized Intersection
E	Delay of 2 seconds
F	Delay of 1 second, or 5 peak hour trips on a critical movement
Notes: – A critical movement is an intersection movement (right turn, left turn, through-movement) that experiences excessive queues which typically operate at LOS F. – By adding proposed project trips to all other trips from a list of projects, these same tables are used to determine if total cumulative impacts are significant. If cumulative impacts are found to be significant, each project is responsible for mitigating its share of the cumulative impact. – The County may also determine impacts have occurred on roads even when a project's traffic or cumulative impacts do not trigger an unacceptable level of service, when such traffic uses a significant amount of remaining road capacity.	

It should be noted that per the *County of San Diego Guidelines for Determining Significance Transportation and Traffic, Second Modification August 24, 2011*, “impacts related to operational features on two-lane highways will be evaluated on a case-by-case basis based upon traffic flow patterns, geometrics, available sight distance, accident histories, and other factors.”

Signalized Intersections

“Traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant traffic volume or level of service traffic impact on a signalized intersection”:

- “The additional or redistributed ADT generated by the proposed project will significantly increase congestion on a signalized intersection currently operating at LOS E or LOS F, or will cause a signalized intersection to operate at a LOS E or LOS F as identified in Table 8.”
- Based upon an evaluation of existing accident rates, the signal priority list, intersection geometrics, proximity of adjacent driveways, sight distance or other factors, the project would significantly impact the operations of the intersection.”

As discussed on page 16 of the *County of San Diego Guidelines for Determining Significance Transportation and Traffic, Second Modification August 24, 2011*, an increase in delay of two seconds or less, the threshold established for signalized intersections operating at LOS E, “...is a small fraction of the typical cycle length for a signalized intersection that ranges between 60 and 120 seconds. The likelihood of increased queues forming due to the additional two seconds of delay is low.” Thus, the increase in delay of two (2) seconds or less, on average, would result in changes to traffic flow that would not be noticeable to the average driver and would thus not constitute a significant impact. Since small changes and disruptions to the traffic flow at a signalized intersection can have a greater effect on the overall intersection operation when the intersection is operating at LOS F, versus LOS E, a more stringent guideline of one (1) second of delay was established for intersections operating at LOS F.

The five (5)-peak hour trip threshold, established for the critical movement of a signalized intersection operating at LOS F, when spread out over the peak hour, results in an increase of one (1) vehicle every 12 minutes or 720 seconds. This increase would not be noticeable to the average driver because one additional vehicle during a 12-minute interval on average would clear the traffic signal cycles well within the 12-minute period. Further, even if all five (5) additional peak hour vehicles arrived at the same time, these trips would also, on average, clear the traffic cycle and the existing queue lengths would be re-established. Thus, the increase of five (5) peak hour trips to a critical movement at a signalized intersection, on average, would result in changes to traffic flow that would not be noticeable to the average driver and would thus not constitute a significant impact.

Unsignalized Intersections

“Traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant impact at an unsignalized intersection as listed in Table [9] and described as text below:”

- “The additional or redistributed ADT generated by the proposed project will add 21 or more peak hour trips to a critical movement of an unsignalized intersection, and cause an unsignalized intersection to operate below LOS D, or
- The additional or redistributed ADT generated by the proposed project will add 21 or more peak hour trips to a critical movement of an unsignalized intersection currently operating at LOS E, or
- The additional or redistributed ADT generated by the proposed project will add 6 or more peak hour trips to a critical movement of an unsignalized intersection, and cause the unsignalized intersection to operate at LOS F, or
- The additional or redistributed ADT generated by the proposed project will add 6 or more peak hour trips to a critical movement of an unsignalized intersection currently operating at LOS F, or
- Based upon an evaluation of existing accident rates, the signal priority list, intersection geometrics, proximity of adjacent driveways, sight distance or other factors, the project would significantly impact the operations of the intersection.”

As discussed on page 18 of the *County of San Diego Guidelines for Determining Significance Transportation and Traffic, Second Modification August 24, 2011*, the addition of 20 peak hour trips to a critical movement, would result in an increase of one (1) vehicle every 3.0 minutes or 180 seconds. “Assuming the average wait time for a vehicle in the critical movement queue is less than 3.0 minutes, which is typical for LOS E conditions; this would not be noticeable to the average driver and would not be considered a significant impact.” Five (5) – trips spread out over an hour would result in an increase of one (1) vehicle every 12.0 minutes or 720 seconds. “This typically exceeds the average wait time in the queue and would not be noticeable to the average driver.” (See page 18 of the County’s *Guidelines for Determining Significance Transportation and Traffic*)

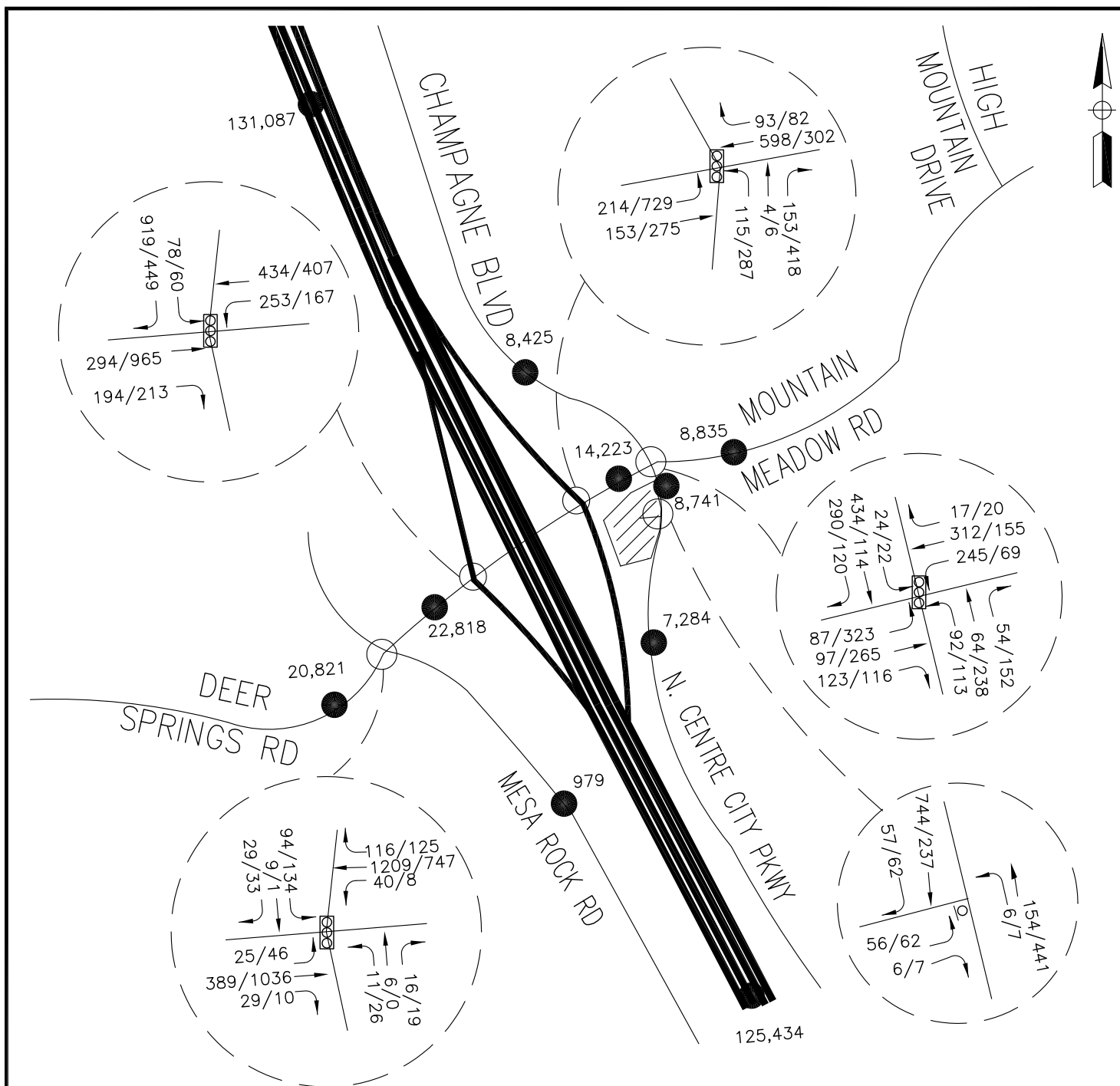
EXISTING PLUS PROJECT CONDITIONS

The daily and peak hour traffic volumes for existing plus project conditions are illustrated in Figure 8.

Roadway Segments

The existing plus project daily levels of service are summarized in Table 9. As shown in Table 9, the following roadway segments operate at LOS E or F under existing and existing plus project conditions: Deer Springs Road from West of Mesa Rock Rd to I-15 Southbound Ramps operates at LOS “F”. Deer Springs between I-15 Northbound Ramp and N. Centre City Parkway operates at LOS “A”.

Deer Springs Road west of Mesa Rock Road currently operates at LOS “F” and will continue to operate at LOS F with the addition of the proposed project. The proposed project will add 91 daily trips to this segment of Deer Springs Road. Under the PFE criteria, a significant impact would result if the project would “significantly impact congestion” on this road segment which currently operates at LOS “F”. Since the project traffic added to this segment of Deer Springs Road is less than the ADT allowed per the *County of San Diego Guidelines for Determining Significance* for a two-lane roadway operating at LOS “F”, it is concluded that the proposed project will not significantly impact congestion. Thus, based on average daily conditions and the significance thresholds identified in Table 7, the proposed project is not considered to have a significant direct impact on Deer Springs Road west of Mesa Rock Road on a daily basis.



LEGEND



- PROJECT SITE



- TRAFFIC SIGNAL



- TRAFFIC SIGNAL

→ - DIRECTION OF TRAVEL

XX/YY - AM/PM PEAK HOUR TURN VOLUMES

● Z,ZZZ - AVERAGE DAILY TRAFFIC

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FIGURE 8

EXISTING PLUS PROJECT TRAFFIC VOLUMES

Table 9 - Existing Plus Project Roadway Segment Level of Service Summary										
Freeway Segments										
Roadway Segment	Class	Capacity	Existing		Existing + Project				Sig?	
			ADT	LOS	ADT	LOS	Project ADT			
County of San Diego Roadway Segments										
Roadway Segment	Class	LOS "E" Capacity (b)	Existing		Existing + Project				Sig?	
			ADT	LOS	ADT	LOS	Project ADT			
North Centre City Parkway										
South of Mountain Meadow Rd	2.2 E LC	16,200	7,110	C	8,515	D	1,405		NO	
South of Project Access	2.2 E LC	16,200	7,110	C	7,284	D	174		NO	
Deer Springs Road										
West of Mesa Rock Rd	2.2 E LC	16,200	20,734	F	20,821	F	87		NO	
Mesa Rock Rd to I-15 SB Ramp	2.2 C LC	19,000	22,644	F	22,818	F	174		YES	
I-15 NB Ramp to Champagne Blvd	4.2B	28,000	13,008	A	14,223	A	1,215		NO	
Mountain Meadow Road										
Champagne Blvd to High Mountain Dr	4.1B	34,200	8,748	A	8,835	A	82		NO	
Champagne Boulevard										
North of Deer Springs Road	2.2 E LC	16,200	8,251	D	8,425	D	174		NO	
Mesa Rock Road										
South of Deer Springs Road	2.2 E LC	16,200	892	A	979	A	87		NO	
(a) The LOS for Interstate 15 were determined based on the Caltrans District 11 procedures. See Appendix D for the Calculations										
(b) Capacity is based on the upper limit of LOS D per the County of San Diego Level of Service Thresholds										
(c) Level of Service Thresholds are not typically applied to non-circulation element roads since their primary purpose is to serve abutting lots, not carry through traffic. The capacity shown here is the recommended upper limit of LOS C. < C = the traffic volume is less than the upper limit for LOS C; > C = the traffic volume is greater than the upper limit for LOS C. ADT = Average Daily Traffic, V/C = Volume to Capacity Ratio, LOS = Level of Service, 8F = 8-Lane Freeway; 2.2E LC = Light Collector; 4.1B= Major Road with intermittent turn lanes.										

Deer Springs Road between Mesa Rock Road and the I-15 southbound ramp currently operates at LOS “F” and will continue to operate at LOS “F” with the addition of the proposed project. The proposed project will add 174 daily trips to this segment of Deer Springs Road. Since the project traffic (174 ADT) added to this segment of Deer Springs Road is less than the 200 ADT allowed per the *County of San Diego Guidelines for Determining Significance* for a four-lane roadway operating at LOS “F”, it is concluded that the proposed project will not have a direct impact. Thus, the proposed project is not considered to not have a significant direct impact on Deer Springs Road between Mesa Rock Road and the I-15 southbound ramp on a daily basis.

Deer Springs Road between the I-15 southbound and northbound ramps currently operate at LOS “F” and will continue to operate at LOS “F” with the addition of the proposed project. The proposed project will add 347 daily trips to this segment of Deer Springs Road. Since the project traffic added to this segment of Deer Springs Road is more than the 100 ADT allowed per the *County of San Diego Guidelines for Determining Significance* for a two-lane roadway operating at LOS “F”, it is concluded that the proposed project will have a significant impact. Thus, the proposed project is considered to have a significant direct impact on Deer Springs Road between the I-15 southbound and northbound ramps.

However, as shown later in Table 10, the intersections on Deer Springs Road at the I-15 northbound and southbound ramps will continue to operate at an acceptable LOS “D” or better during both the AM and PM peak hours under existing and existing plus project conditions. Similar to two-lane highways with intersection spacing under one-mile, due to the close spacing of the signalized intersections at the northbound and southbound ramps on Deer Springs Road, the level of service will for this segment of Deer Springs Road be controlled by the operation of the intersections along the segment, rather than the daily volume. Since the intersections on both sides of the segment operate at an acceptable LOS “D” or better during both peak hours, it is determined that the level of service on the segment of Deer Springs Road between Mesa Rock Road and N. Centre Parkway would be at an acceptable level during the peak periods. Thus, based on the AM and PM peak hour operation, the proposed project is considered to not have a significant direct impact on Deer Springs Road between Mesa Rock Road and N. Centre Parkway. Therefore, mitigation is not required for the segment of Deer Springs Road between Mesa Rock Road and N. Centre Parkway.

All other roadway segments analyzed currently operate at an acceptable LOS “D” under existing conditions and will continue to operate at LOS “D” or better with the addition of the proposed project. Therefore, the project does not have a significant impact on any of the roadway segments analyzed.

Intersections

The intersections’ levels of service for existing plus project conditions are summarized in Table 10, respectively. A copy of the Synchro worksheets for existing plus project conditions can be found in Appendix D.

Table 10 shows that based on the Synchro analysis, all of the intersections analyzed operate at LOS “D” or better under existing and existing plus project conditions. Further review of Table 10 identifies the project does not create any significant direct impact. The ILV Analysis of the I-15/ Deer Springs on/off ramps are presented on Table 11. Review of Table 11 shows that both of the Deer Springs Road/I-15 on-off ramps operate at stable conditions in the AM peak and operate at unstable conditions in the PM peak hour for the existing and existing plus project conditions. The ILV Analysis worksheets are presented in Appendix B.

Table 10 - Existing + Project Intersection Level of Service Summary																			
Intersection	Traffic Control	Critical Move	Existing				Existing + Project												
			AM Peak		PM Peak		AM Peak						PM Peak						
			Delay	LOS	Delay	LOS	Delay	LOS	Δ Delay	Proj. Trips	Sig.?	Impact	Delay	LOS	Δ Delay	Proj. Trips	Sig.?	Impact	
Deer Springs Road (E-W) @ Mesa Rock Road (N-S)	Signalized	Intersection	21.3	C	20.4	C	32.8	C	0.4	12	No	None	30.7	C	4.5	14	No	None	
Deer Springs Rd (E-W) @ I-15 SB Ramps (N-S)	Signalized	Intersection	30.4	C	27.7	C	30.6	C	0.2	28	No	None	29.8	C	2.1	28	No	None	
Deer Springs Rd (E-W) @ I-15 NB Ramps (N-S)	Signalized	Intersection	25.6	C	46.3	D	25.6	C	0.0	92	No	None	46.6	D	0.3	93	No	None	
Deer Springs Rd (E-W) @ Champagne Blvd/ N. Centre City Parkway & Mountain Meadow Road (N-S)	Signalized	Intersection	32.4	C	26.2	C	32.8	C	0.4	120	No	None	30.7	C	4.5	114	No	None	
sec/veh = seconds of delay per vehicle; LOS = Level of Service; E-W = East-West Roadway; N-S = North-South Roadway																			

Table 11 - Existing Plus Project Conditions ILV Analysis						
Intersection	Peak Hour	Existing		Existing Plus Project		% Δ ILV
		IL V/Hour	Operating Condition	IL V/Hour	Operating Condition	
Deer Springs Rd (E-W) @ I-15 NB Ramp (N-S)	AM	920	Stable	966	Stable	5%
	PM	1401	Unstable Flow	1447	Unstable Flow	2.8%
Deer Springs Rd (E-W) @ I-15 SB Ramp (N-S)	AM	994	Stable	1003	Stable	0.9%
	PM	1343	Unstable Flow	1357	Unstable Flow	1.0%
ILV/Hour = Intersecting Lane Vehicles Per Hour; <1,200 IL V/Hour = Stable Flow; 1,200 - 1,500 IL V/Hour = Unstable Flow; 1,500 IL V/Hour = Capacity. (See Appendix B for the Calculations) E-W = East-West Roadway; N-S = North-South Roadway						

OPENING DAY (2018) CONDITIONS

The existing traffic volumes presented on Figure 5 were increased 5% to accommodate growth in the area. Figure 9 presents the Opening Day (2018) traffic volumes. The next step involves the addition of project traffic presented on Figure 6 to Figure 9 traffic volumes to represent Opening Day (2018) Plus Project traffic. Figure 10 presents the resulting traffic volumes. The daily volumes and peak hourly volumes were then analyzed for Roadway segments and intersection level of service.

Roadway Segments

Table 12 summarizes that analysis of the Opening Day (2018) Plus Project Traffic conditions. Review of Table 12 shows I-15 north and south of Deer Springs Road is operating at LOS “D” or better and will continue to operate at LOS “D” with the addition of project traffic. Deer Springs Road is expected to operate at LOS “F” from west of Mesa Rock Road to the I-15 Northbound on/off ramp under both conditions. Further review of Table 12 identifies North Centre Parkway, Champagne Boulevard, Mountain Meadows and Mesa Rock Road to operate at LOS “D” or better for Opening Day 2018 and Opening Day 2018 Plus Project Conditions.

Intersections

The Opening Day (2018) and Opening Day (2018 Plus Project intersection level of services for the traffic volumes presented on Figures 9 and 10 were calculated using Synchro Capacity Software. The results of the analysis are presented on Table 13. Review of Table 13 shows that each intersection analyzed will operate at LOS “D” or better. Therefore, the project is considered to not have any significant direct impacts at any of the intersections studied.

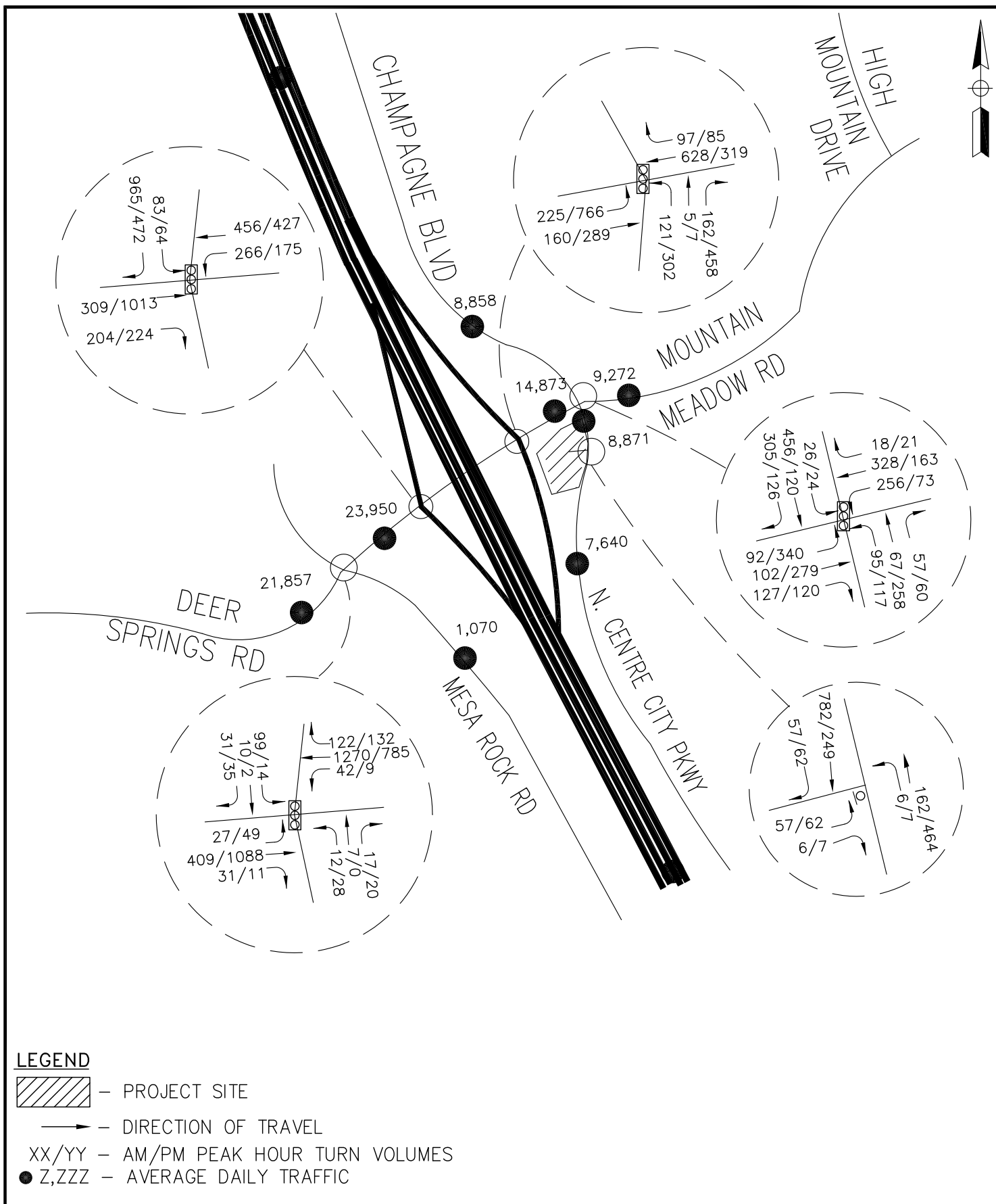
Caltrans ILV analysis was prepared for the I-15 On/Off ramp intersections with Deer Springs Road. Table 14 presents the results of the analysis. Review of Table 14 shows that both of the Deer Springs Road/I-15 on-off ramp’s intersections operate at stable flow conditions in the AM peak hour and unstable flow conditions in the PM peak hour for Opening Day (2018) conditions. The addition of project traffic will cause the Deer Springs/ I-15 NB ramp PM peak hour to operate at capacity. The ILV Analysis worksheets are presented in Appendix B.

Vehicle Queuing on I-15 off ramps

Vehicle queuing on the I-15 Northbound and Southbound off-ramps at Deer Springs Road has been analyzed. The 95th percentile que length for Opening Year 2018 and Opening Year 2018 Plus Project was prepared using the Synchro 8 software. Tables 15 presents the 95th percentile Queue lengths for Opening Year 2018 and Opening Year 2018 Plus Project conditions. A copy of the Synchro Queuing worksheets is presented in Appendix G.

Review of Table 15 Shows the project Opening Year 2018 Plus Project 95th percentile queues. Do not exceed the available vehicle storage on either of the off-ramp. The vehicle queue for the Northbound I-15 left and through off-ramp movement is 400’ feet for Opening Day 2018 and Opening Day 2018 Plus Project. The PM peak hour expected vehicle queue of 400’ feet is less than the 225 feet of the exclusive lane. However, the available storage area for all Northbound movements is 2,100 feet (1650+225+225), which significantly exceeds the available 2,100 feet of storage.

Therefore, the project does not create any vehicle queues on the I-15/ Deer Springs off-ramps impacts.

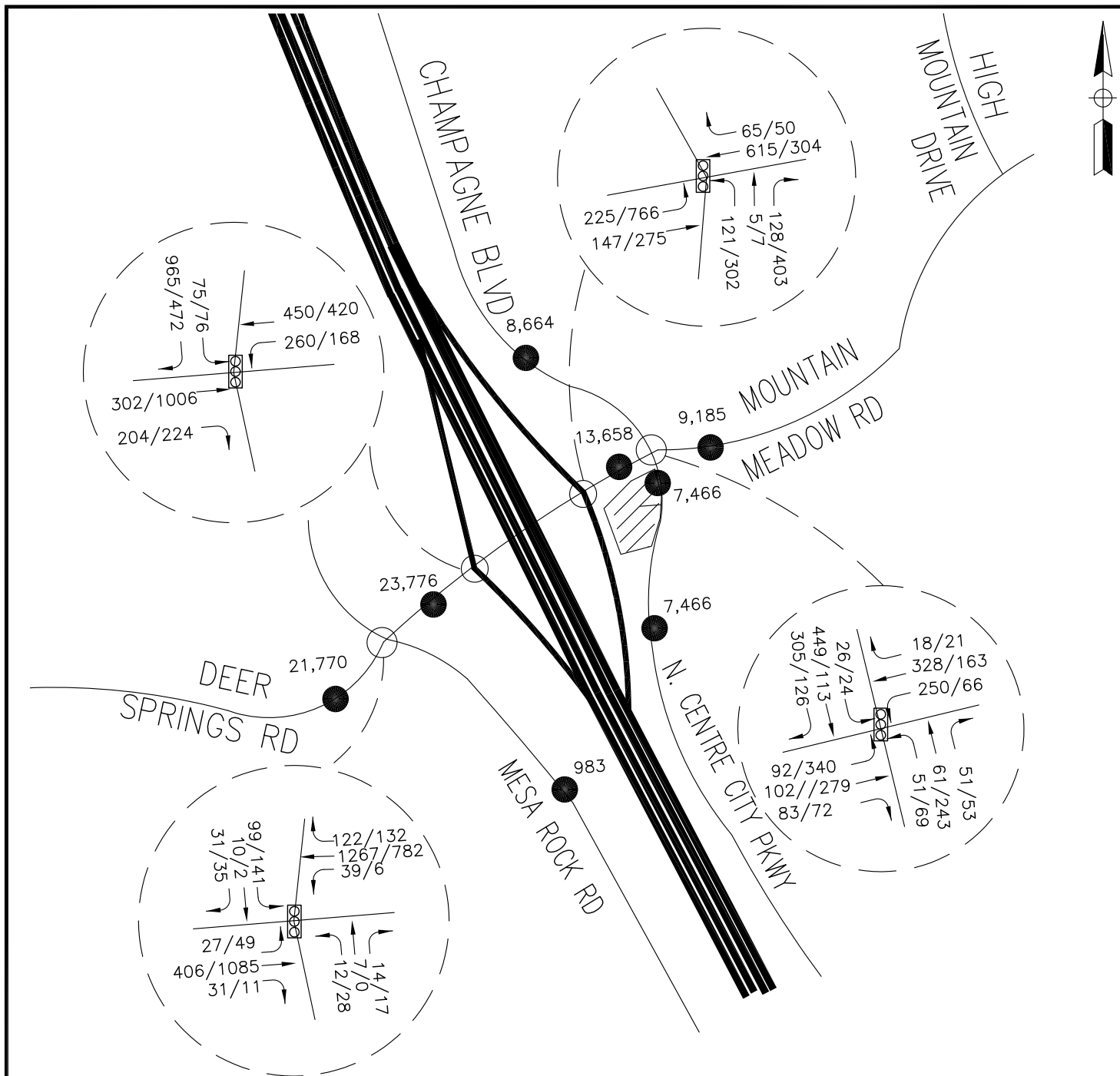


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FIGURE 10
OPENING DAY (2018) PLUS PROJECT
TRAFFIC VOLUMES



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FIGURE 9

OPENING DAY (2018) TRAFFIC VOLUMES

Table 12 – Opening Day (2018) Project Roadway Segment Level of Service Summary									
County of San Diego Roadway Segments									
Roadway Segment	Class	LOS “E” Capacity (b)	Opening Day (2018)		Opening Day (2018) + Project				
			ADT	LOS	ADT	LOS	Project ADT	Sig?	
North Centre City Parkway									
South of Mountain Meadow Rd	2.2 E LC	16,200	7,466	C	8,871	D	1,405	NO	
South of Project Access	2.2 E LC	16,200	7,466	C	7,640	D	174	NO	
Deer Springs Road									
West of Mesa Rock Rd	2.2 E LC	16,200	21,770	F	21,944	F	87	NO	
Mesa Rock Rd to I-15 SB Ramp	2.2 C LC	19,000	23,776	F	23,950	F	347	YES	
I-15 NB Ramp to Champagne Blvd	2.4 B	28,000	13,658	A	14,837	A	1,215	NO	
Mountain Meadow Road									
Champagne Blvd to High Mountain Dr	4.1B	34,200	9,185	A	9,272	A	87	NO	
Champagne Boulevard									
North of Deer Springs Road	2.2 E LC	16,200	8,664	D	8,838	D	174	NO	
Mesa Rock Road									
South of Deer Springs Road	2.2 E LC	16,200	937	A	1,024	A	87	NO	
(a) The LOS for Interstate 15 were determined based on the Caltrans District 11 procedures. See Appendix E for the Calculations									
(b) Capacity is based on the upper limit of LOS D per the County of San Diego Level of Service Thresholds									
(c) Level of Service Thresholds are not typically applied to non-circulation element roads since their primary purpose is to serve abutting lots, not carry through traffic. The capacity shown here is the recommended upper limit of LOS C. < C = the traffic volume is less than the upper limit for LOS C; > C = the traffic volume is greater than the upper limit for LOS C.									
ADT = Average Daily Traffic, V/C = Volume to Capacity Ratio, LOS = Level of Service, 8F = 8-Lane Freeway; 2.2E LC = Light Collector; 4.1B= Major Road with intermittent turn lanes.									

Table 13 - Opening Day (2018) + Project Intersection Level of Service Summary																							
Intersection	Traffic Control	Critical Move	Opening Day (2018)						Opening Day (2018) + Project														
			AM Peak			PM Peak			AM Peak						PM Peak								
			Delay	LOS		Delay	LOS		Delay	LOS		Δ Delay	Proj.-Trips	Sig.?	Impact	Delay	LOS		Δ Delay	Proj.-Trips	Sig.?	Impact	
Deer Springs Road (E-W) @ Mesa Rock Road (N-S)	Signalized	Intersection	22.7	C		21.0	C		22.8	C		0.1	12	No	None		21.2	C		0.2	14	No	None
Deer Springs Rd (E-W) @ I-15 SB Ramps (N-S)	Signalized	Intersection	31.8	C		34.0	C		32.1	C		0.3	28	No	None		38.9	C		2.9	28	No	None
Deer Springs Rd (E-W) @ I-15 NB Ramps (N-S)	Signalized	Intersection	26.5	C		53.0	D		26.5	C		0.0	92	No	None		53.6	D		0.6	93	No	None
Deer Springs Rd (E-W) @ Champagne Blvd/ N. Centre City Parkway & Mountain Meadow Road (N-S)	Signalized	Intersection	35.4	C		28.1	C		35.9	C		0.5	120	No	None		35.2	C		7.1	114	No	None
Center City Parkway (N/S) @ Project Driveway Access	QOSC	EB	DNE					27.7	D		27.7	180	No	None		17.8	C		17.8	154	No	None	

sec/veh = seconds of delay per vehicle; LOS = Level of Service; E-W = East-West Roadway; N-S = North-South Roadway, OWSC = One Way Stop Control, EB = East Bound Approach, DNE = Does Not Exist.

Table 14 – Opening Day (2018) Conditions ILV Analysis									
Intersection	Peak Hour	Opening Day (2018)			Opening Day (2018) Plus Project			% Δ ILV	
		ILV/Hour	Operating Condition	ILV/Hour	Operating Condition	Operating Condition	Operating Condition		
Deer Springs Rd (E-W) @ I-15 NB Ramp (N-S)	AM	968	Stable	981	Stable	Stable	Stable	1.3%	
	PM	1473	Unstable Flow	1527	Unstable Flow	Capacity	Capacity	3.7%	
Deer Springs Rd (E-W) @ I-15 SB Ramp (N-S)	AM	1045	Stable	1050	Stable	Stable	Stable	0.5%	
	PM	1410	Unstable Flow	1426	Unstable Flow	Unstable Flow	Unstable Flow	1.1%	

ILV/Hour = Intersecting Lane Vehicles Per Hour;
 <1,200 ILV/Hour = Stable Flow; 1,200 - 1,500 ILV/Hour = Unstable Flow; 1,500 ILV/Hour = Capacity, (See Appendix B for the Calculations)
 E-W = East-West Roadway; N-S = North-South Roadway

Table 15 - Vehicle Queuing on I-15/ Deer Springs Off Ramps

<i>Intersection</i>	Peak Hour	Movement	Storage Length (ft)	95 th Percentile Queue Length (ft)		Δ (ft)
				Opening Year 2018	Opening Year 2018 Plus Project	
I-15 SB Ramps & Deer Springs Rd.	AM	SBL-TH	150	75	100	25
	PM			75	75	0
	AM	SBR	1,500	250	250	0
	PM			50	50	0
I-15 NB Ramps & Mountain Meadow Rd	AM	NB L-TH	225	150	150	0
	PM			400	400	0 (b)
	AM	NBR	1,650	75	75	0
	PM			125	125	0

Notes:

Values shown in **Bold** indicate movements where the 95th percentile queue length exceeds the available storage length.

(a) Queue lengths were rounded up to the nearest 25 feet to represent the length of a typical vehicle.

(b) The available vehicle queuing for the Northbound off-ramps provide a total of 1,875 feet of vehicle queuing storage for all northbound movements.

SECTION V – PROJECT ACCESS / ON-SITE CIRCULATION AND CENTERLINE ORDINANCE

PROJECT ACCESS

The project proposes one (1) project access on North Centre Parkway. The proposed access was analyzed and found to operate at LOS “D” in the AM peak hour and LOS “C” in the PM Peak period. Based on the two - lane geometrics of North Centre Parkway.

ON-SITE CIRCULATION

Circulation within the site and to/from North Centre Parkway was reviewed and found to be satisfactory. The on-site circulation can adequately accommodate gasoline delivery trucks.

SIGHT DISTANCE

Preliminary investigation of Corner Sight Distance was examined based on existing roadway conditions. The investigation allowed the conclusion that the development of the site could satisfy the County of San Diego Corner Sight Distance requirements. Presently motorist exiting from the site from the proposed driveway can observe 300 feet of corner sight distance looking at southbound vehicles on North Centre Parkway at the Deer Springs- Mountain Meadows Intersection that is signal controlled. Looking north from the proposed driveway required a County of San Diego Design Exception and. A copy of the approved design exception is provided in Appendix H. Looking south on North Centre Parkway there is 550 feet of corner sight distance. The certification and clear zone easement if needed will be finalized with the processing of project improvement plans. A copy of the Corner Sight Distance analysis and Design Exception is presented in Appendix H.

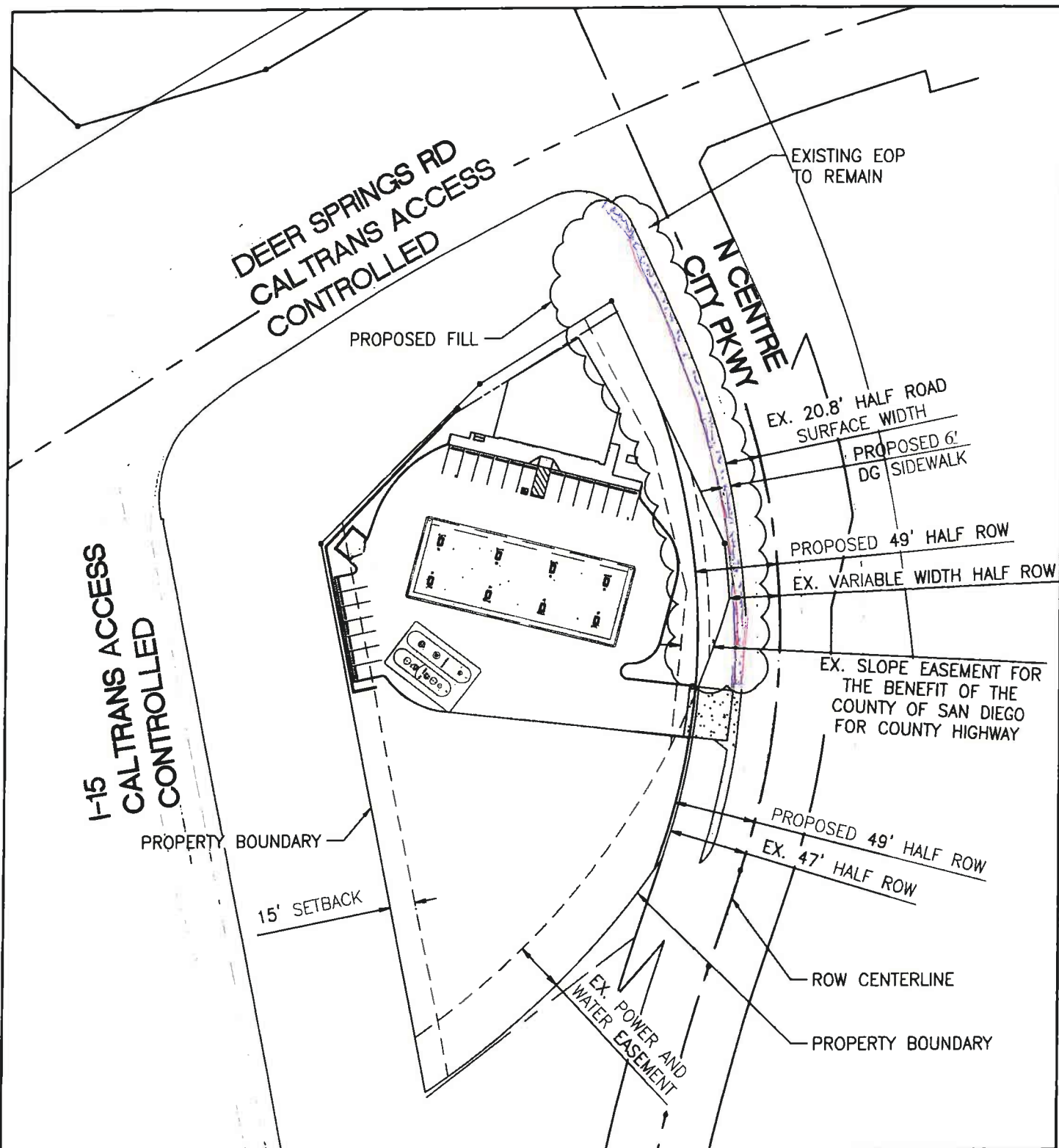
CENTERLINE ORDINANCE

The County of San Diego Centerline Ordinance identifies the requirement for projects to improve their property frontages to conform to the roadway classification identified in the County’s Mobility Element. The project site is within the North County’s Metro Mobility Element Network. The Mobility Element classifies the surrounding roadways as follows:

- Deer Springs Road (SF1414) 4.1B Major Road from I-15 NB Ramp to North Center City Parkway/ Champagne Boulevard.
- North Center City Parkway 4.1B Major Road with Intermittent Lanes from Deer Springs Road- Mountain Meadows Road to Escondido City Limits.

Further review of the site plan, allows the conclusion that the North Centre City Parkway frontage is the only frontage that requires assessment of Centerline Ordinance consideration. This conclusion is reached based on Caltrans Rights-of-Way along Interstate 15 and Deer Springs Road. The Caltrans Rights-of-way extends around the westerly and northerly boundaries and is located as shown on Figure 11.

The applicant has requested a Design Exception to not require the widening of North Centre City Parkway to the County standards for a 4.1B Major Road. However, the Design Exception proposes the offer of an IOD for future widening of the roadway and construction of the project access and a six (6) foot gravel sidewalk along the projects North Centre City Parkway frontage. Adequacy of the existing conditions plus project is discussed in Section IV – Impacts/Mitigation Measures and confirms that North Centre City Parkway will operate at LOS “D” or better under existing roadway and intersection geometries. The recommended opening day roadway condition on North Centre City Parkway is presented on Figure 11. Figure 11 shows the proposed IOD right-of-way and improvements on North Centre City Parkway.



BCE Job #18442



18215 72ND AVENUE SOUTH
KENT, WA 98032
(425)251-6222
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CML ENGINEERING, LAND PLANNING,
SURVEYING, ENVIRONMENTAL SERVICES

FIGURE 11 **RIGHT-OF-WAY/IMPROVEMENT** **EXHIBIT**

KA ENTERPRISES MEGA-MART
26746 MOUNTAIN MEADOW ROAD
ESCONDIDO, CA 92026



1" = 80'

Based on the County of San Diego Public Works Standards, North City Parkway identifies the need to dedicate an additional five (5) feet of rights-of-way. To eliminate the need for the five (5) feet of additional right-of-way it is recommended that on street parking be restricted and the number 2 travel lane (approximately 20 feet) be striped to provide a 12-14 foot travel lane and 6-8 foot buffered bike lane. The recommended parking restriction will allow installation of the Class II Bike Lane and mitigate the need to dedicate the five (5) feet of additional rights-of-way. A design exception has been prepared and approved by the County of San Diego. A copy of the approved design Exception is included in Appendix H.

SECTION VI - PROJECT MITIGATION

TRANSPORTATION IMPACT FEE (TIF)

The County of San Diego has developed an overall programmatic solution that addresses existing and projected future road deficiencies in the unincorporated portions of San Diego County. This program includes the adoption of a Transportation Impact Fee (TIF) program to fund improvements to roadways necessary to mitigate potential cumulative impacts caused by traffic from future development. Based on SANDAG regional growth and land use forecasts, the SANDAG Regional Transportation Model was utilized to analyze projected build-out (year 2050) development conditions on the existing circulation element roadway throughout the unincorporated area of the County. Based on the results of the traffic modeling, funding necessary to construct transportation facilities that will mitigate cumulative impacts from new development was identified. Existing roadway deficiencies will be corrected through improvement projects funded by other public funding sources, such as TransNet, gas tax and grants. Potential cumulative impacts to the region's freeways have been addressed in SANDAG's Regional Transportation Plan (RTP). This plan, which considers freeway build out over the next 40 years, will use funds from TransNet, state and federal funding to improve freeways to projected level of service objectives in the RTP.

Full build out of the project is estimated to generate a total of 2,560 average daily driveway trips. These trips will be distributed on circulation element roadways in the County that were analyzed by the TIF program, some of which currently or are projected to operate at inadequate levels of service. The potential growth represented by the proposed project was included in the growth projections upon which the TIF program is based. Therefore, compliance with the County TIF ordinance, which will be required at issuance of building permits, in combination with other components of the program described above, will mitigate potential cumulative traffic impacts to County Circulation Element Roadways to less than significant. The TIF program provides a mechanism for developers to mitigate their cumulative impacts by paying a specified fee for the use that is being proposed.

The County Board of Supervisors adopted the County of San Diego Traffic Impact Fee (TIF) program in April 2005. The latest TIF Ordinance Update was adopted by the Board of Supervisors effective on December 31, 2012. It should be noted that the actual traffic impact fees are subject to change as the TIF ordinance is updated annually as the fees are adjusted to reflect the engineering cost index. Compliance with the County TIF ordinance will mitigate any cumulative impact that the project has on the County roadway facilities located within the Valley Center Community Sub-region and the North TIF region. The project proposes to comply with the County's TIF to mitigate the project's local and regional cumulative impacts within the unincorporated area.

DIRECT IMPACTS

Direct Impacts – Roadway Segments

The project does not have any direct impact except for Deer Springs Road between I-15 Northbound and Southbound on/off ramps. Due to the close spacing of the signalized intersections on Deer Springs Road, the level of service of Deer Springs Road is actually controlled by the operation of the intersections along the segment, rather than the daily volume. Since each of the intersections on Deer Springs Road, Mesa Rock Road, Champagne Boulevard-North Centre City Parkway operate at an acceptable LOS "D" or better during both peak hours under Existing Plus Project and Opening Day (2018) Plus Project conditions, it is determined that the level of service on the segment of Deer Springs Road between Mesa Rock Road and the northbound and southbound ramps to I-15 would be at an acceptable level during the peak periods.

Direct Impacts – Intersections

The project does not have any direct roadway impacts. Therefore, no mitigation is required

CUMULATIVE IMPACTS

The project is considered to be part of cumulative impacts. To mitigate projects cumulative impacts the Applicant agrees to participate in the County of San Diego Traffic Impact Fees (TIF) Program and will pay the current County TIF Fees at the time building permits are issued.

MITIGATED IMPACTS

- The project does not identify any direct impacts on roadways and/or intersections except for Deer Springs Road between Mesa Rock Road and the I-15 southbound on/off ramp. However, based on the peak hour operation of the traffic signals at Mesa Rock Road and the I-15 Southbound on/off ramps the intersections operate at an acceptable LOS D or better during the peak hours. Thus, based on the peak hour operation, the proposed project is considered to not have a significant direct impact on Deer Springs Road between Mesa Rock Road and Interstate 15 Southbound on/off ramps. Therefore, roadway mitigation measures are not required.
- Pay County of San Diego TIF to mitigate cumulative impacts.
- Dedicate IOD for future Rights-of-way on North Centre City Parkway and construct project access and install six (6) foot of gravel sidewalk along the projects North Centre City Parkway frontage as depicted on Figure 11.

SECTION VII - SUMMARY OF FINDINGS AND CONCLUSIONS

- The applicant proposes to develop the Deer Springs Mini Mart/Gas Station Project on 1.67 acres. The Deer Springs Mini Mart/Gas Station is proposing a 3,500 Convenient Store with 16 Vehicle Fueling positions.
- As detailed in this report development of the project is estimated to generate 2,560 average daily trips, 179 AM peak hour trips, and 205 PM peak hour driveway trips. With credit for the existing uses in the project site will generate 1,735 daily, 126 AM peak hour and 138 PM peak hour trips. To be added to the surrounding roadways.
- The project does not identify any direct impacts on roadways and/or intersections except for Deer Springs Road between the Mesa Rock Road and the I-15 southbound on/off ramp. However, based on the peak hour operation of the traffic signals at the Mesa Rock Road and the I-15 on/off ramps the intersections operate at an acceptable LOS D or better during the peak hours. Thus, based on the peak hour operation, the proposed project is considered to not have a significant direct impact on Deer Springs Road between Mesa Rock Road Interstate 15 northbound on/off ramps. Therefore, roadway mitigation measures are not required.
- The proposed project is part of the cumulative impacts within the study area. Mitigation of cumulative impacts will be accommodated by paying County Traffic Impact (TIF) Fees.
- In accordance with the proposed Design Exception for North Centre City Parkway the project will be responsible to provide an Irrevocable Offer of Dedication (IOD) along the projects North Centre City Parkway frontage to provide the westerly 49 feet of right-of-way along the projects North Centre City parkway frontage from the centerline of the existing North Centre City Parkway and construct the projects access and install a six (6) foot wide gravel sidewalk on North Centre City Parkway frontage from Deer Springs Road to the projects southerly frontage boundary.
- Access to/from the site and circulation within the site was found satisfactory. Trucks delivering gas to the site and internal access was found satisfactory.
- Provide Corner sight distance certification looking 300 feet north and 550 feet looking south on North Centre City Parkway from the projects North Centre City parkway driveway in accordance with the approved design exception certified at the time the project improvement plans are approved.
- Restrict parking on North Centre City Parkway to accommodate the existing Class II Bike Lane on North Centre City Parkway and to maintain the bike lanes in the future, when North Centre City Parkway is improved.

APPENDIX A

24-Hour Machine Counts
AM/PM Peak Hour Turn Counts

24-Hour Machine Counts

THURSDAY - APRIL 27, 2017

CITY: SAN DIEGO

PROJECT: PTD17-0428-02

DEER SPRINGS - E/O MESA ROCK

AM Period	NB	SB	EB	WB	PM Period	NB	SB	EB	WB
00:00			7	9	12:00			123	132
00:15			18	10	12:15			102	118
00:30			3	3	12:30			137	116
00:45			5	33	12:45			148	510
01:00			7	4	13:00			120	117
01:15			4	8	13:15			148	84
01:30			6	3	13:30			132	120
01:45			2	19	13:45			140	540
02:00			5	4	14:00			151	153
02:15			8	7	14:15			187	119
02:30			2	7	14:30			219	165
02:45			6	21	14:45			233	790
03:00			1	5	15:00			199	145
03:15			11	17	15:15			203	186
03:30			7	14	15:30			222	152
03:45			4	23	15:45			232	856
04:00			9	21	16:00			288	184
04:15			11	27	16:15			262	191
04:30			21	49	16:30			284	206
04:45			23	64	16:45			291	1125
05:00			25	87	17:00			284	205
05:15			22	109	17:15			305	226
05:30			43	164	17:30			288	212
05:45			66	156	17:45			268	1145
06:00			60	167	18:00			238	153
06:15			95	253	18:15			179	133
06:30			103	294	18:30			158	96
06:45			141	399	18:45			137	712
07:00			116	324	19:00			140	71
07:15			123	348	19:15			127	59
07:30			124	350	19:30			109	45
07:45			126	489	19:45			94	470
08:00			111	223	20:00			103	33
08:15			108	240	20:15			96	37
08:30			118	237	20:30			109	35
08:45			100	437	20:45			113	421
09:00			100	251	21:00			82	36
09:15			93	190	21:15			76	37
09:30			104	194	21:30			71	41
09:45			81	378	21:45			41	270
10:00			83	125	22:00			42	21
10:15			99	136	22:15			45	19
10:30			107	178	22:30			32	27
10:45			81	370	22:45			30	149
11:00			115	135	23:00			25	8
11:15			96	116	23:15			25	14
11:30			84	128	23:30			24	9
11:45			93	388	23:45			19	93

Total Vol.	2777	5964	8741	7081	4912	11993
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		Daily Totals		
NB	SB	EB	WB	Combined
		9858	10876	20734

Split %	AM			PM		
	31.8%	68.2%	42.2%	59.0%	41.0%	57.8%
Peak Hour	06:45	07:00	07:00	16:45	16:45	16:45
Volume	504	1362	1851	1168	855	2023
P.H.F.	0.89	0.97	0.98	0.96	0.95	0.95

PACIFIC TECHNICAL DATA

THURSDAY - APRIL 27, 2017

CITY: SAN DIEGO

PROJECT: PTD17-0428-02

DEER SPRINGS - MESA ROCK TO 15 SB RAMPS

AM Period	NB	SB	EB	WB		PM Period	NB	SB	EB	WB
00:00			8	10		12:00			140	152
00:15			20	14		12:15			125	152
00:30			5	7		12:30			167	150
00:45			6	39	12	43	82		172	604
01:00			12	8		13:00			144	135
01:15			9	14		13:15			185	115
01:30			6	4		13:30			151	140
01:45			8	35	9	35	70		167	647
02:00			10	5		14:00			186	165
02:15			5	8		14:15			215	157
02:30			4	10		14:30			260	175
02:45			6	25	8	31	56		246	907
03:00			6	10		15:00			209	162
03:15			13	19		15:15			240	199
03:30			13	14		15:30			257	185
03:45			5	37	17	60	97		275	981
04:00			11	26		16:00			251	166
04:15			9	38		16:15			262	184
04:30			36	64		16:30			248	166
04:45			31	87	68	196	283		288	1049
05:00			33	106		17:00			261	208
05:15			35	137		17:15			284	219
05:30			53	174		17:30			262	215
05:45			86	207	157	574	781		255	1062
06:00			72	194		18:00			270	170
06:15			114	275		18:15			198	155
06:30			113	292		18:30			173	101
06:45			146	445	328	1089	1534		164	805
07:00			103	312		19:00			166	79
07:15			110	351		19:15			149	77
07:30			121	311		19:30			131	61
07:45			115	449	288	1262	1711		108	554
08:00			101	222		20:00			119	54
08:15			88	219		20:15			119	56
08:30			116	235		20:30			124	45
08:45			94	399	202	878	1277		129	491
09:00			120	263		21:00			96	53
09:15			119	214		21:15			87	51
09:30			128	205		21:30			71	45
09:45			83	450	190	872	1322		59	313
10:00			108	143		22:00			43	33
10:15			125	158		22:15			57	26
10:30			142	201		22:30			40	34
10:45			101	476	145	647	1123		39	179
11:00			160	147		23:00			27	14
11:15			108	130		23:15			36	21
11:30			107	170		23:30			30	13
11:45			146	521	163	610	1131		23	116

Total Vol.			3170	6297	9467				7708	5469	13177
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	Daily Totals				Combined		
	NB	SB	EB	WB			
			10878	11766	22644		
	AM				PM		
Split %	33.5%	66.5%	41.8%		58.5%	41.5%	58.2%
Peak Hour	11:45	06:45	06:45		16:45	16:45	16:45
Volume	578	1302	1782		1095	836	1931
P.H.F.	0.87	0.93	0.94		0.95	0.95	0.96

PACIFIC TECHNICAL DATA

THURSDAY - APRIL 27, 2017

CITY: SAN DIEGO

PROJECT: PTD17-0428-02

DEER SPRINGS - 15 NB RAMP TO CENTRE CITY

AM Period	NB	SB	EB	WB		PM Period	NB	SB	EB	WB		
00:00			15	2		12:00			91	84		
00:15			10	7		12:15			77	90		
00:30			8	3		12:30			89	83		
00:45			6	39	3	12:45			113	370	69	
01:00			7		2	13:00			89	96		
01:15			2		2	13:15			115	86		
01:30			2		2	13:30			113	87		
01:45			0	11	3	13:45			101	418	78	
02:00			2		0	14:00			86	88		
02:15			8		2	14:15			130	87		
02:30			9		3	14:30			150	73		
02:45			6	25	2	14:45			143	509	90	
03:00			0		1	15:00			138	66		
03:15			4		3	15:15			157	95		
03:30			1		3	15:30			167	100		
03:45			2	7	8	15:45			155	617	106	
04:00			1		4	16:00			169	78		
04:15			3		13	16:15			178	95		
04:30			7		24	16:30			186	79		
04:45			14	25	29	16:45			170	703	86	
05:00			6		32	17:00			149	82		
05:15			14		43	17:15			178	94		
05:30			13		73	17:30			167	73		
05:45			36	69	69	17:45			167	661	78	
06:00			20		115	18:00			181	67		
06:15			42		181	18:15			156	89		
06:30			45		170	18:30			127	56		
06:45			47	154	170	18:45			119	583	54	
07:00			50		207	19:00			102	42		
07:15			31		162	19:15			109	44		
07:30			87		153	19:30			86	32		
07:45			101	269	117	19:45			106	403	48	
08:00			76		118	20:00			78	43		
08:15			65		119	20:15			80	30		
08:30			77		107	20:30			83	24		
08:45			85	303	102	20:45			91	332	23	
09:00			107		115	21:00			56	33		
09:15			77		131	21:15			73	21		
09:30			63		111	21:30			59	20		
09:45			68	315	111	21:45			52	240	17	
10:00			79		120	22:00			43	20		
10:15			82		101	22:15			38	14		
10:30			74		88	22:30			33	13		
10:45			72	307	95	22:45			26	140	8	
11:00			94		93	23:00			22	8		
11:15			92		91	23:15			15	9		
11:30			93		99	23:30			12	3		
11:45			104	383	86	23:45			18	67	2	
Total Vol.			1907			3295			5202			
									5043			
									2763			
									7806			
Daily Totals												
						NB	SB	EB	WB	Combined		
						6950						
						6058						
						13008						
AM												
PM												
Split %	36.7%					63.3%					40.0%	
						64.6%						
						35.4%						
						60.0%						
Peak Hour	11:00					06:15					06:15	
Volume	383					728					912	
P.H.F.	0.92					0.88					0.89	
						16:00						
						15:15						
						15:30						
						703						
						379						
						1048						
						0.94						
						0.89						
						0.96						

PACIFIC TECHNICAL DATA

THURSDAY - APRIL 27, 2017

CITY: SAN DIEGO

PROJECT: PTD17-0428-02

DEER SPRINGS - E/O CENTRE CITY

AM Period	NB	SB	EB	WB	PM Period	NB	SB	EB	WB			
00:00			9	1	12:00			60	63			
00:15			11	1	12:15			54	65			
00:30			4	3	12:30			51	49			
00:45			3	27	2	7	34	75	240	46	223	463
01:00			4	2	13:00			57	71			
01:15			1	0	13:15			60	76			
01:30			4	1	13:30			61	65			
01:45			0	9	2	5	14	74	252	66	278	530
02:00			2	0	14:00			62	69			
02:15			4	0	14:15			74	63			
02:30			2	1	14:30			87	54			
02:45			4	12	2	3	15	79	302	74	260	562
03:00			1	0	15:00			89	58			
03:15			1	1	15:15			77	70			
03:30			1	2	15:30			91	60			
03:45			0	3	8	11	14	101	358	57	245	603
04:00			2	3	16:00			97	58			
04:15			1	9	16:15			109	62			
04:30			4	13	16:30			112	57			
04:45			6	13	16	41	54	107	425	59	236	661
05:00			0	19	17:00			87	68			
05:15			2	24	17:15			108	61			
05:30			6	38	17:30			94	68			
05:45			6	14	49	130	144	112	401	61	258	659
06:00			7	55	18:00			96	51			
06:15			19	88	18:15			90	73			
06:30			25	94	18:30			89	48			
06:45			23	74	109	346	420	80	355	36	208	563
07:00			30	144	19:00			79	26			
07:15			24	134	19:15			75	28			
07:30			39	130	19:30			58	25			
07:45			72	165	146	554	719	73	285	29	108	393
08:00			55	110	20:00			54	16			
08:15			59	93	20:15			44	18			
08:30			53	82	20:30			67	21			
08:45			67	234	89	374	608	58	223	16	71	294
09:00			51	95	21:00			39	26			
09:15			47	108	21:15			50	15			
09:30			42	70	21:30			49	9			
09:45			44	184	102	375	559	26	164	6	56	220
10:00			52	77	22:00			31	7			
10:15			51	78	22:15			21	7			
10:30			54	77	22:30			23	8			
10:45			43	200	78	310	510	16	91	2	24	115
11:00			57	77	23:00			15	2			
11:15			66	70	23:15			10	3			
11:30			53	79	23:30			5	1			
11:45			65	241	74	300	541	15	45	2	8	53

Total Vol.		1176	2456	3632		3141	1975	5116
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		Daily Totals		
NB	SB	EB	WB	Combined
		4317	4431	8748

		AM			PM		
Split %		32.4%	67.6%	41.5%	61.4%	38.6%	58.5%
Peak Hour		11:15	07:00	07:00	16:00	13:00	16:00
Volume		244	554	719	425	278	661
P.H.F.		0.92	0.95	0.82	0.95	0.91	0.97

PACIFIC TECHNICAL DATA

THURSDAY - APRIL 27, 2017

CITY: SAN DIEGO

PROJECT: PTD17-0428-02

CHAMPAGNE - N/O DEER SPRINGS

AM Period	NB	SB	EB	WB	PM Period	NB	SB	EB	WB
00:00	3	3			12:00	50	53		
00:15	1	7			12:15	46	52		
00:30	2	1			12:30	54	43		
00:45	1	7	1	12	12:45	58	208	46	194
01:00	1	0			13:00	53	51		
01:15	0	1			13:15	74	52		
01:30	0	2			13:30	64	43		
01:45	0	1	1	4	13:45	64	255	43	189
02:00	1	0			14:00	64	38		
02:15	2	1			14:15	76	53		
02:30	5	2			14:30	79	52		
02:45	2	10	1	4	14:45	87	306	46	189
03:00	0	1			15:00	105	36		
03:15	0	0			15:15	111	61		
03:30	0	2			15:30	143	76		
03:45	4	4	1	4	15:45	143	502	63	236
04:00	0	2			16:00	135	49		
04:15	0	3			16:15	168	56		
04:30	2	8			16:30	135	57		
04:45	8	10	17	30	16:45	132	570	53	215
05:00	4	10			17:00	137	55		
05:15	14	20			17:15	151	45		
05:30	8	35			17:30	137	48		
05:45	28	54	39	104	17:45	133	558	43	191
06:00	10	84			18:00	124	44		
06:15	28	136			18:15	88	30		
06:30	24	150			18:30	61	26		
06:45	28	90	138	508	18:45	59	332	35	135
07:00	34	190			19:00	45	33		
07:15	33	211			19:15	62	23		
07:30	45	211			19:30	43	21		
07:45	45	157	123	735	19:45	47	197	27	104
08:00	43	83			20:00	26	30		
08:15	30	82			20:15	44	15		
08:30	45	63			20:30	27	9		
08:45	42	160	59	287	20:45	41	138	13	67
09:00	55	54			21:00	34	14		
09:15	42	54			21:15	26	18		
09:30	30	51			21:30	13	14		
09:45	37	164	70	229	21:45	32	105	7	53
10:00	43	65			22:00	15	12		
10:15	41	60			22:15	19	11		
10:30	38	54			22:30	18	8		
10:45	41	163	57	236	22:45	7	59	6	37
11:00	52	54			23:00	8	2		
11:15	51	53			23:15	3	7		
11:30	51	46			23:30	5	1		
11:45	54	208	46	199	23:45	2	18	3	13
Total Vol.	1028	2352		3380		3248	1623		4871
					Daily Totals				
					NB	SB	EB	WB	Combined
					4276	3975			8251
Split %	30.4%	69.6%	AM		41.0%	66.7%	33.3%	PM	
Peak Hour	11:00	06:45	07:00		15:30	15:15	15:30		15:30
Volume	208	750	892		589	249	833		833
P.H.F.	0.96	0.89	0.87		0.97	0.82	0.93		0.93

PACIFIC TECHNICAL DATA

THURSDAY - APRIL 27, 2017

CITY: SAN DIEGO

PROJECT: PTD17-0428-02

CENTRE CITY - S/O DEER SPRINGS

AM Period	NB	SB	EB	WB	PM Period	NB	SB	EB	WB
00:00	2	6			12:00	49	48		
00:15	2	3			12:15	44	41		
00:30	0	3			12:30	44	31		
00:45	0	4	0	12	12:45	46	183	33	153
01:00	0	1			13:00	51	47		
01:15	1	1			13:15	49	54		
01:30	2	1			13:30	54	52		
01:45	0	3	0	3	13:45	66	220	54	207
02:00	1	1			14:00	61	41		
02:15	0	0			14:15	44	40		
02:30	0	1			14:30	45	62		
02:45	1	2	1	3	14:45	55	205	65	208
03:00	0	0			15:00	77	38		
03:15	2	1			15:15	77	78		
03:30	1	0			15:30	95	60		
03:45	0	3	2	3	15:45	95	344	54	230
04:00	2	0			16:00	103	53		
04:15	3	0			16:15	121	44		
04:30	3	4			16:30	99	65		
04:45	4	12	7	11	16:45	105	428	58	220
05:00	4	5			17:00	101	62		
05:15	14	10			17:15	124	57		
05:30	19	12			17:30	108	76		
05:45	17	54	33	60	17:45	99	432	44	239
06:00	26	30			18:00	61	53		
06:15	29	63			18:15	60	39		
06:30	29	86			18:30	49	38		
06:45	28	112	99	278	18:45	45	215	36	166
07:00	37	147			19:00	45	27		
07:15	30	172			19:15	47	27		
07:30	38	226			19:30	36	23		
07:45	43	148	216	761	19:45	41	169	31	108
08:00	56	98			20:00	26	22		
08:15	46	66			20:15	26	20		
08:30	51	61			20:30	32	17		
08:45	46	199	65	290	20:45	24	108	13	72
09:00	32	52			21:00	23	15		
09:15	37	37			21:15	18	22		
09:30	39	43			21:30	19	16		
09:45	22	130	54	186	21:45	15	75	9	62
10:00	36	41			22:00	10	7		
10:15	30	46			22:15	13	7		
10:30	34	55			22:30	9	6		
10:45	35	135	48	190	22:45	6	38	9	29
11:00	36	55			23:00	6	4		
11:15	49	50			23:15	2	3		
11:30	45	52			23:30	3	6		
11:45	38	168	43	200	23:45	2	13	6	19
Total Vol.	970	1997		2967		2430	1713		4143
					Daily Totals				
					NB	SB	EB	WB	Combined
					3400	3710			7110
Split %	32.7%	67.3%		41.7%	58.7%	41.3%			58.3%
Peak Hour	08:00	07:00		07:00	16:45	16:45			16:45
Volume	199	761		909	438	253			691
P.H.F.	0.89	0.84		0.86	0.92	0.83			0.94

PACIFIC TECHNICAL DATA

THURSDAY - APRIL 27, 2017

CITY: SAN DIEGO

PROJECT: PTD17-0428-02

MESA ROCK - S/O DEER SPRINGS

AM Period	NB	SB	EB	WB	PM Period	NB	SB	EB	WB
00:00	0	0			12:00	12	10		
00:15	1	0			12:15	11	7		
00:30	0	0			12:30	8	6		
00:45	0	1	0	0	12:45	9	40	5	28
01:00	0	0			13:00	10	12		
01:15	0	1			13:15	5	11		
01:30	0	0			13:30	4	5		
01:45	0	0	0	1	13:45	5	24	6	34
02:00	1	0			14:00	3	5		
02:15	0	0			14:15	4	8		
02:30	1	0			14:30	8	9		
02:45	0	2	0	0	14:45	9	24	5	27
03:00	0	0			15:00	5	5		
03:15	0	0			15:15	12	3		
03:30	0	0			15:30	11	5		
03:45	0	0	0	0	15:45	16	44	4	17
04:00	0	0			16:00	28	8		
04:15	0	1			16:15	14	5		
04:30	0	1			16:30	13	12		
04:45	1	1	0	2	16:45	11	66	6	31
05:00	0	0			17:00	15	5		
05:15	0	2			17:15	9	4		
05:30	0	2			17:30	5	2		
05:45	1	1	1	5	17:45	5	34	10	21
06:00	2	0			18:00	6	8		
06:15	2	2			18:15	4	9		
06:30	4	3			18:30	2	1		
06:45	5	13	8	13	18:45	3	15	3	21
07:00	8	15			19:00	2	2		
07:15	9	12			19:15	2	1		
07:30	11	18			19:30	0	4		
07:45	5	33	28	73	19:45	0	4	1	8
08:00	6	15			20:00	1	2		
08:15	7	8			20:15	0	0		
08:30	12	12			20:30	0	0		
08:45	5	30	8	43	20:45	1	2	1	3
09:00	12	10			21:00	2	1		
09:15	11	8			21:15	1	0		
09:30	15	9			21:30	0	0		
09:45	9	47	5	32	21:45	0	3	1	2
10:00	11	4			22:00	0	1		
10:15	8	9			22:15	1	0		
10:30	9	10			22:30	1	0		
10:45	10	38	5	28	22:45	0	2	0	1
11:00	5	8			23:00	0	0		
11:15	4	9			23:15	0	0		
11:30	9	11			23:30	1	1		
11:45	12	30	17	45	23:45	0	1	1	2
Total Vol.	196	242			438	259	195		
					Daily Totals				
					NB	SB	EB	WB	Combined
					455	437			892
AM					PM				
Split %	44.7%	55.3%			57.0%	43.0%			50.9%
Peak Hour	09:00	07:00			15:45	12:30			15:45
Volume	47	73			71	34			100
P.H.F.	0.78	0.65			0.64	0.71			0.69

PACIFIC TECHNICAL DATA

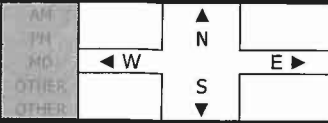
AM/PM Peak Hour Turn Counts

INTERSECTION TURNING MOVEMENT COUNTS

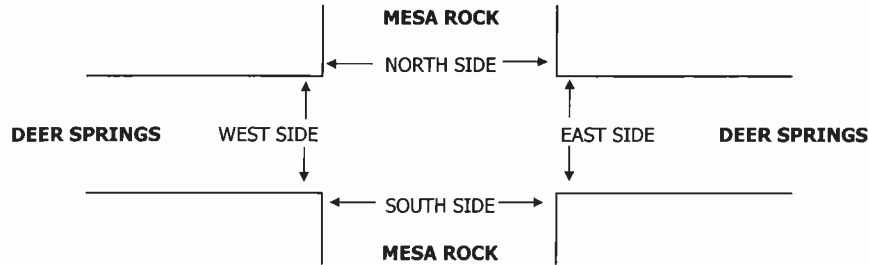
PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 4/27/17 THURSDAY LOCATION: NORTH & SOUTH: EAST & WEST: DEER SPRINGS I-15 MESA ROCK DEER SPRINGS PROJECT #: PTD17-0428-02 LOCATION #: 1 CONTROL: SIGNAL

NOTES:



	NORTHBOUND MESA ROCK			SOUTHBOUND MESA ROCK			EASTBOUND DEER SPRINGS			WESTBOUND DEER SPRINGS			TOTAL	U-TURNS				
	NL 0	NT 1	NR 0	SL 0	ST 1	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0		NB X	SB X	EB X	WB X	TTL
AM																		
7:00 AM	1	3	3	25	2	5	8	75	11	6	305	26	470					0
7:15 AM	5	0	2	20	3	7	6	103	3	2	343	28	522					0
7:30 AM	5	2	3	25	1	7	4	108	8	8	294	36	501					0
7:45 AM	0	1	5	24	3	10	7	100	7	21	264	26	468					0
8:00 AM	1	1	3	23	1	14	4	89	4	11	221	27	399					0
8:15 AM	3	1	4	27	1	3	3	79	5	1	220	24	371					0
8:30 AM	6	2	3	20	3	9	6	99	4	7	221	31	411					0
8:45 AM	3	0	4	25	1	14	5	82	2	3	188	32	359					0
VOLUMES	24	10	27	189	15	69	43	735	44	59	2,056	230	3,501	0	0	0	0	0
APPROACH %	39%	16%	44%	69%	5%	25%	5%	89%	5%	3%	88%	10%						
APP/DEPART	61	/	283	273	/	118	822	/	951	2,345	/	2,149	0					
BEGIN PEAK HR	7:00 AM																	
VOLUMES	11	6	13	94	9	29	25	386	29	37	1,206	116	1,961					
APPROACH %	37%	20%	43%	71%	7%	22%	6%	88%	7%	3%	89%	9%						
PEAK HR FACTOR	0.750			0.892			0.917			0.911			0.939					
APP/DEPART	30	/	147	132	/	75	440	/	493	1,359	/	1,246	0					
PM																		
4:00 PM	15	3	6	51	2	7	11	227	5	0	142	32	501					0
4:15 PM	10	0	6	32	0	6	7	243	2	3	161	31	501					0
4:30 PM	6	4	5	37	1	7	11	236	5	5	162	32	511					0
4:45 PM	10	0	0	37	0	6	10	256	4	0	172	37	532					0
5:00 PM	8	0	9	34	0	8	12	252	3	3	188	28	545					0
5:15 PM	7	0	4	33	0	9	11	267	2	1	201	29	564					0
5:30 PM	1	0	3	30	1	10	13	258	1	1	183	31	532					0
5:45 PM	4	0	1	30	0	6	8	246	8	4	153	33	493				1	1
VOLUMES	61	7	34	284	4	59	83	1,985	30	17	1,362	253	4,179	0	0	0	1	1
APPROACH %	60%	7%	33%	82%	1%	17%	4%	95%	1%	1%	83%	16%						
APP/DEPART	102	/	343	347	/	51	2,098	/	2,303	1,632	/	1,482	0					
BEGIN PEAK HR	4:45 PM																	
VOLUMES	26	0	16	134	1	33	46	1,033	10	5	744	125	2,173					
APPROACH %	62%	0%	38%	80%	1%	20%	4%	95%	1%	1%	85%	14%						
PEAK HR FACTOR	0.618			0.977			0.972			0.946			0.963					
APP/DEPART	42	/	171	168	/	16	1,089	/	1,183	874	/	803	0					



		PEDESTRIAN CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
AM	7:00 AM					0
	7:15 AM					0
	7:30 AM					0
	7:45 AM					0
	8:00 AM					0
	8:15 AM					0
	8:30 AM					0
	8:45 AM					0
	TOTAL	0	0	0	0	0
PM	4:00 PM					0
	4:15 PM					0
	4:30 PM					0
	4:45 PM					0
	5:00 PM					0
	5:15 PM					0
	5:30 PM					0
	5:45 PM					0
	TOTAL	0	0	0	0	0

		PEDESTRIAN ACTIVATIONS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
AM	7:00 AM					0
	7:15 AM					0
	7:30 AM					0
	7:45 AM					0
	8:00 AM					0
	8:15 AM					0
	8:30 AM					0
	8:45 AM					0
	TOTAL	0	0	0	0	0
PM	4:00 PM					0
	4:15 PM					0
	4:30 PM					0
	4:45 PM					0
	5:00 PM					0
	5:15 PM					0
	5:30 PM					0
	5:45 PM					0
	TOTAL	0	0	0	0	0

		BICYCLE CROSSINGS				
		NS	SS	ES	WS	TOTAL
AM	7:00 AM					0
	7:15 AM					0
	7:30 AM					0
	7:45 AM					0
	8:00 AM					0
	8:15 AM					0
	8:30 AM					0
	8:45 AM					0
	TOTAL	0	0	0	0	0
PM	4:00 PM					0
	4:15 PM					0
	4:30 PM					0
	4:45 PM					0
	5:00 PM					0
	5:15 PM					0
	5:30 PM					0
	5:45 PM					0
	TOTAL	0	0	0	0	0

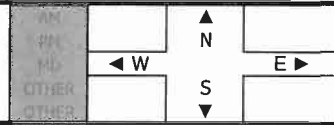
		BICYCLE ACTIVATIONS				
		NS	SS	ES	WS	TOTAL
AM	7:00 AM					0
	7:15 AM					0
	7:30 AM					0
	7:45 AM					0
	8:00 AM					0
	8:15 AM					0
	8:30 AM					0
	8:45 AM					0
	TOTAL	0	0	0	0	0
PM	4:00 PM					0
	4:15 PM					0
	4:30 PM					0
	4:45 PM					0
	5:00 PM					0
	5:15 PM					0
	5:30 PM					0
	5:45 PM					0
	TOTAL	0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS

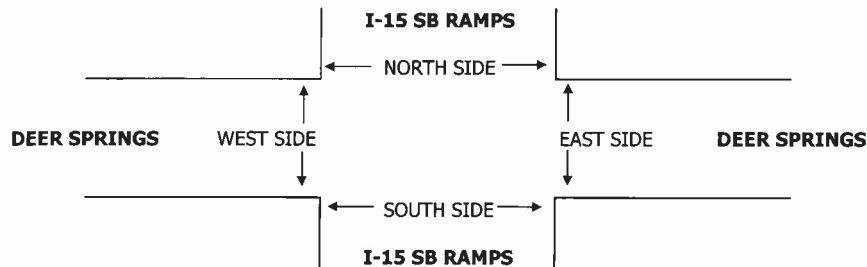
PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 4/27/17 THURSDAY LOCATION: NORTH & SOUTH: EAST & WEST: DEER SPRINGS I-15 I-15 SB RAMPS DEER SPRINGS PROJECT #: PTD17-0428-02 LOCATION #: 2 CONTROL: SIGNAL

NOTES:



	NORTHBOUND I-15 SB RAMPS			SOUTHBOUND I-15 SB RAMPS			EASTBOUND DEER SPRINGS			WESTBOUND DEER SPRINGS			TOTAL	U-TURNS				
	NL X	NT X	NR X	SL 0.5	ST 0.5	SR 2	EL X	ET 1	ER 1	WL 1	WT 1	WR X		NB X	SB X	EB X	WB X	TTL
AM																		
7:00 AM				8	0	211		57	46	84	127		533					0
7:15 AM				8	0	239		63	56	65	116		547					0
7:30 AM				16	0	234		88	53	54	98		543					0
7:45 AM				39	0	235		79	39	44	87		523					0
8:00 AM				13	0	168		81	34	63	75		434					0
8:15 AM				6	0	167		63	38	58	88		420					0
8:30 AM				14	0	170		85	37	52	78		436					0
8:45 AM				12	0	167		68	32	62	59		400					0
VOLUMES	0	0	0	116	0	1,591	0	584	335	482	728	0	3,836	0	0	0	0	0
APPROACH %	0%	0%	0%	7%	0%	93%	0%	64%	36%	40%	60%	0%						
APP/DEPART	0	/	0	1,707	/	817	919	/	700	1,210	/	2,319	0					
BEGIN PEAK HR	7:00 AM																	
VOLUMES	0	0	0	71	0	919	0	287	194	247	428	0	2,146					
APPROACH %	0%	0%	0%	7%	0%	93%	0%	60%	40%	37%	63%	0%						
PEAK HR FACTOR	0.000			0.903			0.853			0.800			0.981					
APP/DEPART	0	/	0	990	/	441	481	/	358	675	/	1,347	0					
PM																		
4:00 PM				13	0	76		228	54	39	98		508					0
4:15 PM				17	0	98		224	46	42	97		524					0
4:30 PM				14	0	98		242	38	47	89		528					0
4:45 PM				9	0	112		233	51	40	96		541					0
5:00 PM				12	0	113		239	53	42	95		554					0
5:15 PM				14	0	115		248	55	35	119		586					0
5:30 PM				18	0	109		238	54	43	90		552					0
5:45 PM				11	0	98		238	37	42	106		532					0
VOLUMES	0	0	0	108	0	819	0	1,890	388	330	790	0	4,325	0	0	0	0	0
APPROACH %	0%	0%	0%	12%	0%	88%	0%	83%	17%	29%	71%	0%						
APP/DEPART	0	/	0	927	/	718	2,278	/	1,998	1,120	/	1,609	0					
BEGIN PEAK HR	4:45 PM																	
VOLUMES	0	0	0	53	0	449	0	958	213	160	400	0	2,233					
APPROACH %	0%	0%	0%	11%	0%	89%	0%	82%	18%	29%	71%	0%						
PEAK HR FACTOR	0.000			0.973			0.966			0.909			0.953					
APP/DEPART	0	/	0	502	/	373	1,171	/	1,011	560	/	849	0					



		PEDESTRIAN CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
AM	7:00 AM					0
	7:15 AM					0
	7:30 AM					0
	7:45 AM					0
	8:00 AM					0
	8:15 AM					0
	8:30 AM					0
	8:45 AM					0
	TOTAL	0	0	0	0	0
PM	4:00 PM					0
	4:15 PM					0
	4:30 PM					0
	4:45 PM					0
	5:00 PM					0
	5:15 PM					0
	5:30 PM					0
	5:45 PM					0
	TOTAL	0	0	0	0	0

		PEDESTRIAN ACTIVATIONS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
AM	7:00 AM					0
	7:15 AM					0
	7:30 AM					0
	7:45 AM					0
	8:00 AM					0
	8:15 AM					0
	8:30 AM					0
	8:45 AM					0
	TOTAL	0	0	0	0	0
PM	4:00 PM					0
	4:15 PM					0
	4:30 PM					0
	4:45 PM					0
	5:00 PM					0
	5:15 PM					0
	5:30 PM					0
	5:45 PM					0
	TOTAL	0	0	0	0	0

		BICYCLE CROSSINGS				
		NS	SS	ES	WS	TOTAL
AM	7:00 AM					0
	7:15 AM					0
	7:30 AM					0
	7:45 AM					0
	8:00 AM					0
	8:15 AM					0
	8:30 AM					0
	8:45 AM					0
	TOTAL	0	0	0	0	0
PM	4:00 PM					0
	4:15 PM					0
	4:30 PM					0
	4:45 PM					0
	5:00 PM					0
	5:15 PM					0
	5:30 PM					0
	5:45 PM					0
	TOTAL	0	0	0	0	0

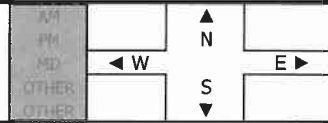
		BICYCLE ACTIVATIONS				
		NS	SS	ES	WS	TOTAL
AM	7:00 AM					0
	7:15 AM					0
	7:30 AM					0
	7:45 AM					0
	8:00 AM					0
	8:15 AM					0
	8:30 AM					0
	8:45 AM					0
	TOTAL	0	0	0	0	0
PM	4:00 PM					0
	4:15 PM					0
	4:30 PM					0
	4:45 PM					0
	5:00 PM					0
	5:15 PM					0
	5:30 PM					0
	5:45 PM					0
	TOTAL	0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS

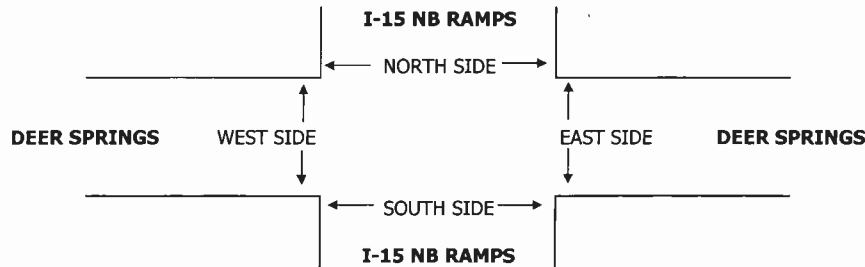
PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 4/27/17 THURSDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	DEER SPRINGS I-15 I-15 NB RAMPS DEER SPRINGS	PROJECT #: LOCATION #: CONTROL:	PTD17-0428-02 3 SIGNAL
------------------------------	---	--	---------------------------------------	------------------------------

NOTES:



	NORTHBOUND I-15 NB RAMPS			SOUTHBOUND I-15 NB RAMPS			EASTBOUND DEER SPRINGS			WESTBOUND DEER SPRINGS			TOTAL	U-TURNS				
LANES:	NL 0.5	NT 0.5	NR 1	SL X	ST X	SR X	EL 1	ET 1	ER X	WL X	WT 1	WR 1		NB X	SB X	EB X	WB X	TTL
AM																		
7:00 AM	24	1	25				43	22			195	18	328					0
7:15 AM	31	0	14				55	16			153	16	285					0
7:30 AM	32	0	35				52	47			139	12	317					0
7:45 AM	28	3	47				64	55			98	15	310					0
8:00 AM	31	0	35				52	51			105	18	292					0
8:15 AM	34	1	36				47	25			110	5	258					0
8:30 AM	33	0	40				48	30			101	9	261					0
8:45 AM	28	2	47				54	34			92	13	270					0
VOLUMES	241	7	279	0	0	0	415	280	0	0	993	106	2,321	0	0	0	0	0
APPROACH %	46%	1%	53%	0%	0%	0%	60%	40%	0%	0%	90%	10%						
APP/DEPART	527	/	528	0	/	0	695	/	559	1,099	/	1,234	0					
BEGIN PEAK HR	7:00 AM																	
VOLUMES	115	4	121	0	0	0	214	140	0	0	585	61	1,240					
APPROACH %	48%	2%	50%	0%	0%	0%	60%	40%	0%	0%	91%	9%						
PEAK HR FACTOR	0.769			0.000			0.744			0.758			0.945					
APP/DEPART	240	/	279	0	/	0	354	/	261	646	/	700	0					
PM																		
4:00 PM	72	2	85				167	70			66	13	475					0
4:15 PM	64	1	92				160	74			72	12	475					0
4:30 PM	72	2	98				169	81			67	14	503					0
4:45 PM	66	3	109				189	51			74	11	503					0
5:00 PM	77	1	77				182	64			68	9	478					0
5:15 PM	72	0	99				189	65			80	13	518					0
5:30 PM	81	2	80				175	84			64	10	496					0
5:45 PM	70	0	93				185	62			71	5	486					0
VOLUMES	574	11	733	0	0	0	1,416	551	0	0	562	87	3,934	0	0	0	0	0
APPROACH %	44%	1%	56%	0%	0%	0%	72%	28%	0%	0%	87%	13%						
APP/DEPART	1,318	/	1,514	0	/	0	1,967	/	1,284	649	/	1,136	0					
BEGIN PEAK HR	4:30 PM																	
VOLUMES	287	6	383	0	0	0	729	261	0	0	289	47	2,002					
APPROACH %	42%	1%	57%	0%	0%	0%	74%	26%	0%	0%	86%	14%						
PEAK HR FACTOR	0.949			0.000			0.974			0.903			0.966					
APP/DEPART	676	/	782	0	/	0	990	/	644	336	/	576	0					



	AM	PM
7:00 AM		
7:15 AM		
7:30 AM		
7:45 AM		
8:00 AM		
8:15 AM		
8:30 AM		
8:45 AM		
TOTAL		
4:00 PM		
4:15 PM		
4:30 PM		
4:45 PM		
5:00 PM		
5:15 PM		
5:30 PM		
5:45 PM		
TOTAL		

PEDESTRIAN CROSSINGS				
N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
				0
				0
				0
				0
				0
				0
				0
0	0	0	0	0
				0
				0
				0
				0
				0
				0
0	0	0	0	0

PEDESTRIAN ACTIVATIONS				
N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
				0
				0
				0
				0
				0
				0
				0
0	0	0	0	0
				0
				0
				0
				0
				0
				0
0	0	0	0	0

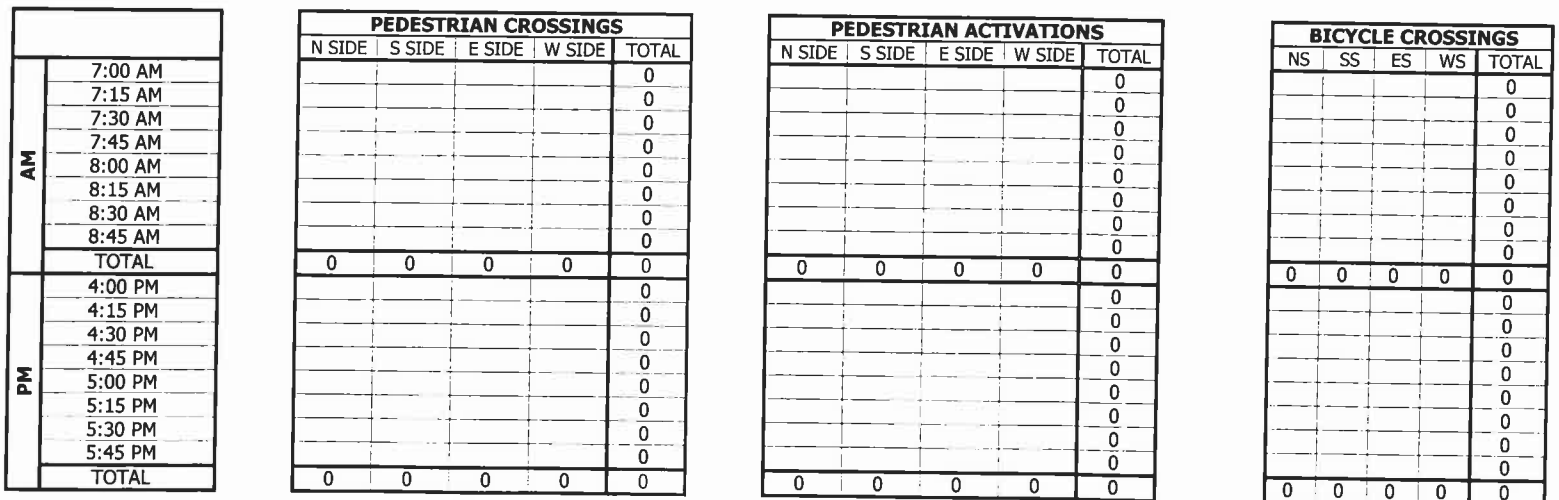
BICYCLE CROSSINGS				
NS	SS	ES	WS	TOTAL
				0
				0
				0
				0
				0
				0
				0
0	0	0	0	0
				0
				0
				0
				0
				0
				0
0	0	0	0	0

PREPARED BY: PACIFIC TECHNICAL DATA

PROJECT #: PTD17-0428-02
LOCATION #: 4
CONTROL: SIGNAL

AM		▲	
PM		N	
NO	◀ W		E ▶
OTHER		S	
		▼	

U-TURNS				
NB X	SB X	EB X	WB X	TTL
				0
				0
				0
				0
				0
				0
				0
				0
0	0	0	0	0
				0
				0
				0
				0
				0
				0
0	0	0	0	0



APPENDIX B

ILV Analysis
Work Sheets for Northbound and Southbound
Deer Springs Road/Mountain Meadows @ I-15 Intersection

Signal Timing Sheets

ILV ANALYSIS

Signalized Intersection CAPACITY ANALYSIS

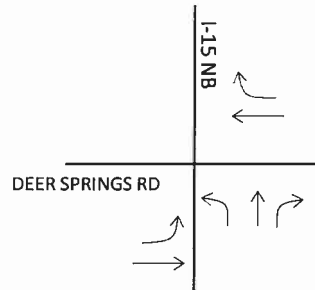
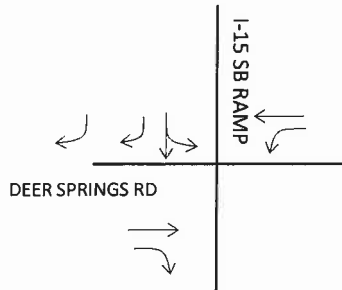
Intersection: Deer Springs Rd-Mountain Meadow @I-15 SB/NB Ramps

Date: 5/24/2017

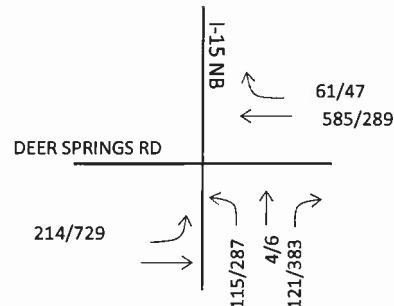
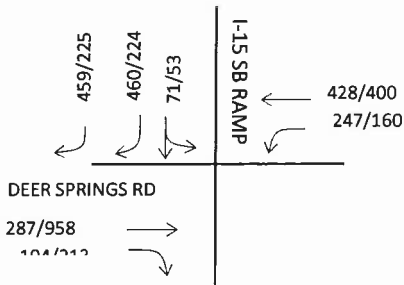
Analyst: Bill Darnell

Period: AM/PM Peak

LANE GEOMETRICS



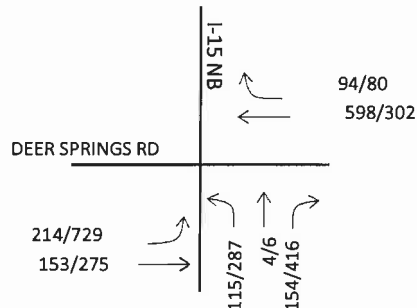
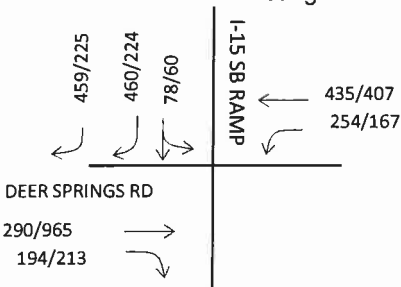
Existing Conditions



ILV (AM) = 460+247+287=994
ILV (PM) = 225+160+958=1,343

ILV (AM) = 214+585+121=920
ILV (PM) = 729+289+383=1,401

Existing Plus Project Conditions



ILV (AM) = 459+254+290=1,003
ILV (PM) = 965+167+225=1,357

ILV (AM) = 214+598+154=966
ILV (PM) = 729+302+416=1,447

<1,200- ILV/HR= Stable Flow
1,200-1,500 ILV/HR =Unstable Flow
> 1,500 ILV/HR= Capacity

ILV ANALYSIS

Signalized Intersection CAPACITY ANALYSIS

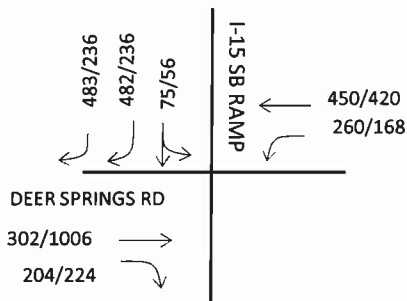
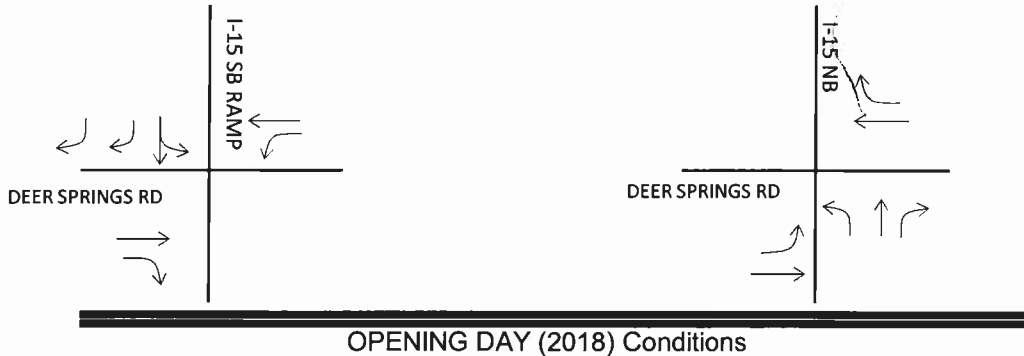
Intersection: Deer Springs Rd-Mountain Meadow @I-15 SB/NB Ramps

Date: 5/24/2017

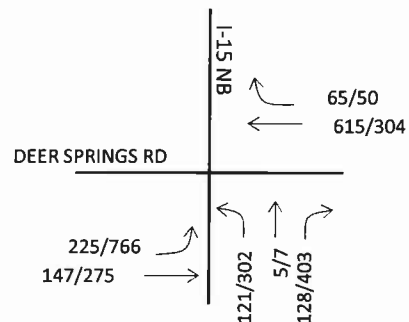
Analyst: Bill Darnell

Period: AM/PM Peak

LANE GEOMETRICS

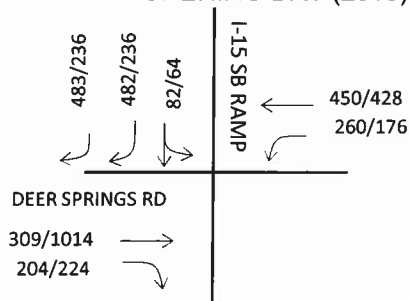


$$\begin{aligned} \text{ILV (AM)} &= 483+260+302=1,045 \\ \text{ILV (PM)} &= 236+168+1,006=1,410 \end{aligned}$$

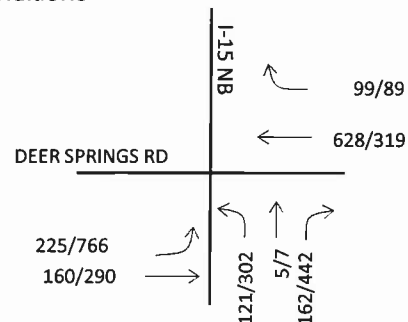


$$\begin{aligned} \text{ILV (AM)} &= 225+615+128=968 \\ \text{ILV (PM)} &= 766+304+403=1,473 \end{aligned}$$

OPENING DAY (2018) Plus Project Conditions



$$\begin{aligned} \text{ILV (AM)} &= 483+260+309=1,050 \\ \text{ILV (PM)} &= 236+176+1,014=1,426 \end{aligned}$$



$$\begin{aligned} \text{ILV (AM)} &= 225+628+128=981 \\ \text{ILV (PM)} &= 766+319+442=1,527 \end{aligned}$$

<1,200- ILV/HR= Stable Flow
1,200-1,500 ILV/HR =Unstable Flow
> 1,500 ILV/HR= Capacity

DATE: 12/15/2014

INTERVAL		PHASE TIMING								PRE-EMPTION				F										
		1	2	3	4	5	6	7	8	9	E			FLAGS			1	2	3	4	5	6	7	8
0	WALK		7		1	1	7		1	CLK RST	EV SEL	0	PERMIT				2	4	5	6		8	0	
1	DONT WALK		10		1	1	10		1		RR1 CLR	15	RED LOCK						5			8	1	
2	MIN GREEN		5		5	5	5		5		EVA DLY	0	YEL LOCK									2		
3	TYPE 3 DET		0		0	0	0		0		EVA CLR	5	V RECALL				2			6			3	
4	ADD/VEH		0.0		0.0	0.0	0.0		0.0		EVB DLY	0	P RECALL										4	
5	PASSAGE		2.0		2.0	4.0	2.0		2.0		EVB CLR	5	PED PHASES				2			6			5	
6	MAX GAP		2.0		2.0	6.0	2.0		2.0		EVC DLY	0	RT OLA										6	
7	MIN GAP		2.0		2.0	2.0	2.0		2.0		EVC CLR	5	RT OLB										7	
8	MAX EXT		30		15	40	20		20		EVD DLY	0	DBL ENTRY					4				8	8	
9	MAX 2					65				YR	EVD CLR	5	MAX 2 PHASES						5				9	
A	MAX 3						35			MO	MAX EV	255	LAG PHASES				READ ONLY						A	
B										DAY	RR2 CLR	15	RED REST										B	
C	REDUCE BY		0.0		0.0	0.1	0.0		0.0	DOW			REST-IN-WALK										C	
D	EVERY		1.0		1.0	1.0	1.0		1.0	HR			MAX 3 PHASES						6				D	
E	YELLOW		4.8		4.1	3.7	4.8		4.1	MIN			YEL START UP				2			6			E	
F	RED		1.0		1.0	1.0	1.0		1.0	SEC			FIRST PHASE									8	F	
3.5	PED XING FT		48				47										1	2	3	4	5	6	7	8
	BIKE XING FT		48				47																	

NOTES:

ENTRIES IN THESE LOCATIONS CAN BE CHANGED IN CC1 FLASH ONLY

FOC LONG FAILURE	
FOD SHORT FAILURE	
FOE	0
FOF	5

FCO	3
FC1	3
FC2	10
FCA	0.0
FCB	0.0
FCC	0.0
FCD	0.0

FDO TB SELECT	1
FD3 PED SELECT	0
FD4 7 WIRE	0
FD5 PERMISSIVE	0
FD8 OS SEEKING	1

CO5 FLASH TYPE	1
CC2 DOWNLOAD	1

	CONTROL PLANS									Y-COORD		LAG PHASE		FLAGS									
	1	2	3	4	5	6	7	8	9		C	D	E	F		1	2	3	4	5	6	7	8
0 CYCLE LENGTH		90	100			90	100	120						LAG FZ FREE		2		4		6		8	0
1 FZ1 GRN FCTR		0	0			0	0	0					GAPOUT CP1	LAG FZ CP 1									1
2													GAPOUT CP2	LAG FZ CP 2	0	2		4	5			8	2
3 FZ3 GRN FCTR		0	0			0	0	0					GAPOUT CP3	LAG FZ CP 3	0	2		4	5			8	3
4 FZ4 GRN FCTR		12	12			10	12	15		PERM TIME			GAPOUT CP4	LAG FZ CP 4									4
5 FZ5 GRN FCTR		30	35			40	45	57		LAG OFFSET			GAPOUT CP5	LAG FZ CP 5									5
6										FORCE OFF			GAPOUT CP6	LAG FZ CP 6	1	2		4	5			8	6
7 FZ7 GRN FCTR		0	0			0	0	0		LONG GRN			GAPOUT CP7	LAG FZ CP 7	0	2		4	5			8	7
8 FZ8 GRN FCTR		15	20			12	17	20		NO GREEN			GAPOUT CP8	LAG FZ CP 8	0	2		4	5			8	8
9 MULTI CYCLE		0	0			0	0	0					GAPOUT CP9	LAG FZ CP 9									9
A OFFSET A		15	15			65	65	65		OFFSET				LAG C COORD									A
B OFFSET B		15	15			65	65	65						LAG D COORD									B
C OFFSET C		15	15			65	65	65						COORD FAZES		2			6				C
D FZ 3 EXT																							D
E FZ 7 EXT																							E
F OFFSET INTRPT																							F

CO1 MANUAL CP

CO2 MASTER CP

CO3 CURRENT CP

CO4 LAST CP

CO7 TRNSMT CP

CO8 MANUAL OFFSET

CAO LOCAL CYCLE TIMER

CBO MASTER CYCLE TIMER

CAA LOCAL OFFSET

CBA MASTER OFFSET

SYSTEM MASTER:

RTE 15 NB RAMP

FEATURE

1

2

3

4

5

6

7

8

LOCATION

1

2

3

4

5

6

7

8

OFF ON

1

2

3

4

5

6

7

8

COO = 1

CCB/CDB OFFSET TIMER

CCC/CDC LAG GREEN TIMER

CCD/CDD FORCE OFF TIMER

CCE/CDE LONG GREEN TIMER

CCF/CDF NO GREEN TIMER

	D	FLAGS								E	FLAGS								F	FLAGS							
	MAX	1	2	3	4	5	6	7	8	MIN	1	2	3	4	5	6	7	8	PED	1	2	3	4	5	6	7	8
0	RCL									RCL									RCL								
1	CP 1									CP 1									CP 1								
2	CP 2									CP 2									CP 2								
3	CP 3									CP 3									CP 3								
4	CP 4									CP 4									CP 4								
5	CP 5									CP 5									CP 5								
6	CP 6									CP 6									CP 6								
7	CP 7									CP 7									CP 7								
8	CP 8									CP 8									CP 8								
9	CP 9									CP 9									CP 9								
A																			RCL 1								
B																			RCL 2								
C																											
D																											
E																											
F																											
		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8

LAST POWER FAILURE REGISTER

HOUR = D-A-E

MINUTE = D-B-E

DAY = D-C-E

RCL 1 = TIME OF DAY MAX RECALL (1ST SELECT) PHASES
(CALL ACTIVE LIGHTS)

RCL 2 = TIME OF DAY MAX RECALL (2ND SELECT) PHASES
(CALL ACTIVE LIGHTS)

LAST FLASH TIME REGISTER

HOUR = D-A-F

MINUTE = D-B-F

DAY = D-C-F

D-E-E = C8 VERSION NUMBER

D-E-F = LITHIUM BATTERY CONDITION

84 = BAD

85 = GOOD

E		FLAGS								F	FLAGS																				
		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8													
0	FUNCTION									FUNCTION										CODE 4											
1										CODE 5																					
2										C-RECALL																					
3										D-RECALL																					
4										EXCLUSIVE																					
5										2 PED	2																				
6										6 PED								6													
7										4 PED	4																				
8										8 PED																	8				
9																															
A	OLA NOT									OLA ON																					A
B	OLB NOT									OLB ON																					B
C	OLC NOT									OLC ON																					C
D	OLD NOT									OLD ON																					D
E																															E
F																															F
		1	2	3	4	5	6	7	8			1	2	3	4	5	6	7	8			1	2	3	4	5	6	7	8		

-5

TIME OF DAY ACTIVITY TABLE													
7+EVENT+HR+MIN+ACT+"E"+ON/OFF+DOW LTS													
	HR	MIN	ACT	ON/OFF	S	M	T	W	T	F	S		
0	06	00	3	ON		2	3	4	5	6	7		
1	09	00	3			2	3	4	5	6	7		
2													
3	15	00	2	ON		2	3	4	5	6	7		
4	19	00	2			2	3	4	5	6	7		
5													
6													
7													
8													
9													
A													
B													
C													
D	15	00	E			2	3	4	5	6			
E	18	00	E	ON	1	2	3	4	5	6	7		
F													

ACTIVITY CODE

- 1 TYPE OF MAX TERMINATION
- 2 MAX 2
- 3 MAX 3
- 4 COND SERV (1ST SELECT)
- 5 COND SERV (2ND SELECT)
- 6 ENERGIZE AUX OUTPUT-RED
- 7 ENERGIZE AUX OUTPUT-GREEN

CONTROL PLAN TIME OF DAY													
9+EVENT+HR+MIN+CP+OS+E+DOW													
	HR	MIN	CP	OS	S	M	T	W	T	F	S		
0													
1													
2													
3													
4													
5	15	00	7	A		2	3	4	5	6			
6	18	00	E		1	2	3	4	5	6	7		
7													
8													
9													
A													
B													
C													
D													
E													
F													

- 8 ENERGIZE AUX OUTPUT-YELLOW

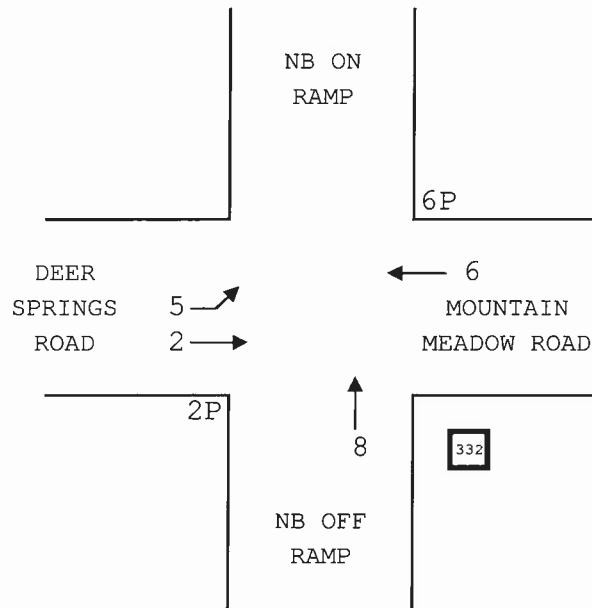
- 9 TIME OF DAY MAX RECALL (1ST SELECT)
- A TRAFFIC ACT. MAX 2 OPERATION
- B TIME OF DAY MAX RECALL (2ND SELECT)
- C YELLOW YIELD COORDINATION
- D YELLOW YIELD COORDINATION
- E TIME OF DAY FREE OPERATION
- F FLASHING OPERATION

CONTROL PLAN TIME OF DAY													
9+EVENT+HR+MIN+CP+OS+E+DOW													
	HR	MIN	CP	OS	S	M	T	W	T	F	S		
0													
1													
2													
3													
4													
5													
6													
7													
8													
9													
A													
B													
C													
D													
E													
F													

DATE: 4/29/2004

LOCATION: *Rte 15 NB @ Deer Springs Road - Mountain Meadow Road*

CONFLICT MONITOR PROGRAM



INTERVAL	PHASE TIMING								PRE-EMPTION		F															
	1	2	3	4	5	6	7	8	9	CLK RST	EV SEL	E	FLAGS	1	2	3	4	5	6	7	8					
0 WALK	1	7		1	1	7							PERMIT	1	2		4	5	6		0					
1 DONT WALK	1	10		1	1	10							RED LOCK	1							1					
2 MIN GREEN	5	6		5	5	6							YEL LOCK								2					
3 TYPE 3 DET	0	0		0	0	0							V RECALL		2			6			3					
4 ADD/VEH	0.0	0.0		0.0	0.0	0.0							P RECALL								4					
5 PASSAGE	2.0	2.0		2.0	2.0	2.0							PED PHASES		2			6			5					
6 MAX GAP	2.0	2.0		2.0	2.0	2.0							RT OLA								6					
7 MIN GAP	2.0	2.0		2.0	2.0	2.0							RT OLB								7					
8 MAX EXT	25	35		20	20	40							DBL ENTRY								8					
9 MAX 2	35			30					YR				MAX 2 PHASES	1			5				9					
A MAX 3									MO				LAG PHASES		READ ONLY							A				
B									DAY				RED REST								B					
C REDUCE BY	0.0	0.0		0.0	0.0	0.0			DOW				REST-IN-WALK								C					
D EVERY	1.0	1.0		1.0	1.0	1.0			HR				MAX 3 PHASES								D					
E YELLOW	3.7	4.8		4.1	3.7	4.8			MIN				YEL START UP	2				6			E					
F RED	1.0	1.0		1.0	1.0	1.0			SEC				FIRST PHASE			4					F					
3.5 PED XING FT		47				50								1	2	3	4	5	6	7	8					
BIKE XING FT		60				65																				

NOTES:

OLA = FZ5

ENTRIES IN THESE LOCATIONS CAN BE CHANGED IN CC1 FLASH ONLY

FOC LONG FAILURE	
FOD SHORT FAILURE	
FOE	0
FOF	5

FCO	3
FC1	3
FC2	10
FCA	0.0
FCB	0.0
FCC	0.0
FCD	0.0

FDO TB SELECT	1
FD3 PED SELECT	0
FD4 7 WIRE	0
FD5 PERMISSIVE	0
FD8 OS SEEKING	1

CO5 FLASH TYPE	1
CC2 DOWNLOAD	1

	CONTROL PLANS									Y-COORD		LAG PHASE		FLAGS							
	1	2	3	4	5	6	7	8	9	C	D	E	F	1	2	3	4	5	6	7	8
0 CYCLE LENGTH		90	100	120		90	100	120					LAG FZ FREE		2		4		6		0
1 FZ1 GRN FCTR		25	30	40		25	25	27				GAPOUT CP1	LAG FZ CP 1								1
2												GAPOUT CP2	LAG FZ CP 2	1		4		6			2
3 FZ3 GRN FCTR		0	0	0		0	0	0				GAPOUT CP3	LAG FZ CP 3	1		4		6			3
4 FZ4 GRN FCTR		10	10	15		10	10	10			PERM TIME	GAPOUT CP4	LAG FZ CP 4	1		4		6			4
5 FZ5 GRN FCTR		15	20	35		10	10	10			LAG OFFSET	GAPOUT CP5	LAG FZ CP 5								5
6											FORCE OFF	GAPOUT CP6	LAG FZ CP 6	1		4		6			6
7 FZ7 GRN FCTR		0	0	0		0	0	0			LONG GRN	GAPOUT CP7	LAG FZ CP 7	1		4		6			7
8 FZ8 GRN FCTR		0	0	0		0	0	0			NO GREEN	GAPOUT CP8	LAG FZ CP 8	1		4		6			8
9 MULTI CYCLE		0	0	0		0	0	0				GAPOUT CP9	LAG FZ CP 9								9
A OFFSET A		15	15	15		5	5	5			OFFSET		LAG C COORD								A
B OFFSET B		15	15	15		5	5	5					LAG D COORD								B
C OFFSET C		15	15	15		5	5	5					COORD FAZES	2				6			C
D FZ 3 EXT																					D
E FZ 7 EXT																					E
F OFFSET INTRPT																					F

CO1 MANUAL CP

CO2 MASTER CP

CO3 CURRENT CP

CO4 LAST CP

CO7 TRNSMT CP

COD MANUAL OFFSET

CAO LOCAL CYCLE TIMER

CBO MASTER CYCLE TIMER

CAA LOCAL OFFSET

CBA MASTER OFFSET

FEATURE

	OFF	ON
1		
2		
3		
4		
5		
6		
7		
8		

SYSTEM MASTER:

RTE 15 NB RAMP

LOCATION

	OFF	ON
1		
2		2
3		
4		
5		
6		
7		
8		

COO = 2

CCB/CDB OFFSET TIMER

CCC/CDC LAG GREEN TIMER

CCD/CDD FORCE OFF TIMER

CCE/CDE LONG GREEN TIMER

CCF/CDF NO GREEN TIMER

D	FLAGS								E	FLAGS								F	FLAGS							
	1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8
MAX									MIN	1	2	3	4	5	6	7	8	PED	1	2	3	4	5	6	7	8
RCL									RCL									RCL								
CP 1									CP 1									CP 1								
CP 2									CP 2	1								CP 2								
CP 3									CP 3	1								CP 3								
CP 4									CP 4	1								CP 4								
CP 5									CP 5									CP 5								
CP 6									CP 6	1								CP 6								
CP 7									CP 7	1								CP 7								
CP 8									CP 8	1								CP 8								
CP 9									CP 9									CP 9								
A																		RCL 1								
B																		RCL 2								
C																										
D																										
E																										
F																										
	1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8

LAST POWER FAILURE REGISTER

HOUR = D-A-E
 MINUTE = D-B-E
 DAY = D-C-E

RCL 1 = TIME OF DAY MAX RECALL (1ST SELECT) PHASES

(CALL ACTIVE LIGHTS)

RCL 2 = TIME OF DAY MAX RECALL (2ND SELECT) PHASES

(CALL ACTIVE LIGHTS)

LAST FLASH TIME REGISTER

HOUR = D-A-F
 MINUTE = D-B-F
 DAY = D-C-F

D-E-E = C8 VERSION NUMBER

D-E-F = LITHIUM BATTERY CONDITION

84 = BAD

85 = GOOD

E	FLAGS								F	FLAGS							
	1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8
FUNCTION									FUNCTION								
0									CODE 4								
1									CODE 5								
2									C-RECALL								
3									D-RECALL								
4									EXCLUSIVE								
5									2 PED	2							
6									6 PED						6		
7									4 PED				4				
8									8 PED							8	
9																	
A									OLA ON								
B									OLB ON								
C									OLC ON								
D									OLD ON								
E																	
F																	
	1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8

TIME OF DAY ACTIVITY TABLE													
7+EVENT+HR+MIN+ACT+"E"+ON/OFF+DOW LTS													
	HR	MIN	ACT	ON/OFF	S	M	T	W	T	F	S		
0	06	30	2	ON		2	3	4	5	6	7		
1	08	05	2			2	3	4	5	6			
2						2	3	4	5	6			
3													
4													
5													
6													
7													
8													
9													
A													
B													
C	06	30	E			2	3	4	5	6			
D	08	05	E	ON	1	2	3	4	5	6	7		
E	14	00	E			2	3	4	5	6			
F	18	30	E	ON	1	2	3	4	5	6	7		

ACTIVITY CODE

- 1 TYPE OF MAX TERMINATION
- 2 MAX 2
- 3 MAX 3
- 4 COND SERV (1ST SELECT)
- 5 COND SERV (2ND SELECT)
- 6 ENERGIZE AUX OUTPUT-RED
- 7 ENERGIZE AUX OUTPUT-GREEN

CONTROL PLAN TIME OF DAY													
9+EVENT+HR+MIN+CP+OS+E+DOW													
	HR	MIN	CP	OS	S	M	T	W	T	F	S		
0													
1	06	30	3	A		2	3	4	5	6			
2	08	05	E		1	2	3	4	5	6	7		
3													
4	14	00	6	A		2	3	4	5	6			
5	15	00	7	A		2	3	4	5	6			
6	18	00	6	A		2	3	4	5	6			
7	18	30	E		1	2	3	4	5	6	7		
8													
9													
A													
B													
C													
D													
E													
F													

8 ENERGIZE AUX OUTPUT-YELLOW

9 TIME OF DAY MAX RECALL (1ST SELECT)

A TRAFFIC ACT. MAX 2 OPERATION

B TIME OF DAY MAX RECALL (2ND SELECT)

C YELLOW YIELD COORDINATION

D YELLOW YIELD COORDINATION

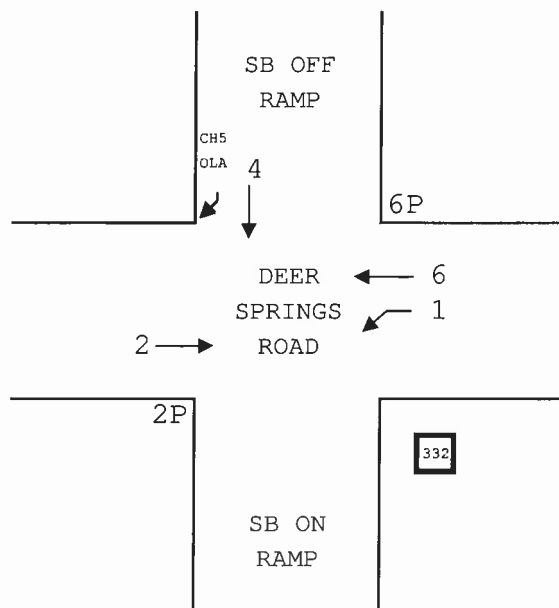
E TIME OF DAY FREE OPERATION

F FLASHING OPERATION

DATE: 5/23/2007

LOCATION: Rte 15 SB @ Deer Springs Road

CONFLICT MONITOR PROGRAM



I-15 & Deer Springs Rd Mini Mart
1: Mesa Rock Rd & Deer Springs Rd

Existing Conditions
Timing Plan: AM Peak



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Configurations						
Volume (vph)	25	386	37	1206	6	9
Turn Type	Prot	NA	Prot	NA	NA	NA
Protected Phases	5	2	1	6	8	4
Permitted Phases						
Detector Phase	5	2	1	6	8	4
Switch Phase						
Minimum Initial (s)	4.0	5.0	4.0	5.0	4.0	4.0
Minimum Split (s)	9.0	24.0	9.0	23.0	26.0	28.0
Total Split (s)	9.0	36.0	10.0	37.0	26.0	28.0
Total Split (%)	9.0%	36.0%	10.0%	37.0%	26.0%	28.0%
Yellow Time (s)	3.0	5.0	3.0	5.0	4.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	4.0	6.0	5.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max	None	C-Max	Min	Min

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 110
Control Type: Actuated-Coordinated

Splits and Phases: 1: Mesa Rock Rd & Deer Springs Rd

$\phi 1$	$\phi 2 (R)$	$\phi 4$	$\phi 8$
10 s	36 s	28 s	26 s
$\phi 5$	$\phi 6 (R)$		
9 s	37 s		

I-15 & Deer Springs Rd Mini Mart
1: Mesa Rock Rd & Deer Springs Rd

Existing Conditions

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	386	29	37	1206	116	11	6	13	94	9	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		4.0	6.0			5.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	0.99		1.00	0.99			0.94			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1770	3502		1770	3493			1725			1745	
Flt Permitted	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (perm)	1770	3502		1770	3493			1725			1745	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	420	32	40	1311	126	12	7	14	102	10	32
RTOR Reduction (vph)	0	4	0	0	4	0	0	13	0	0	12	0
Lane Group Flow (vph)	27	448	0	40	1433	0	0	20	0	0	132	0
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												
Actuated Green, G (s)	3.5	55.2		4.1	55.8			8.4			13.3	
Effective Green, g (s)	3.5	55.2		4.1	55.8			8.4			13.3	
Actuated g/C Ratio	0.04	0.55		0.04	0.56			0.08			0.13	
Clearance Time (s)	4.0	6.0		4.0	6.0			5.0			4.0	
Vehicle Extension (s)	2.0	2.5		2.0	2.5			2.0			2.0	
Lane Grp Cap (vph)	61	1933		72	1949			144			232	
v/s Ratio Prot	0.02	0.13		c0.02	c0.41			c0.01			c0.08	
v/s Ratio Perm												
v/c Ratio	0.44	0.23		0.56	0.74			0.14			0.57	
Uniform Delay, d1	47.3	11.5		47.1	16.6			42.5			40.7	
Progression Factor	1.00	1.00		0.94	1.11			1.00			1.00	
Incremental Delay, d2	1.9	0.3		4.1	2.0			0.2			1.9	
Delay (s)	49.2	11.8		48.3	20.3			42.6			42.6	
Level of Service	D	B		D	C			D			D	
Approach Delay (s)		13.9			21.1			42.6			42.6	
Approach LOS		B			C			D			D	
Intersection Summary												
HCM 2000 Control Delay			21.3			HCM 2000 Level of Service					C	
HCM 2000 Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			19.0			
Intersection Capacity Utilization			59.0%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

I-15 & Deer Springs Rd Mini Mart
1: Mesa Rock Rd & Deer Springs Rd

Existing Conditions
Timing Plan: PM Peak

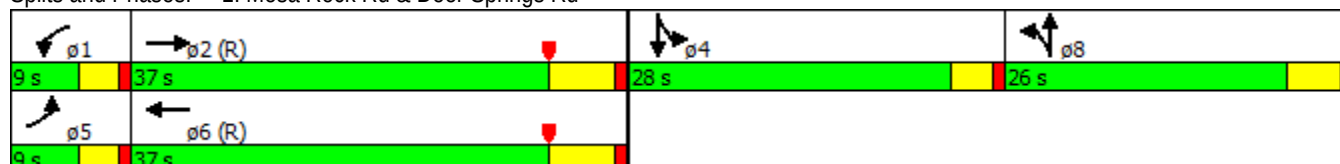


Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Configurations						
Volume (vph)	46	1033	5	744	0	1
Turn Type	Prot	NA	Prot	NA	NA	NA
Protected Phases	5	2	1	6	8	4
Permitted Phases						
Detector Phase	5	2	1	6	8	4
Switch Phase						
Minimum Initial (s)	4.0	5.0	4.0	5.0	4.0	4.0
Minimum Split (s)	9.0	24.0	9.0	23.0	26.0	28.0
Total Split (s)	9.0	37.0	9.0	37.0	26.0	28.0
Total Split (%)	9.0%	37.0%	9.0%	37.0%	26.0%	28.0%
Yellow Time (s)	3.0	5.0	3.0	5.0	4.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	4.0	6.0	5.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max	None	C-Max	Min	Min

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 100
Control Type: Actuated-Coordinated

Splits and Phases: 1: Mesa Rock Rd & Deer Springs Rd



I-15 & Deer Springs Rd Mini Mart
1: Mesa Rock Rd & Deer Springs Rd

Existing Conditions

Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	46	1033	10	5	744	125	26	0	16	134	1	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		4.0	6.0			5.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			0.95			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.96	
Satd. Flow (prot)	1770	3534		1770	3463			1714			1744	
Flt Permitted	0.95	1.00		0.95	1.00			0.97			0.96	
Satd. Flow (perm)	1770	3534		1770	3463			1714			1744	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	50	1123	11	5	809	136	28	0	17	146	1	36
RTOR Reduction (vph)	0	0	0	0	9	0	0	41	0	0	10	0
Lane Group Flow (vph)	50	1134	0	5	936	0	0	4	0	0	173	0
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												
Actuated Green, G (s)	5.5	57.2		1.0	52.7			7.8			15.0	
Effective Green, g (s)	5.5	57.2		1.0	52.7			7.8			15.0	
Actuated g/C Ratio	0.06	0.57		0.01	0.53			0.08			0.15	
Clearance Time (s)	4.0	6.0		4.0	6.0			5.0			4.0	
Vehicle Extension (s)	2.0	2.5		2.0	2.5			2.0			2.0	
Lane Grp Cap (vph)	97	2021		17	1825			133			261	
v/s Ratio Prot	c0.03	c0.32		0.00	0.27			c0.00			c0.10	
v/s Ratio Perm												
v/c Ratio	0.52	0.56		0.29	0.51			0.03			0.66	
Uniform Delay, d1	46.0	13.5		49.1	15.3			42.6			40.1	
Progression Factor	1.00	1.00		0.82	1.23			1.00			1.00	
Incremental Delay, d2	1.9	1.1		3.2	1.0			0.0			4.8	
Delay (s)	47.9	14.6		43.6	19.8			42.6			44.9	
Level of Service	D	B		D	B			D			D	
Approach Delay (s)		16.0			20.0			42.6			44.9	
Approach LOS		B			B			D			D	
Intersection Summary												
HCM 2000 Control Delay			20.4			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)				19.0		
Intersection Capacity Utilization			56.4%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

I-15 & Deer Springs Rd Mini Mart
 2: I-15 SB Ramps & Deer Springs Rd

Existing Conditions
 Timing Plan: AM Peak

	→	↘	↙	←	↓	↙
Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Configurations	↑	↑	↘	↑	↘	↘
Volume (vph)	287	194	247	428	0	919
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	2		1	6	4	
Permitted Phases		2				4
Detector Phase	2	2	1	6	4	4
Switch Phase						
Minimum Initial (s)	6.0	6.0	5.0	6.0	5.0	5.0
Minimum Split (s)	23.0	23.0	10.0	23.8	23.0	23.0
Total Split (s)	34.0	34.0	29.0	63.0	37.0	37.0
Total Split (%)	34.0%	34.0%	29.0%	63.0%	37.0%	37.0%
Yellow Time (s)	4.8	4.8	3.7	4.8	4.1	4.1
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	4.7	5.8	5.1	5.1
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	Min	Min

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated

Splits and Phases: 2: I-15 SB Ramps & Deer Springs Rd



I-15 & Deer Springs Rd Mini Mart
2: I-15 SB Ramps & Deer Springs Rd

Existing Conditions

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	287	194	247	428	0	0	0	0	71	0	919
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.8	5.8	4.7	5.8						5.1	5.1
Lane Util. Factor		1.00	1.00	1.00	1.00						1.00	0.88
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		1863	1583	1770	1863						1770	2787
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		1863	1583	1770	1863						1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	312	211	268	465	0	0	0	0	77	0	999
RTOR Reduction (vph)	0	0	124	0	0	0	0	0	0	0	0	512
Lane Group Flow (vph)	0	312	87	268	465	0	0	0	0	0	77	487
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2							4		4
Actuated Green, G (s)		41.0	41.0	19.7	65.4						23.7	23.7
Effective Green, g (s)		41.0	41.0	19.7	65.4						23.7	23.7
Actuated g/C Ratio		0.41	0.41	0.20	0.65						0.24	0.24
Clearance Time (s)		5.8	5.8	4.7	5.8						5.1	5.1
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		763	649	348	1218						419	660
v/s Ratio Prot		c0.17		c0.15	0.25							
v/s Ratio Perm			0.05								0.04	c0.17
v/c Ratio		0.41	0.13	0.77	0.38						0.18	0.74
Uniform Delay, d1		20.9	18.4	38.0	8.0						30.4	35.3
Progression Factor		0.75	0.87	1.38	0.91						1.00	1.00
Incremental Delay, d2		1.6	0.4	8.3	0.7						0.2	4.3
Delay (s)		17.2	16.5	60.9	8.0						30.6	39.6
Level of Service		B	B	E	A						C	D
Approach Delay (s)		16.9			27.4			0.0			38.9	
Approach LOS		B			C			A			D	
Intersection Summary												
HCM 2000 Control Delay			30.4			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)				15.6		
Intersection Capacity Utilization			63.8%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

I-15 & Deer Springs Rd Mini Mart
2: I-15 SB Ramps & Deer Springs Rd

Existing Conditions
Timing Plan: PM Peak

	→	↘	↙	←	↓	↙
Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Configurations	↑	↑	↘	↑	↘	↘
Volume (vph)	958	213	160	400	0	449
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	2		1	6	4	
Permitted Phases		2				4
Detector Phase	2	2	1	6	4	4
Switch Phase						
Minimum Initial (s)	6.0	6.0	5.0	6.0	5.0	5.0
Minimum Split (s)	23.0	23.0	10.0	23.8	23.0	23.0
Total Split (s)	62.0	62.0	15.0	77.0	23.0	23.0
Total Split (%)	62.0%	62.0%	15.0%	77.0%	23.0%	23.0%
Yellow Time (s)	4.8	4.8	3.7	4.8	4.1	4.1
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	4.7	5.8	5.1	5.1
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	Min	Min

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 2: I-15 SB Ramps & Deer Springs Rd



I-15 & Deer Springs Rd Mini Mart
2: I-15 SB Ramps & Deer Springs Rd

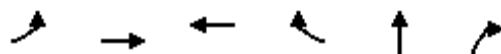
Existing Conditions

Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	958	213	160	400	0	0	0	0	53	0	449
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.8	5.8	4.7	5.8						5.1	5.1
Lane Util. Factor		1.00	1.00	1.00	1.00						1.00	0.88
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		1863	1583	1770	1863						1770	2787
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		1863	1583	1770	1863						1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1041	232	174	435	0	0	0	0	58	0	488
RTOR Reduction (vph)	0	0	82	0	0	0	0	0	0	0	0	440
Lane Group Flow (vph)	0	1041	150	174	435	0	0	0	0	0	58	48
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2							4		4
Actuated Green, G (s)		59.4	59.4	15.1	79.2						9.9	9.9
Effective Green, g (s)		59.4	59.4	15.1	79.2						9.9	9.9
Actuated g/C Ratio		0.59	0.59	0.15	0.79						0.10	0.10
Clearance Time (s)		5.8	5.8	4.7	5.8						5.1	5.1
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		1106	940	267	1475						175	275
v/s Ratio Prot		c0.56		c0.10	0.23							
v/s Ratio Perm			0.09								0.03	0.02
v/c Ratio		0.94	0.16	0.65	0.29						0.33	0.18
Uniform Delay, d1		18.7	9.1	40.0	2.8						42.0	41.3
Progression Factor		0.98	0.64	0.49	3.85						1.00	1.00
Incremental Delay, d2		14.6	0.3	2.3	0.2						1.1	0.3
Delay (s)		33.0	6.2	22.0	11.1						43.1	41.6
Level of Service		C	A	C	B						D	D
Approach Delay (s)		28.1			14.2			0.0			41.8	
Approach LOS		C			B			A			D	
Intersection Summary												
HCM 2000 Control Delay			27.7			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)				15.6		
Intersection Capacity Utilization			84.8%			ICU Level of Service				E		
Analysis Period (min)			15									
c Critical Lane Group												

I-15 & Deer Springs Rd Mini Mart
3: I-15 NB Ramps & Deer Springs Rd

Existing Conditions
Timing Plan: AM Peak



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Configurations						
Volume (vph)	214	140	585	61	4	121
Turn Type	Prot	NA	NA	Perm	NA	Perm
Protected Phases	5	2	6		8	
Permitted Phases				6		8
Detector Phase	5	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	24.0	77.0	53.0	53.0	23.0	23.0
Total Split (%)	24.0%	77.0%	53.0%	53.0%	23.0%	23.0%
Yellow Time (s)	3.7	4.8	4.8	4.8	4.1	4.1
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	5.8	5.8	5.8	5.1	5.1
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Max	C-Max	C-Max	Min	Min

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow, Master Intersection

Natural Cycle: 70

Control Type: Actuated-Coordinated

Splits and Phases: 3: I-15 NB Ramps & Deer Springs Rd



I-15 & Deer Springs Rd Mini Mart
3: I-15 NB Ramps & Deer Springs Rd

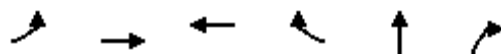
Existing Conditions

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	214	140	0	0	585	61	115	4	121	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.8			5.8	5.8		5.1	5.1			
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (prot)	1770	1863			1863	1583		1777	1583			
Flt Permitted	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (perm)	1770	1863			1863	1583		1777	1583			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	233	152	0	0	636	66	125	4	132	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	30	0	0	116	0	0	0
Lane Group Flow (vph)	233	152	0	0	636	36	0	129	17	0	0	0
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases						6	8		8			
Actuated Green, G (s)	17.4	76.6			54.5	54.5		12.5	12.5			
Effective Green, g (s)	17.4	76.6			54.5	54.5		12.5	12.5			
Actuated g/C Ratio	0.17	0.77			0.54	0.54		0.12	0.12			
Clearance Time (s)	4.7	5.8			5.8	5.8		5.1	5.1			
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0			
Lane Grp Cap (vph)	307	1427			1015	862		222	197			
v/s Ratio Prot	c0.13	0.08			c0.34							
v/s Ratio Perm						0.02		0.07	0.01			
v/c Ratio	0.76	0.11			0.63	0.04		0.58	0.08			
Uniform Delay, d1	39.3	3.0			15.7	10.6		41.3	38.7			
Progression Factor	0.86	1.85			1.00	1.00		1.00	1.00			
Incremental Delay, d2	9.8	0.1			2.9	0.1		3.8	0.2			
Delay (s)	43.5	5.6			18.6	10.7		45.1	38.9			
Level of Service	D	A			B	B		D	D			
Approach Delay (s)		28.5			17.9			42.0			0.0	
Approach LOS		C			B			D			A	
Intersection Summary												
HCM 2000 Control Delay		25.6			HCM 2000 Level of Service			C				
HCM 2000 Volume to Capacity ratio		0.65										
Actuated Cycle Length (s)		100.0			Sum of lost time (s)			15.6				
Intersection Capacity Utilization		63.8%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												

I-15 & Deer Springs Rd Mini Mart
3: I-15 NB Ramps & Deer Springs Rd

Existing Conditions
Timing Plan: PM Peak

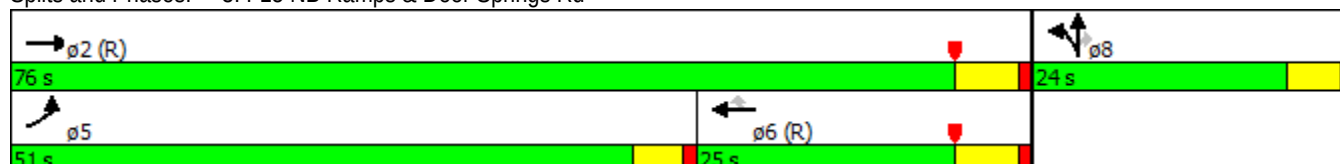


Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Configurations						
Volume (vph)	729	261	289	47	6	383
Turn Type	Prot	NA	NA	Perm	NA	Perm
Protected Phases	5	2	6		8	
Permitted Phases				6		8
Detector Phase	5	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	51.0	76.0	25.0	25.0	24.0	24.0
Total Split (%)	51.0%	76.0%	25.0%	25.0%	24.0%	24.0%
Yellow Time (s)	3.7	4.8	4.8	4.8	4.1	4.1
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	5.8	5.8	5.8	5.1	5.1
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Max	C-Max	C-Max	Min	Min

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow, Master Intersection
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 3: I-15 NB Ramps & Deer Springs Rd

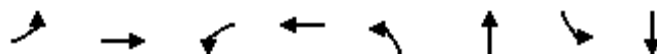


I-15 & Deer Springs Rd Mini Mart
3: I-15 NB Ramps & Deer Springs Rd

Existing Conditions

Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	729	261	0	0	289	47	287	6	383	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.8			5.8	5.8		5.1	5.1			
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (prot)	1770	1863			1863	1583		1776	1583			
Flt Permitted	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (perm)	1770	1863			1863	1583		1776	1583			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	792	284	0	0	314	51	312	7	416	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	41	0	0	328	0	0	0
Lane Group Flow (vph)	792	284	0	0	314	10	0	319	88	0	0	0
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			
Actuated Green, G (s)	45.9	70.2			19.6	19.6		18.9	18.9			
Effective Green, g (s)	45.9	70.2			19.6	19.6		18.9	18.9			
Actuated g/C Ratio	0.46	0.70			0.20	0.20		0.19	0.19			
Clearance Time (s)	4.7	5.8			5.8	5.8		5.1	5.1			
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0			
Lane Grp Cap (vph)	812	1307			365	310		335	299			
v/s Ratio Prot	c0.45	0.15			c0.17			c0.18				
v/s Ratio Perm						0.01			0.06			
v/c Ratio	0.98	0.22			0.86	0.03		0.95	0.29			
Uniform Delay, d1	26.5	5.2			38.9	32.5		40.1	34.8			
Progression Factor	1.29	1.22			1.00	1.00		1.00	1.00			
Incremental Delay, d2	14.7	0.2			22.4	0.2		36.5	0.5			
Delay (s)	49.0	6.5			61.3	32.7		76.6	35.4			
Level of Service	D	A			E	C		E	D			
Approach Delay (s)		37.8			57.3			53.3			0.0	
Approach LOS		D			E			D			A	
Intersection Summary												
HCM 2000 Control Delay			46.3				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.94									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)			15.6		
Intersection Capacity Utilization			84.8%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	←	↑↓	←	↑↓		↑↓		↑↓
Volume (vph)	87	97	238	312	48	58	24	427
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		8		4
Permitted Phases					8		4	
Detector Phase	5	2	1	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	4.0	6.0	4.0	6.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.4	23.0	9.4	25.2	28.5	28.5	32.5	32.5
Total Split (s)	16.0	23.0	22.0	29.0	55.0	55.0	55.0	55.0
Total Split (%)	16.0%	23.0%	22.0%	29.0%	55.0%	55.0%	55.0%	55.0%
Yellow Time (s)	4.4	5.2	4.4	5.2	5.5	5.5	5.5	5.5
All-Red Time (s)	0.5	1.0	0.5	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	4.9	6.2	4.9	6.2		6.5		6.5
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	Min	Min	Min	Min

Intersection Summary

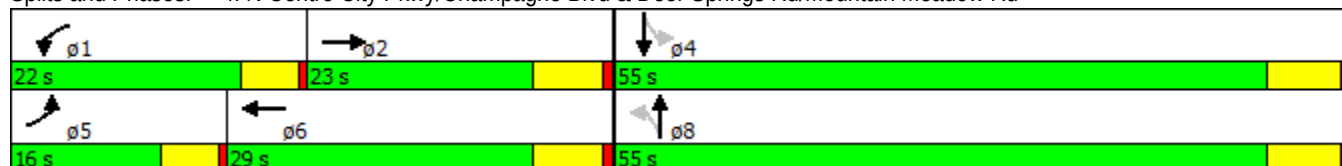
Cycle Length: 100

Actuated Cycle Length: 84.5

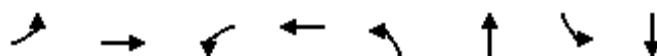
Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Splits and Phases: 4: N Centre City Pkwy/Champagne Blvd & Deer Springs Rd/Mountain Meadow Rd



												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	87	97	79	238	312	17	48	58	48	24	427	290
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	6.2		4.9	6.2			6.5			6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	0.93		1.00	0.99			0.96			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.98			1.00	
Satd. Flow (prot)	1770	3300		1770	3512			1757			1761	
Flt Permitted	0.95	1.00		0.95	1.00			0.69			0.99	
Satd. Flow (perm)	1770	3300		1770	3512			1235			1742	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	95	105	86	259	339	18	52	63	52	26	464	315
RTOR Reduction (vph)	0	77	0	0	4	0	0	16	0	0	23	0
Lane Group Flow (vph)	95	114	0	259	353	0	0	151	0	0	782	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	7.3	9.4		15.8	17.9			42.6			42.6	
Effective Green, g (s)	7.3	9.4		15.8	17.9			42.6			42.6	
Actuated g/C Ratio	0.09	0.11		0.19	0.21			0.50			0.50	
Clearance Time (s)	4.9	6.2		4.9	6.2			6.5			6.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0			2.0	
Lane Grp Cap (vph)	151	363		327	736			616			868	
v/s Ratio Prot	0.05	0.03		c0.15	c0.10							
v/s Ratio Perm								0.12			c0.45	
v/c Ratio	0.63	0.32		0.79	0.48			0.25			0.90	
Uniform Delay, d1	37.7	35.0		33.2	29.7			12.2			19.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	5.8	0.2		11.6	0.2			0.1			12.2	
Delay (s)	43.5	35.2		44.8	29.8			12.3			31.7	
Level of Service	D	D		D	C			B			C	
Approach Delay (s)		38.0			36.1			12.3			31.7	
Approach LOS		D			D			B			C	
Intersection Summary												
HCM 2000 Control Delay			32.4			HCM 2000 Level of Service					C	
HCM 2000 Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			85.4			Sum of lost time (s)			17.6			
Intersection Capacity Utilization			75.3%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	323	265	62	155	65	231	22	107
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		8		4
Permitted Phases					8		4	
Detector Phase	5	2	1	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	4.0	6.0	4.0	6.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.4	23.0	9.4	25.2	28.5	28.5	32.5	32.5
Total Split (s)	31.0	43.6	14.4	27.0	42.0	42.0	42.0	42.0
Total Split (%)	31.0%	43.6%	14.4%	27.0%	42.0%	42.0%	42.0%	42.0%
Yellow Time (s)	4.4	5.2	4.4	5.2	5.5	5.5	5.5	5.5
All-Red Time (s)	0.5	1.0	0.5	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	4.9	6.2	4.9	6.2		6.5		6.5
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	Min	Min	Min	Min

Intersection Summary

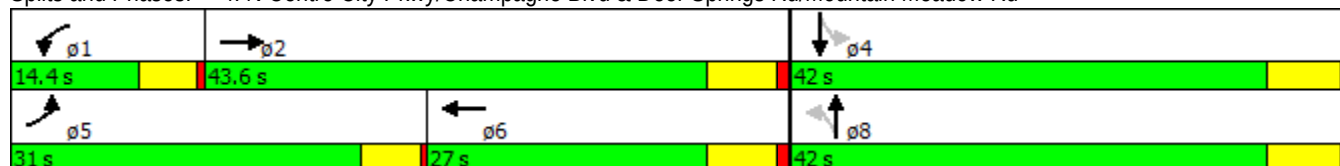
Cycle Length: 100

Actuated Cycle Length: 74.2

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Splits and Phases: 4: N Centre City Pkwy/Champagne Blvd & Deer Springs Rd/Mountain Meadow Rd



												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	323	265	68	62	155	20	65	231	145	22	107	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	6.2		4.9	6.2			6.5			6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	0.97		1.00	0.98			0.96			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1770	3431		1770	3478			1767			1734	
Flt Permitted	0.95	1.00		0.95	1.00			0.91			0.94	
Satd. Flow (perm)	1770	3431		1770	3478			1614			1637	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	351	288	74	67	168	22	71	251	158	24	116	130
RTOR Reduction (vph)	0	24	0	0	11	0	0	17	0	0	34	0
Lane Group Flow (vph)	351	338	0	67	179	0	0	463	0	0	236	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	19.4	24.8		5.9	11.3			26.3			26.3	
Effective Green, g (s)	19.4	24.8		5.9	11.3			26.3			26.3	
Actuated g/C Ratio	0.26	0.33		0.08	0.15			0.35			0.35	
Clearance Time (s)	4.9	6.2		4.9	6.2			6.5			6.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0			2.0	
Lane Grp Cap (vph)	460	1140		139	526			569			577	
v/s Ratio Prot	c0.20	c0.10		0.04	0.05							
v/s Ratio Perm								c0.29			0.14	
v/c Ratio	0.76	0.30		0.48	0.34			0.81			0.41	
Uniform Delay, d1	25.5	18.4		32.9	28.3			21.9			18.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	6.6	0.1		1.0	0.1			8.2			0.2	
Delay (s)	32.1	18.5		33.8	28.5			30.2			18.4	
Level of Service	C	B		C	C			C			B	
Approach Delay (s)		25.2			29.9			30.2			18.4	
Approach LOS		C			C			C			B	
Intersection Summary												
HCM 2000 Control Delay			26.2									
HCM 2000 Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			74.6									
Intersection Capacity Utilization			76.0%									
Analysis Period (min)			15									
c Critical Lane Group												

I-15 & Deer Springs Rd Mini Mart
1: Mesa Rock Rd & Deer Springs Rd

Existing Plus Project
Timing Plan: AM Peak

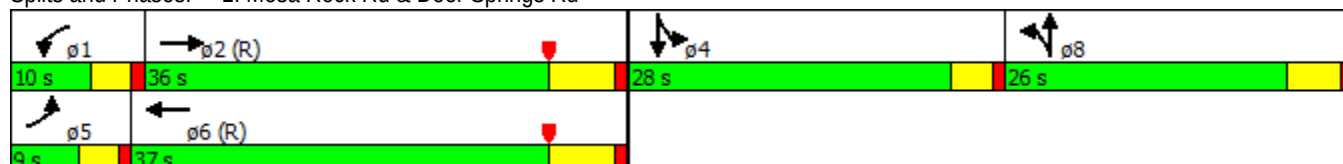


Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Configurations						
Volume (vph)	25	389	40	1213	6	9
Turn Type	Prot	NA	Prot	NA	NA	NA
Protected Phases	5	2	1	6	8	4
Permitted Phases						
Detector Phase	5	2	1	6	8	4
Switch Phase						
Minimum Initial (s)	4.0	5.0	4.0	5.0	4.0	4.0
Minimum Split (s)	9.0	24.0	9.0	23.0	26.0	28.0
Total Split (s)	9.0	36.0	10.0	37.0	26.0	28.0
Total Split (%)	9.0%	36.0%	10.0%	37.0%	26.0%	28.0%
Yellow Time (s)	3.0	5.0	3.0	5.0	4.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	4.0	6.0	5.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max	None	C-Max	Min	Min

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 110
Control Type: Actuated-Coordinated

Splits and Phases: 1: Mesa Rock Rd & Deer Springs Rd



I-15 & Deer Springs Rd Mini Mart
1: Mesa Rock Rd & Deer Springs Rd

Existing Plus Project
Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	389	29	40	1213	116	11	6	16	94	9	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		4.0	6.0			5.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	0.99		1.00	0.99			0.94			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1770	3502		1770	3493			1715			1745	
Flt Permitted	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (perm)	1770	3502		1770	3493			1715			1745	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	423	32	43	1318	126	12	7	17	102	10	32
RTOR Reduction (vph)	0	4	0	0	4	0	0	16	0	0	12	0
Lane Group Flow (vph)	27	451	0	43	1440	0	0	20	0	0	132	0
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												
Actuated Green, G (s)	3.5	55.1		4.2	55.8			8.4			13.3	
Effective Green, g (s)	3.5	55.1		4.2	55.8			8.4			13.3	
Actuated g/C Ratio	0.04	0.55		0.04	0.56			0.08			0.13	
Clearance Time (s)	4.0	6.0		4.0	6.0			5.0			4.0	
Vehicle Extension (s)	2.0	2.5		2.0	2.5			2.0			2.0	
Lane Grp Cap (vph)	61	1929		74	1949			144			232	
v/s Ratio Prot	0.02	0.13		c0.02	c0.41			c0.01			c0.08	
v/s Ratio Perm												
v/c Ratio	0.44	0.23		0.58	0.74			0.14			0.57	
Uniform Delay, d1	47.3	11.6		47.0	16.6			42.5			40.7	
Progression Factor	1.00	1.00		0.94	1.11			1.00			1.00	
Incremental Delay, d2	1.9	0.3		5.7	2.0			0.2			1.9	
Delay (s)	49.2	11.9		49.7	20.4			42.6			42.6	
Level of Service	D	B		D	C			D			D	
Approach Delay (s)		13.9			21.3			42.6			42.6	
Approach LOS		B			C			D			D	
Intersection Summary												
HCM 2000 Control Delay			21.4			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			19.0			
Intersection Capacity Utilization			59.7%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

I-15 & Deer Springs Rd Mini Mart
1: Mesa Rock Rd & Deer Springs Rd

Existing Plus Project
Timing Plan: PM Peak



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Configurations						
Volume (vph)	46	1037	8	751	0	1
Turn Type	Prot	NA	Prot	NA	NA	NA
Protected Phases	5	2	1	6	8	4
Permitted Phases						
Detector Phase	5	2	1	6	8	4
Switch Phase						
Minimum Initial (s)	4.0	5.0	4.0	5.0	4.0	4.0
Minimum Split (s)	9.0	24.0	9.0	23.0	26.0	28.0
Total Split (s)	9.0	37.0	9.0	37.0	26.0	28.0
Total Split (%)	9.0%	37.0%	9.0%	37.0%	26.0%	28.0%
Yellow Time (s)	3.0	5.0	3.0	5.0	4.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	4.0	6.0	5.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max	None	C-Max	Min	Min

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 100
Control Type: Actuated-Coordinated

Splits and Phases: 1: Mesa Rock Rd & Deer Springs Rd

$\phi 1$	$\phi 2 (R)$	$\phi 4$	$\phi 8$
9 s	37 s	28 s	26 s
$\phi 5$	$\phi 6 (R)$		
9 s	37 s		

I-15 & Deer Springs Rd Mini Mart
1: Mesa Rock Rd & Deer Springs Rd

Existing Plus Project
Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	46	1037	10	8	751	125	26	0	20	134	1	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		4.0	6.0			5.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			0.94			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.96	
Satd. Flow (prot)	1770	3534		1770	3463			1704			1744	
Flt Permitted	0.95	1.00		0.95	1.00			0.97			0.96	
Satd. Flow (perm)	1770	3534		1770	3463			1704			1744	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	50	1127	11	9	816	136	28	0	22	146	1	36
RTOR Reduction (vph)	0	0	0	0	9	0	0	46	0	0	10	0
Lane Group Flow (vph)	50	1138	0	9	943	0	0	4	0	0	173	0
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												
Actuated Green, G (s)	5.5	57.2		1.0	52.7			7.8			15.0	
Effective Green, g (s)	5.5	57.2		1.0	52.7			7.8			15.0	
Actuated g/C Ratio	0.06	0.57		0.01	0.53			0.08			0.15	
Clearance Time (s)	4.0	6.0		4.0	6.0			5.0			4.0	
Vehicle Extension (s)	2.0	2.5		2.0	2.5			2.0			2.0	
Lane Grp Cap (vph)	97	2021		17	1825			132			261	
v/s Ratio Prot	c0.03	c0.32		0.01	0.27			c0.00			c0.10	
v/s Ratio Perm												
v/c Ratio	0.52	0.56		0.53	0.52			0.03			0.66	
Uniform Delay, d1	46.0	13.5		49.3	15.4			42.6			40.1	
Progression Factor	1.00	1.00		0.84	1.22			1.00			1.00	
Incremental Delay, d2	1.9	1.1		12.1	1.0			0.0			4.8	
Delay (s)	47.9	14.6		53.5	19.8			42.6			44.9	
Level of Service	D	B		D	B			D			D	
Approach Delay (s)		16.0			20.1			42.6			44.9	
Approach LOS		B			C			D			D	
Intersection Summary												
HCM 2000 Control Delay			20.5			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			19.0			
Intersection Capacity Utilization			57.4%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

I-15 & Deer Springs Rd Mini Mart
 2: I-15 SB Ramps & Deer Springs Rd

Existing Plus Project
 Timing Plan: AM Peak

	→	↘	↙	←	↓	↙
Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Configurations	↑	↑	↘	↑	↘	↘
Volume (vph)	290	194	254	435	0	919
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	2		1	6	4	
Permitted Phases		2				4
Detector Phase	2	2	1	6	4	4
Switch Phase						
Minimum Initial (s)	6.0	6.0	5.0	6.0	5.0	5.0
Minimum Split (s)	23.0	23.0	10.0	23.8	23.0	23.0
Total Split (s)	34.0	34.0	29.0	63.0	37.0	37.0
Total Split (%)	34.0%	34.0%	29.0%	63.0%	37.0%	37.0%
Yellow Time (s)	4.8	4.8	3.7	4.8	4.1	4.1
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	4.7	5.8	5.1	5.1
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	Min	Min

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated

Splits and Phases: 2: I-15 SB Ramps & Deer Springs Rd



I-15 & Deer Springs Rd Mini Mart
2: I-15 SB Ramps & Deer Springs Rd

Existing Plus Project
Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	290	194	254	435	0	0	0	0	78	0	919
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.8	5.8	4.7	5.8						5.1	5.1
Lane Util. Factor		1.00	1.00	1.00	1.00						1.00	0.88
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		1863	1583	1770	1863						1770	2787
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		1863	1583	1770	1863						1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	315	211	276	473	0	0	0	0	85	0	999
RTOR Reduction (vph)	0	0	126	0	0	0	0	0	0	0	0	500
Lane Group Flow (vph)	0	315	85	276	473	0	0	0	0	0	85	499
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2							4		4
Actuated Green, G (s)		40.3	40.3	20.0	65.0						24.1	24.1
Effective Green, g (s)		40.3	40.3	20.0	65.0						24.1	24.1
Actuated g/C Ratio		0.40	0.40	0.20	0.65						0.24	0.24
Clearance Time (s)		5.8	5.8	4.7	5.8						5.1	5.1
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		750	637	354	1210						426	671
v/s Ratio Prot		c0.17		c0.16	0.25							
v/s Ratio Perm			0.05								0.05	c0.18
v/c Ratio		0.42	0.13	0.78	0.39						0.20	0.74
Uniform Delay, d1		21.5	18.8	37.9	8.2						30.3	35.1
Progression Factor		0.75	0.89	1.40	0.93						1.00	1.00
Incremental Delay, d2		1.7	0.4	8.5	0.8						0.2	4.5
Delay (s)		17.8	17.1	61.5	8.4						30.5	39.6
Level of Service		B	B	E	A						C	D
Approach Delay (s)		17.5			28.0			0.0			38.8	
Approach LOS		B			C			A			D	
Intersection Summary												
HCM 2000 Control Delay			30.6			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			15.6			
Intersection Capacity Utilization			64.1%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

I-15 & Deer Springs Rd Mini Mart
2: I-15 SB Ramps & Deer Springs Rd

Existing Plus Project
Timing Plan: PM Peak

	→	↘	↙	←	↓	↗
Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Configurations	↑	↑	↘	↑	↘	↗
Volume (vph)	966	213	167	407	0	449
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	2		1	6	4	
Permitted Phases		2				4
Detector Phase	2	2	1	6	4	4
Switch Phase						
Minimum Initial (s)	6.0	6.0	5.0	6.0	5.0	5.0
Minimum Split (s)	23.0	23.0	10.0	23.8	23.0	23.0
Total Split (s)	62.0	62.0	15.0	77.0	23.0	23.0
Total Split (%)	62.0%	62.0%	15.0%	77.0%	23.0%	23.0%
Yellow Time (s)	4.8	4.8	3.7	4.8	4.1	4.1
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	4.7	5.8	5.1	5.1
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	Min	Min

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 2: I-15 SB Ramps & Deer Springs Rd



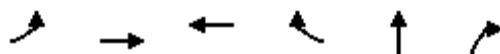
I-15 & Deer Springs Rd Mini Mart
2: I-15 SB Ramps & Deer Springs Rd

Existing Plus Project
Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	966	213	167	407	0	0	0	0	60	0	449
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.8	5.8	4.7	5.8						5.1	5.1
Lane Util. Factor		1.00	1.00	1.00	1.00						1.00	0.88
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		1863	1583	1770	1863						1770	2787
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		1863	1583	1770	1863						1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1050	232	182	442	0	0	0	0	65	0	488
RTOR Reduction (vph)	0	0	83	0	0	0	0	0	0	0	0	438
Lane Group Flow (vph)	0	1050	149	182	442	0	0	0	0	0	65	50
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2							4		4
Actuated Green, G (s)		58.3	58.3	15.9	78.9						10.2	10.2
Effective Green, g (s)		58.3	58.3	15.9	78.9						10.2	10.2
Actuated g/C Ratio		0.58	0.58	0.16	0.79						0.10	0.10
Clearance Time (s)		5.8	5.8	4.7	5.8						5.1	5.1
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		1086	922	281	1469						180	284
v/s Ratio Prot		c0.56		c0.10	0.24							
v/s Ratio Perm			0.09								0.04	0.02
v/c Ratio		0.97	0.16	0.65	0.30						0.36	0.18
Uniform Delay, d1		19.9	9.6	39.4	2.9						41.9	41.1
Progression Factor		0.98	0.65	0.44	3.92						1.00	1.00
Incremental Delay, d2		18.7	0.3	1.9	0.2						1.2	0.3
Delay (s)		38.3	6.6	19.4	11.6						43.1	41.4
Level of Service		D	A	B	B						D	D
Approach Delay (s)		32.5			13.9			0.0			41.6	
Approach LOS		C			B			A			D	
Intersection Summary												
HCM 2000 Control Delay			29.8			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)				15.6		
Intersection Capacity Utilization			85.5%			ICU Level of Service				E		
Analysis Period (min)			15									
c Critical Lane Group												

I-15 & Deer Springs Rd Mini Mart
3: I-15 NB Ramps & Deer Springs Rd

Existing Plus Project
Timing Plan: AM Peak



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Configurations						
Volume (vph)	214	153	598	94	4	154
Turn Type	Prot	NA	NA	Perm	NA	Perm
Protected Phases	5	2	6		8	
Permitted Phases				6		8
Detector Phase	5	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	24.0	77.0	53.0	53.0	23.0	23.0
Total Split (%)	24.0%	77.0%	53.0%	53.0%	23.0%	23.0%
Yellow Time (s)	3.7	4.8	4.8	4.8	4.1	4.1
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	5.8	5.8	5.8	5.1	5.1
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Max	C-Max	C-Max	Min	Min

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow, Master Intersection
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 3: I-15 NB Ramps & Deer Springs Rd



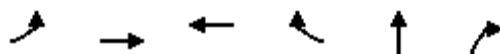
I-15 & Deer Springs Rd Mini Mart
3: I-15 NB Ramps & Deer Springs Rd

Existing Plus Project
Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	214	153	0	0	598	94	115	4	154	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.8			5.8	5.8		5.1	5.1			
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (prot)	1770	1863			1863	1583		1777	1583			
Flt Permitted	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (perm)	1770	1863			1863	1583		1777	1583			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	233	166	0	0	650	102	125	4	167	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	44	0	0	146	0	0	0
Lane Group Flow (vph)	233	166	0	0	650	58	0	129	21	0	0	0
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases						6	8		8			
Actuated Green, G (s)	17.3	76.5			54.5	54.5		12.6	12.6			
Effective Green, g (s)	17.3	76.5			54.5	54.5		12.6	12.6			
Actuated g/C Ratio	0.17	0.76			0.54	0.54		0.13	0.13			
Clearance Time (s)	4.7	5.8			5.8	5.8		5.1	5.1			
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0			
Lane Grp Cap (vph)	306	1425			1015	862		223	199			
v/s Ratio Prot	c0.13	0.09			c0.35							
v/s Ratio Perm						0.04		0.07	0.01			
v/c Ratio	0.76	0.12			0.64	0.07		0.58	0.11			
Uniform Delay, d1	39.4	3.0			15.9	10.7		41.2	38.7			
Progression Factor	0.84	1.88			1.00	1.00		1.00	1.00			
Incremental Delay, d2	10.2	0.2			3.1	0.2		3.6	0.2			
Delay (s)	43.1	5.9			19.0	10.9		44.8	38.9			
Level of Service	D	A			B	B		D	D			
Approach Delay (s)		27.6			17.9			41.5			0.0	
Approach LOS		C			B			D			A	
Intersection Summary												
HCM 2000 Control Delay		25.4			HCM 2000 Level of Service			C				
HCM 2000 Volume to Capacity ratio		0.66										
Actuated Cycle Length (s)		100.0			Sum of lost time (s)			15.6				
Intersection Capacity Utilization		64.1%			ICU Level of Service			C				
Analysis Period (min)		15										
c Critical Lane Group												

I-15 & Deer Springs Rd Mini Mart
3: I-15 NB Ramps & Deer Springs Rd

Existing Plus Project
Timing Plan: PM Peak

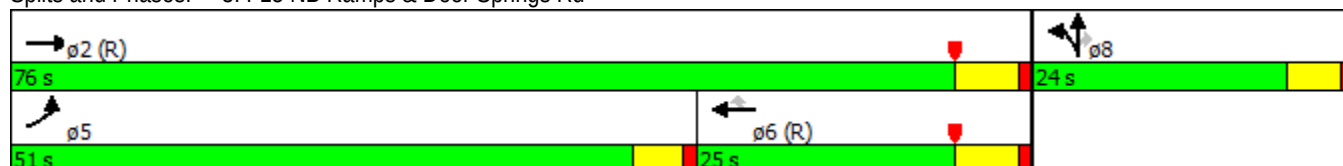


Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Configurations						
Volume (vph)	729	275	302	80	6	416
Turn Type	Prot	NA	NA	Perm	NA	Perm
Protected Phases	5	2	6		8	
Permitted Phases				6		8
Detector Phase	5	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	51.0	76.0	25.0	25.0	24.0	24.0
Total Split (%)	51.0%	76.0%	25.0%	25.0%	24.0%	24.0%
Yellow Time (s)	3.7	4.8	4.8	4.8	4.1	4.1
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	5.8	5.8	5.8	5.1	5.1
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Max	C-Max	C-Max	Min	Min

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow, Master Intersection
Natural Cycle: 90
Control Type: Actuated-Coordinated

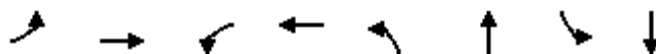
Splits and Phases: 3: I-15 NB Ramps & Deer Springs Rd



I-15 & Deer Springs Rd Mini Mart
3: I-15 NB Ramps & Deer Springs Rd

Existing Plus Project
Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	729	275	0	0	302	80	287	6	416	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.8			5.8	5.8		5.1	5.1			
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (prot)	1770	1863			1863	1583		1776	1583			
Flt Permitted	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (perm)	1770	1863			1863	1583		1776	1583			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	792	299	0	0	328	87	312	7	452	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	70	0	0	357	0	0	0
Lane Group Flow (vph)	792	299	0	0	328	17	0	319	95	0	0	0
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			
Actuated Green, G (s)	45.9	70.2			19.6	19.6		18.9	18.9			
Effective Green, g (s)	45.9	70.2			19.6	19.6		18.9	18.9			
Actuated g/C Ratio	0.46	0.70			0.20	0.20		0.19	0.19			
Clearance Time (s)	4.7	5.8			5.8	5.8		5.1	5.1			
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0			
Lane Grp Cap (vph)	812	1307			365	310		335	299			
v/s Ratio Prot	c0.45	0.16			c0.18			c0.18				
v/s Ratio Perm						0.01			0.06			
v/c Ratio	0.98	0.23			0.90	0.06		0.95	0.32			
Uniform Delay, d1	26.5	5.3			39.2	32.7		40.1	35.0			
Progression Factor	1.33	1.25			1.00	1.00		1.00	1.00			
Incremental Delay, d2	13.9	0.2			27.3	0.3		36.5	0.6			
Delay (s)	49.1	6.8			66.6	33.0		76.6	35.6			
Level of Service	D	A			E	C		E	D			
Approach Delay (s)		37.5			59.5			52.6			0.0	
Approach LOS		D			E			D			A	
Intersection Summary												
HCM 2000 Control Delay			46.6				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.95									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)			15.6		
Intersection Capacity Utilization			85.5%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	←	↑↑	←	↑↑		↑↑		↑↑
Volume (vph)	87	97	245	312	94	65	24	434
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		8		4
Permitted Phases					8		4	
Detector Phase	5	2	1	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	4.0	6.0	4.0	6.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.4	23.0	9.4	25.2	28.5	28.5	32.5	32.5
Total Split (s)	16.0	23.0	22.0	29.0	55.0	55.0	55.0	55.0
Total Split (%)	16.0%	23.0%	22.0%	29.0%	55.0%	55.0%	55.0%	55.0%
Yellow Time (s)	4.4	5.2	4.4	5.2	5.5	5.5	5.5	5.5
All-Red Time (s)	0.5	1.0	0.5	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	4.9	6.2	4.9	6.2		6.5		6.5
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	Min	Min	Min	Min

Intersection Summary

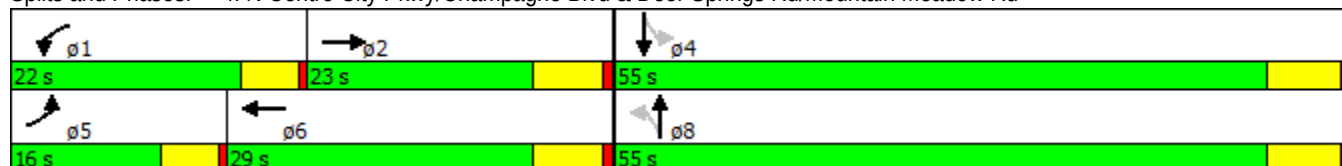
Cycle Length: 100

Actuated Cycle Length: 85.7

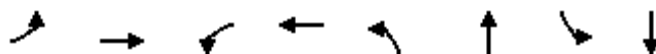
Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Splits and Phases: 4: N Centre City Pkwy/Champagne Blvd & Deer Springs Rd/Mountain Meadow Rd



												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	87	97	125	245	312	17	94	65	55	24	434	290
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	6.2		4.9	6.2			6.5			6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	0.92		1.00	0.99			0.97			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.98			1.00	
Satd. Flow (prot)	1770	3240		1770	3512			1759			1762	
Flt Permitted	0.95	1.00		0.95	1.00			0.49			0.99	
Satd. Flow (perm)	1770	3240		1770	3512			882			1739	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	95	105	136	266	339	18	102	71	60	26	472	315
RTOR Reduction (vph)	0	121	0	0	4	0	0	12	0	0	22	0
Lane Group Flow (vph)	95	120	0	266	353	0	0	221	0	0	791	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	7.3	9.4		16.1	18.2			43.5			43.5	
Effective Green, g (s)	7.3	9.4		16.1	18.2			43.5			43.5	
Actuated g/C Ratio	0.08	0.11		0.19	0.21			0.50			0.50	
Clearance Time (s)	4.9	6.2		4.9	6.2			6.5			6.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0			2.0	
Lane Grp Cap (vph)	149	351		329	738			443			873	
v/s Ratio Prot	0.05	0.04		c0.15	c0.10							
v/s Ratio Perm								0.25			c0.45	
v/c Ratio	0.64	0.34		0.81	0.48			0.50			0.91	
Uniform Delay, d1	38.4	35.7		33.8	30.0			14.3			19.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	6.4	0.2		12.9	0.2			0.3			12.6	
Delay (s)	44.8	35.9		46.6	30.2			14.6			32.3	
Level of Service	D	D		D	C			B			C	
Approach Delay (s)		38.4			37.2			14.6			32.3	
Approach LOS		D			D			B			C	
Intersection Summary												
HCM 2000 Control Delay			32.8			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			86.6			Sum of lost time (s)			17.6			
Intersection Capacity Utilization			93.8%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	323	265	69	155	115	238	22	114
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		8		4
Permitted Phases					8		4	
Detector Phase	5	2	1	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	4.0	6.0	4.0	6.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.4	23.0	9.4	25.2	28.5	28.5	32.5	32.5
Total Split (s)	31.0	43.6	14.4	27.0	42.0	42.0	42.0	42.0
Total Split (%)	31.0%	43.6%	14.4%	27.0%	42.0%	42.0%	42.0%	42.0%
Yellow Time (s)	4.4	5.2	4.4	5.2	5.5	5.5	5.5	5.5
All-Red Time (s)	0.5	1.0	0.5	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	4.9	6.2	4.9	6.2		6.5		6.5
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	Min	Min	Min	Min

Intersection Summary

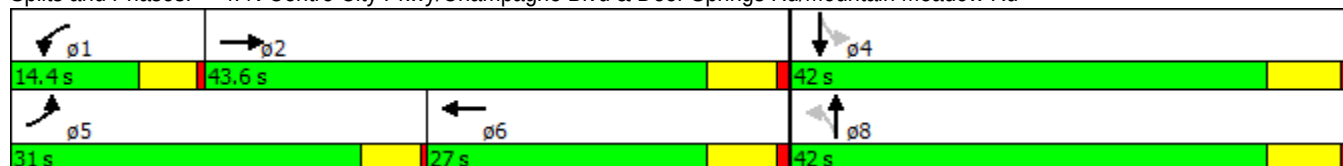
Cycle Length: 100

Actuated Cycle Length: 83.9

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Splits and Phases: 4: N Centre City Pkwy/Champagne Blvd & Deer Springs Rd/Mountain Meadow Rd



												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	323	265	104	69	155	20	115	238	152	22	114	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	6.2		4.9	6.2			6.5			6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	0.96		1.00	0.98			0.96			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1770	3390		1770	3478			1767			1738	
Flt Permitted	0.95	1.00		0.95	1.00			0.83			0.93	
Satd. Flow (perm)	1770	3390		1770	3478			1483			1625	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	351	288	113	75	168	22	125	259	165	24	124	130
RTOR Reduction (vph)	0	47	0	0	11	0	0	14	0	0	28	0
Lane Group Flow (vph)	351	354	0	75	179	0	0	535	0	0	250	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	20.3	24.9		6.5	11.1			35.9			35.9	
Effective Green, g (s)	20.3	24.9		6.5	11.1			35.9			35.9	
Actuated g/C Ratio	0.24	0.29		0.08	0.13			0.42			0.42	
Clearance Time (s)	4.9	6.2		4.9	6.2			6.5			6.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0			2.0	
Lane Grp Cap (vph)	423	994		135	454			627			687	
v/s Ratio Prot	c0.20	c0.10		0.04	0.05							
v/s Ratio Perm								c0.36			0.15	
v/c Ratio	0.83	0.36		0.56	0.39			0.85			0.36	
Uniform Delay, d1	30.7	23.7		37.8	33.8			22.1			16.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	12.1	0.1		2.8	0.2			10.5			0.1	
Delay (s)	42.8	23.8		40.6	34.0			32.7			16.8	
Level of Service	D	C		D	C			C			B	
Approach Delay (s)		32.6			35.9			32.7			16.8	
Approach LOS		C			D			C			B	
Intersection Summary												
HCM 2000 Control Delay			30.7									C
HCM 2000 Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			84.9								17.6	
Intersection Capacity Utilization			85.7%								E	
ICU Level of Service												
Analysis Period (min)			15									
c Critical Lane Group												

I-15 & Deer Springs Rd Mini Mart
5: N Centre City Pkwy & Proj Dwy

Existing Plus Project
Timing Plan: AM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	60	7	7	154	744	60
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	65	8	8	167	809	65
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)					255	
pX, platoon unblocked	0.67	0.67	0.67			
vC, conflicting volume	1024	841	874			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	785	510	559			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	73	98	99			
cM capacity (veh/h)	238	375	673			
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	65	8	175	874		
Volume Left	65	0	8	0		
Volume Right	0	8	0	65		
cSH	238	375	673	1700		
Volume to Capacity	0.27	0.02	0.01	0.51		
Queue Length 95th (ft)	27	2	1	0		
Control Delay (s)	25.7	14.8	0.6	0.0		
Lane LOS	D	B	A			
Approach Delay (s)	24.6		0.6	0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization			52.8%	ICU Level of Service		A
Analysis Period (min)			15			

I-15 & Deer Springs Rd Mini Mart
5: N Centre City Pkwy & Project Dwy

Existing Plus Project
Timing Plan: PM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	70	7	8	441	237	69
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	76	8	9	479	258	75
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)					255	
pX, platoon unblocked						
vC, conflicting volume	792	295	333			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	792	295	333			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	79	99	99			
cM capacity (veh/h)	356	744	1227			
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	76	8	488	333		
Volume Left	76	0	9	0		
Volume Right	0	8	0	75		
cSH	356	744	1227	1700		
Volume to Capacity	0.21	0.01	0.01	0.20		
Queue Length 95th (ft)	20	1	1	0		
Control Delay (s)	17.9	9.9	0.2	0.0		
Lane LOS	C	A	A			
Approach Delay (s)	17.1		0.2	0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization			40.2%	ICU Level of Service		A
Analysis Period (min)			15			

I-15 & Deer Springs Rd Mini Mart
1: Mesa Rock Rd & Deer Springs Rd

Opening Year 2018
Timing Plan: AM Peak



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Configurations						
Volume (vph)	27	406	39	1267	7	10
Turn Type	Prot	NA	Prot	NA	NA	NA
Protected Phases	5	2	1	6	8	4
Permitted Phases						
Detector Phase	5	2	1	6	8	4
Switch Phase						
Minimum Initial (s)	4.0	5.0	4.0	5.0	4.0	4.0
Minimum Split (s)	9.0	24.0	9.0	23.0	26.0	28.0
Total Split (s)	9.0	36.0	10.0	37.0	26.0	28.0
Total Split (%)	9.0%	36.0%	10.0%	37.0%	26.0%	28.0%
Yellow Time (s)	3.0	5.0	3.0	5.0	4.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	4.0	6.0	5.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max	None	C-Max	Min	Min

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 110
Control Type: Actuated-Coordinated

Splits and Phases: 1: Mesa Rock Rd & Deer Springs Rd

$\phi 1$	$\phi 2 (R)$	$\phi 4$	$\phi 8$
10 s	36 s	28 s	26 s
$\phi 5$	$\phi 6 (R)$		
9 s	37 s		

I-15 & Deer Springs Rd Mini Mart
1: Mesa Rock Rd & Deer Springs Rd

Opening Year 2018

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	27	406	31	39	1267	122	12	7	14	99	10	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		4.0	6.0			5.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	0.99		1.00	0.99			0.94			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1770	3501		1770	3492			1727			1745	
Flt Permitted	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (perm)	1770	3501		1770	3492			1727			1745	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	441	34	42	1377	133	13	8	15	108	11	34
RTOR Reduction (vph)	0	4	0	0	4	0	0	14	0	0	12	0
Lane Group Flow (vph)	29	471	0	42	1506	0	0	22	0	0	141	0
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												
Actuated Green, G (s)	3.6	54.7		4.1	55.2			8.5			13.7	
Effective Green, g (s)	3.6	54.7		4.1	55.2			8.5			13.7	
Actuated g/C Ratio	0.04	0.55		0.04	0.55			0.08			0.14	
Clearance Time (s)	4.0	6.0		4.0	6.0			5.0			4.0	
Vehicle Extension (s)	2.0	2.5		2.0	2.5			2.0			2.0	
Lane Grp Cap (vph)	63	1915		72	1927			146			239	
v/s Ratio Prot	0.02	0.13		c0.02	c0.43			c0.01			c0.08	
v/s Ratio Perm												
v/c Ratio	0.46	0.25		0.58	0.78			0.15			0.59	
Uniform Delay, d1	47.2	11.9		47.1	17.6			42.4			40.5	
Progression Factor	1.00	1.00		0.91	1.12			1.00			1.00	
Incremental Delay, d2	1.9	0.3		5.6	2.4			0.2			2.4	
Delay (s)	49.2	12.2		48.3	22.2			42.6			42.9	
Level of Service	D	B		D	C			D			D	
Approach Delay (s)		14.3			22.9			42.6			42.9	
Approach LOS		B			C			D			D	
Intersection Summary												
HCM 2000 Control Delay			22.7			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			19.0			
Intersection Capacity Utilization			61.7%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

I-15 & Deer Springs Rd Mini Mart
1: Mesa Rock Rd & Deer Springs Rd

Opening Year 2018
Timing Plan: PM Peak

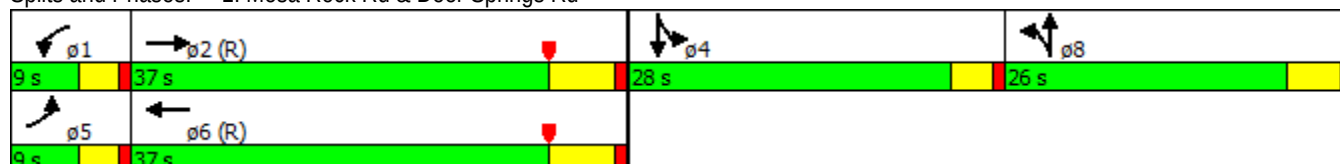


Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Configurations						
Volume (vph)	49	1085	6	782	0	2
Turn Type	Prot	NA	Prot	NA	NA	NA
Protected Phases	5	2	1	6	8	4
Permitted Phases						
Detector Phase	5	2	1	6	8	4
Switch Phase						
Minimum Initial (s)	4.0	5.0	4.0	5.0	4.0	4.0
Minimum Split (s)	9.0	24.0	9.0	23.0	26.0	28.0
Total Split (s)	9.0	37.0	9.0	37.0	26.0	28.0
Total Split (%)	9.0%	37.0%	9.0%	37.0%	26.0%	28.0%
Yellow Time (s)	3.0	5.0	3.0	5.0	4.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	4.0	6.0	5.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max	None	C-Max	Min	Min

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 100
Control Type: Actuated-Coordinated

Splits and Phases: 1: Mesa Rock Rd & Deer Springs Rd



I-15 & Deer Springs Rd Mini Mart
1: Mesa Rock Rd & Deer Springs Rd

Opening Year 2018

Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	1085	11	6	782	132	28	0	17	141	2	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		4.0	6.0			5.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			0.95			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.96	
Satd. Flow (prot)	1770	3534		1770	3463			1715			1744	
Flt Permitted	0.95	1.00		0.95	1.00			0.97			0.96	
Satd. Flow (perm)	1770	3534		1770	3463			1715			1744	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	53	1179	12	7	850	143	30	0	18	153	2	38
RTOR Reduction (vph)	0	0	0	0	10	0	0	44	0	0	10	0
Lane Group Flow (vph)	53	1191	0	7	983	0	0	4	0	0	183	0
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												
Actuated Green, G (s)	5.6	56.8		1.0	52.2			7.8			15.4	
Effective Green, g (s)	5.6	56.8		1.0	52.2			7.8			15.4	
Actuated g/C Ratio	0.06	0.57		0.01	0.52			0.08			0.15	
Clearance Time (s)	4.0	6.0		4.0	6.0			5.0			4.0	
Vehicle Extension (s)	2.0	2.5		2.0	2.5			2.0			2.0	
Lane Grp Cap (vph)	99	2007		17	1807			133			268	
v/s Ratio Prot	c0.03	c0.34		0.00	0.28			c0.00			c0.10	
v/s Ratio Perm												
v/c Ratio	0.54	0.59		0.41	0.54			0.03			0.68	
Uniform Delay, d1	45.9	14.1		49.2	16.0			42.6			40.0	
Progression Factor	1.00	1.00		0.85	1.21			1.00			1.00	
Incremental Delay, d2	2.8	1.3		5.3	1.1			0.0			5.6	
Delay (s)	48.7	15.4		47.1	20.3			42.6			45.6	
Level of Service	D	B		D	C			D			D	
Approach Delay (s)		16.8			20.5			42.6			45.6	
Approach LOS		B			C			D			D	
Intersection Summary												
HCM 2000 Control Delay			21.0			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			19.0			
Intersection Capacity Utilization			58.5%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

I-15 & Deer Springs Rd Mini Mart
2: I-15 SB Ramps & Deer Springs Rd

Opening Year 2018
Timing Plan: AM Peak



Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Configurations	↑	↗	↖	↑	↑	↗
Volume (vph)	302	204	260	450	0	965
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	2		1	6	4	
Permitted Phases		2				4
Detector Phase	2	2	1	6	4	4
Switch Phase						
Minimum Initial (s)	6.0	6.0	5.0	6.0	5.0	5.0
Minimum Split (s)	23.0	23.0	10.0	23.8	23.0	23.0
Total Split (s)	34.0	34.0	29.0	63.0	37.0	37.0
Total Split (%)	34.0%	34.0%	29.0%	63.0%	37.0%	37.0%
Yellow Time (s)	4.8	4.8	3.7	4.8	4.1	4.1
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	4.7	5.8	5.1	5.1
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	Min	Min

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 2: I-15 SB Ramps & Deer Springs Rd



I-15 & Deer Springs Rd Mini Mart
2: I-15 SB Ramps & Deer Springs Rd

Opening Year 2018

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	302	204	260	450	0	0	0	0	75	0	965
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.8	5.8	4.7	5.8						5.1	5.1
Lane Util. Factor		1.00	1.00	1.00	1.00						1.00	0.88
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		1863	1583	1770	1863						1770	2787
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		1863	1583	1770	1863						1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	328	222	283	489	0	0	0	0	82	0	1049
RTOR Reduction (vph)	0	0	139	0	0	0	0	0	0	0	0	467
Lane Group Flow (vph)	0	328	83	283	489	0	0	0	0	0	82	582
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2							4		4
Actuated Green, G (s)		37.6	37.6	20.3	62.6						26.5	26.5
Effective Green, g (s)		37.6	37.6	20.3	62.6						26.5	26.5
Actuated g/C Ratio		0.38	0.38	0.20	0.63						0.26	0.26
Clearance Time (s)		5.8	5.8	4.7	5.8						5.1	5.1
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		700	595	359	1166						469	738
v/s Ratio Prot		c0.18		c0.16	0.26							
v/s Ratio Perm			0.05								0.05	c0.21
v/c Ratio		0.47	0.14	0.79	0.42						0.17	0.79
Uniform Delay, d1		23.6	20.6	37.8	9.5						28.3	34.2
Progression Factor		0.77	1.00	1.43	0.97						1.00	1.00
Incremental Delay, d2		2.2	0.5	8.6	0.9						0.2	5.6
Delay (s)		20.3	21.0	62.8	10.0						28.5	39.8
Level of Service		C	C	E	B						C	D
Approach Delay (s)		20.6			29.4			0.0			38.9	
Approach LOS		C			C			A			D	
Intersection Summary												
HCM 2000 Control Delay			31.8			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)				15.6		
Intersection Capacity Utilization			66.5%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												

I-15 & Deer Springs Rd Mini Mart
2: I-15 SB Ramps & Deer Springs Rd

Opening Year 2018
Timing Plan: PM Peak

	→	↘	↙	←	↓	↙
Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Configurations	↑	↑	↘	↑	↘	↘
Volume (vph)	1006	224	168	420	0	472
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	2		1	6	4	
Permitted Phases		2				4
Detector Phase	2	2	1	6	4	4
Switch Phase						
Minimum Initial (s)	6.0	6.0	5.0	6.0	5.0	5.0
Minimum Split (s)	23.0	23.0	10.0	23.8	23.0	23.0
Total Split (s)	62.0	62.0	15.0	77.0	23.0	23.0
Total Split (%)	62.0%	62.0%	15.0%	77.0%	23.0%	23.0%
Yellow Time (s)	4.8	4.8	3.7	4.8	4.1	4.1
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	4.7	5.8	5.1	5.1
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	Min	Min

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 100
Control Type: Actuated-Coordinated

Splits and Phases: 2: I-15 SB Ramps & Deer Springs Rd



I-15 & Deer Springs Rd Mini Mart
2: I-15 SB Ramps & Deer Springs Rd

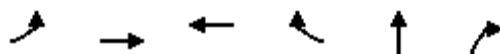
Opening Year 2018

Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1006	224	168	420	0	0	0	0	56	0	472
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.8	5.8	4.7	5.8						5.1	5.1
Lane Util. Factor		1.00	1.00	1.00	1.00						1.00	0.88
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		1863	1583	1770	1863						1770	2787
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		1863	1583	1770	1863						1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1093	243	183	457	0	0	0	0	61	0	513
RTOR Reduction (vph)	0	0	84	0	0	0	0	0	0	0	0	460
Lane Group Flow (vph)	0	1093	159	183	457	0	0	0	0	0	61	53
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2							4		4
Actuated Green, G (s)		58.1	58.1	16.0	78.8						10.3	10.3
Effective Green, g (s)		58.1	58.1	16.0	78.8						10.3	10.3
Actuated g/C Ratio		0.58	0.58	0.16	0.79						0.10	0.10
Clearance Time (s)		5.8	5.8	4.7	5.8						5.1	5.1
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		1082	919	283	1468						182	287
v/s Ratio Prot		c0.59		c0.10	0.25							
v/s Ratio Perm			0.10								0.03	0.02
v/c Ratio		1.01	0.17	0.65	0.31						0.34	0.18
Uniform Delay, d1		20.9	9.8	39.4	3.0						41.7	41.0
Progression Factor		0.97	0.61	0.45	3.94						1.00	1.00
Incremental Delay, d2		27.7	0.3	1.5	0.2						1.1	0.3
Delay (s)		48.0	6.3	19.3	11.9						42.8	41.3
Level of Service		D	A	B	B						D	D
Approach Delay (s)		40.4			14.0			0.0			41.5	
Approach LOS		D			B			A			D	
Intersection Summary												
HCM 2000 Control Delay			34.0			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)				15.6		
Intersection Capacity Utilization			88.5%			ICU Level of Service				E		
Analysis Period (min)			15									
c Critical Lane Group												

I-15 & Deer Springs Rd Mini Mart
3: I-15 NB Ramps & Deer Springs Rd

Opening Year 2018
Timing Plan: AM Peak



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Configurations						
Volume (vph)	225	147	615	65	5	128
Turn Type	Prot	NA	NA	Perm	NA	Perm
Protected Phases	5	2	6		8	
Permitted Phases				6		8
Detector Phase	5	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	24.0	77.0	53.0	53.0	23.0	23.0
Total Split (%)	24.0%	77.0%	53.0%	53.0%	23.0%	23.0%
Yellow Time (s)	3.7	4.8	4.8	4.8	4.1	4.1
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	5.8	5.8	5.8	5.1	5.1
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Max	C-Max	C-Max	Min	Min

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow, Master Intersection
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 3: I-15 NB Ramps & Deer Springs Rd



I-15 & Deer Springs Rd Mini Mart
3: I-15 NB Ramps & Deer Springs Rd

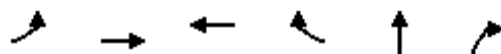
Opening Year 2018

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	225	147	0	0	615	65	121	5	128	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.8			5.8	5.8		5.1	5.1			
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (prot)	1770	1863			1863	1583		1777	1583			
Flt Permitted	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (perm)	1770	1863			1863	1583		1777	1583			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	245	160	0	0	668	71	132	5	139	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	33	0	0	121	0	0	0
Lane Group Flow (vph)	245	160	0	0	668	38	0	137	18	0	0	0
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases						6	8		8			
Actuated Green, G (s)	17.9	76.1			53.5	53.5		13.0	13.0			
Effective Green, g (s)	17.9	76.1			53.5	53.5		13.0	13.0			
Actuated g/C Ratio	0.18	0.76			0.54	0.54		0.13	0.13			
Clearance Time (s)	4.7	5.8			5.8	5.8		5.1	5.1			
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0			
Lane Grp Cap (vph)	316	1417			996	846		231	205			
v/s Ratio Prot	c0.14	0.09			c0.36							
v/s Ratio Perm						0.02		0.08	0.01			
v/c Ratio	0.78	0.11			0.67	0.04		0.59	0.09			
Uniform Delay, d1	39.1	3.1			16.9	11.1		41.0	38.3			
Progression Factor	0.83	2.00			1.00	1.00		1.00	1.00			
Incremental Delay, d2	10.6	0.2			3.6	0.1		4.0	0.2			
Delay (s)	43.2	6.4			20.5	11.2		45.1	38.5			
Level of Service	D	A			C	B		D	D			
Approach Delay (s)		28.6			19.6			41.7			0.0	
Approach LOS		C			B			D			A	
Intersection Summary												
HCM 2000 Control Delay			26.5				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)			15.6		
Intersection Capacity Utilization			66.5%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

I-15 & Deer Springs Rd Mini Mart
3: I-15 NB Ramps & Deer Springs Rd

Opening Year 2018
Timing Plan: PM Peak

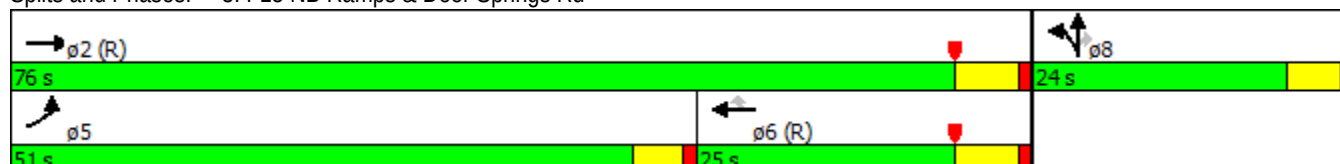


Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Configurations						
Volume (vph)	766	275	304	50	7	403
Turn Type	Prot	NA	NA	Perm	NA	Perm
Protected Phases	5	2	6		8	
Permitted Phases				6		8
Detector Phase	5	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	51.0	76.0	25.0	25.0	24.0	24.0
Total Split (%)	51.0%	76.0%	25.0%	25.0%	24.0%	24.0%
Yellow Time (s)	3.7	4.8	4.8	4.8	4.1	4.1
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	5.8	5.8	5.8	5.1	5.1
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Max	C-Max	C-Max	Min	Min

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow, Master Intersection
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 3: I-15 NB Ramps & Deer Springs Rd

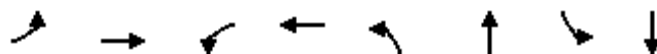


I-15 & Deer Springs Rd Mini Mart
3: I-15 NB Ramps & Deer Springs Rd

Opening Year 2018

Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	766	275	0	0	304	50	302	7	403	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.8			5.8	5.8		5.1	5.1			
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (prot)	1770	1863			1863	1583		1776	1583			
Flt Permitted	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (perm)	1770	1863			1863	1583		1776	1583			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	833	299	0	0	330	54	328	8	438	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	44	0	0	328	0	0	0
Lane Group Flow (vph)	833	299	0	0	330	10	0	336	110	0	0	0
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			
Actuated Green, G (s)	46.3	70.2			19.2	19.2		18.9	18.9			
Effective Green, g (s)	46.3	70.2			19.2	19.2		18.9	18.9			
Actuated g/C Ratio	0.46	0.70			0.19	0.19		0.19	0.19			
Clearance Time (s)	4.7	5.8			5.8	5.8		5.1	5.1			
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0			
Lane Grp Cap (vph)	819	1307			357	303		335	299			
v/s Ratio Prot	c0.47	0.16			c0.18			c0.19				
v/s Ratio Perm						0.01			0.07			
v/c Ratio	1.02	0.23			0.92	0.03		1.00	0.37			
Uniform Delay, d1	26.9	5.3			39.7	32.9		40.5	35.3			
Progression Factor	1.33	1.29			1.00	1.00		1.00	1.00			
Incremental Delay, d2	21.4	0.1			31.8	0.2		49.9	0.8			
Delay (s)	57.2	6.9			71.5	33.1		90.5	36.1			
Level of Service	E	A			E	C		F	D			
Approach Delay (s)		43.9			66.1			59.7			0.0	
Approach LOS		D			E			E			A	
Intersection Summary												
HCM 2000 Control Delay			53.0				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.99									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)			15.6		
Intersection Capacity Utilization			88.5%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↰	↱	↰	↱		↱		↱
Volume (vph)	92	102	250	328	51	61	26	449
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		8		4
Permitted Phases					8		4	
Detector Phase	5	2	1	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	4.0	6.0	4.0	6.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.4	23.0	9.4	25.2	28.5	28.5	32.5	32.5
Total Split (s)	16.0	23.0	22.0	29.0	55.0	55.0	55.0	55.0
Total Split (%)	16.0%	23.0%	22.0%	29.0%	55.0%	55.0%	55.0%	55.0%
Yellow Time (s)	4.4	5.2	4.4	5.2	5.5	5.5	5.5	5.5
All-Red Time (s)	0.5	1.0	0.5	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	4.9	6.2	4.9	6.2		6.5		6.5
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	Min	Min	Min	Min

Intersection Summary

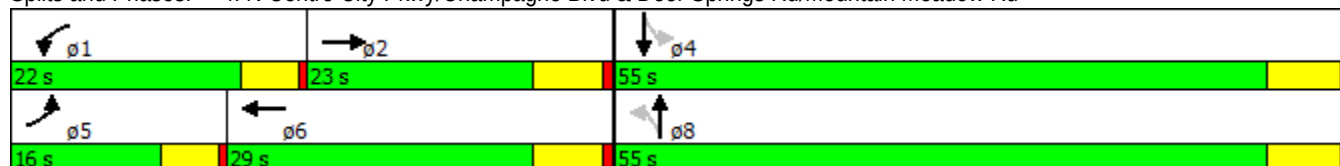
Cycle Length: 100

Actuated Cycle Length: 89.4

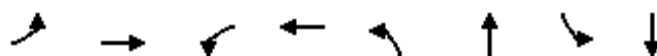
Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Splits and Phases: 4: N Centre City Pkwy/Champagne Blvd & Deer Springs Rd/Mountain Meadow Rd



												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	92	102	83	250	328	18	51	61	51	26	449	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	6.2		4.9	6.2			6.5			6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	0.93		1.00	0.99			0.96			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.98			1.00	
Satd. Flow (prot)	1770	3302		1770	3511			1757			1761	
Flt Permitted	0.95	1.00		0.95	1.00			0.67			0.99	
Satd. Flow (perm)	1770	3302		1770	3511			1202			1740	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	100	111	90	272	357	20	55	66	55	28	488	332
RTOR Reduction (vph)	0	81	0	0	4	0	0	15	0	0	22	0
Lane Group Flow (vph)	100	120	0	272	373	0	0	161	0	0	826	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	7.6	9.5		16.4	18.3			46.9			46.9	
Effective Green, g (s)	7.6	9.5		16.4	18.3			46.9			46.9	
Actuated g/C Ratio	0.08	0.11		0.18	0.20			0.52			0.52	
Clearance Time (s)	4.9	6.2		4.9	6.2			6.5			6.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0			2.0	
Lane Grp Cap (vph)	148	347		321	710			623			902	
v/s Ratio Prot	0.06	0.04		c0.15	c0.11							
v/s Ratio Perm								0.13			c0.47	
v/c Ratio	0.68	0.35		0.85	0.53			0.26			0.92	
Uniform Delay, d1	40.2	37.6		35.8	32.2			12.1			19.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	9.2	0.2		17.6	0.3			0.1			13.5	
Delay (s)	49.4	37.8		53.4	32.5			12.2			33.4	
Level of Service	D	D		D	C			B			C	
Approach Delay (s)		41.6			41.3			12.2			33.4	
Approach LOS		D			D			B			C	
Intersection Summary												
HCM 2000 Control Delay			35.4			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			90.4			Sum of lost time (s)			17.6			
Intersection Capacity Utilization			78.4%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	340	279	66	163	69	243	24	113
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		8		4
Permitted Phases					8		4	
Detector Phase	5	2	1	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	4.0	6.0	4.0	6.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.4	23.0	9.4	25.2	28.5	28.5	32.5	32.5
Total Split (s)	31.0	43.6	14.4	27.0	42.0	42.0	42.0	42.0
Total Split (%)	31.0%	43.6%	14.4%	27.0%	42.0%	42.0%	42.0%	42.0%
Yellow Time (s)	4.4	5.2	4.4	5.2	5.5	5.5	5.5	5.5
All-Red Time (s)	0.5	1.0	0.5	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	4.9	6.2	4.9	6.2		6.5		6.5
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	Min	Min	Min	Min

Intersection Summary

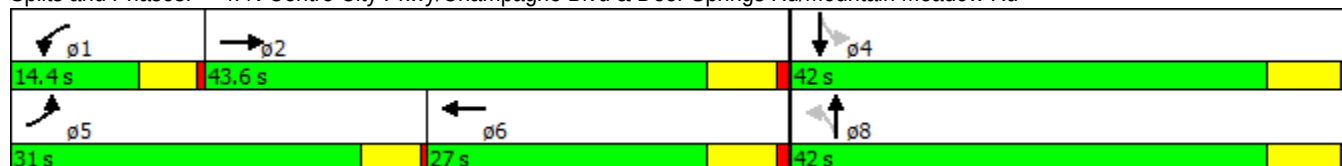
Cycle Length: 100

Actuated Cycle Length: 78.1

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Splits and Phases: 4: N Centre City Pkwy/Champagne Blvd & Deer Springs Rd/Mountain Meadow Rd



												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	340	279	72	66	163	21	69	243	153	24	113	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	6.2		4.9	6.2			6.5			6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	0.97		1.00	0.98			0.96			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1770	3431		1770	3478			1767			1734	
Flt Permitted	0.95	1.00		0.95	1.00			0.90			0.93	
Satd. Flow (perm)	1770	3431		1770	3478			1601			1628	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	370	303	78	72	177	23	75	264	166	26	123	137
RTOR Reduction (vph)	0	24	0	0	11	0	0	17	0	0	32	0
Lane Group Flow (vph)	370	357	0	72	189	0	0	488	0	0	254	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	20.8	26.2		6.1	11.5			28.8			28.8	
Effective Green, g (s)	20.8	26.2		6.1	11.5			28.8			28.8	
Actuated g/C Ratio	0.26	0.33		0.08	0.15			0.37			0.37	
Clearance Time (s)	4.9	6.2		4.9	6.2			6.5			6.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0			2.0	
Lane Grp Cap (vph)	467	1142		137	508			585			595	
v/s Ratio Prot	c0.21	c0.10		0.04	0.05							
v/s Ratio Perm								c0.30			0.16	
v/c Ratio	0.79	0.31		0.53	0.37			0.83			0.43	
Uniform Delay, d1	26.9	19.5		34.9	30.3			22.8			18.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	8.4	0.1		1.7	0.2			9.5			0.2	
Delay (s)	35.3	19.6		36.6	30.5			32.3			18.9	
Level of Service	D	B		D	C			C			B	
Approach Delay (s)		27.3			32.1			32.3			18.9	
Approach LOS		C			C			C			B	
Intersection Summary												
HCM 2000 Control Delay			28.1			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			78.7			Sum of lost time (s)			17.6			
Intersection Capacity Utilization			79.0%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

I-15 & Deer Springs Rd Mini Mart
1: Mesa Rock Rd & Deer Springs Rd

Opening Year 2018 Plus Project

Timing Plan: AM Peak



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Configurations						
Volume (vph)	27	409	42	1270	7	10
Turn Type	Prot	NA	Prot	NA	NA	NA
Protected Phases	5	2	1	6	8	4
Permitted Phases						
Detector Phase	5	2	1	6	8	4
Switch Phase						
Minimum Initial (s)	4.0	5.0	4.0	5.0	4.0	4.0
Minimum Split (s)	9.0	24.0	9.0	23.0	26.0	28.0
Total Split (s)	9.0	36.0	10.0	37.0	26.0	28.0
Total Split (%)	9.0%	36.0%	10.0%	37.0%	26.0%	28.0%
Yellow Time (s)	3.0	5.0	3.0	5.0	4.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	4.0	6.0	5.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max	None	C-Max	Min	Min

Intersection Summary

Cycle Length: 100

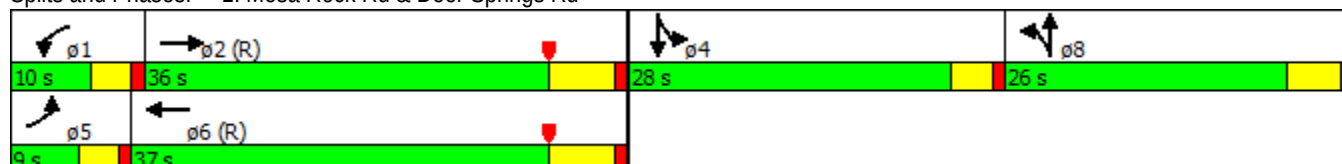
Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow

Natural Cycle: 110

Control Type: Actuated-Coordinated

Splits and Phases: 1: Mesa Rock Rd & Deer Springs Rd



I-15 & Deer Springs Rd Mini Mart
1: Mesa Rock Rd & Deer Springs Rd

Opening Year 2018 Plus Project

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	27	409	31	42	1270	122	12	7	17	99	10	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		4.0	6.0			5.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	0.99		1.00	0.99			0.94			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1770	3502		1770	3493			1718			1745	
Flt Permitted	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (perm)	1770	3502		1770	3493			1718			1745	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	445	34	46	1380	133	13	8	18	108	11	34
RTOR Reduction (vph)	0	4	0	0	4	0	0	16	0	0	12	0
Lane Group Flow (vph)	29	475	0	46	1509	0	0	23	0	0	141	0
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												
Actuated Green, G (s)	3.6	54.6		4.2	55.2			8.5			13.7	
Effective Green, g (s)	3.6	54.6		4.2	55.2			8.5			13.7	
Actuated g/C Ratio	0.04	0.55		0.04	0.55			0.08			0.14	
Clearance Time (s)	4.0	6.0		4.0	6.0			5.0			4.0	
Vehicle Extension (s)	2.0	2.5		2.0	2.5			2.0			2.0	
Lane Grp Cap (vph)	63	1912		74	1928			146			239	
v/s Ratio Prot	0.02	0.14		c0.03	c0.43			c0.01			c0.08	
v/s Ratio Perm												
v/c Ratio	0.46	0.25		0.62	0.78			0.15			0.59	
Uniform Delay, d1	47.2	11.9		47.1	17.7			42.4			40.5	
Progression Factor	1.00	1.00		0.90	1.12			1.00			1.00	
Incremental Delay, d2	1.9	0.3		8.2	2.4			0.2			2.4	
Delay (s)	49.2	12.2		50.8	22.2			42.6			42.9	
Level of Service	D	B		D	C			D			D	
Approach Delay (s)		14.3			23.1			42.6			42.9	
Approach LOS		B			C			D			D	
Intersection Summary												
HCM 2000 Control Delay			22.8			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			19.0			
Intersection Capacity Utilization			61.9%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

I-15 & Deer Springs Rd Mini Mart
1: Mesa Rock Rd & Deer Springs Rd

Opening Year 2018 Plus Project

Timing Plan: PM Peak



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Configurations						
Volume (vph)	49	1089	10	786	0	2
Turn Type	Prot	NA	Prot	NA	NA	NA
Protected Phases	5	2	1	6	8	4
Permitted Phases						
Detector Phase	5	2	1	6	8	4
Switch Phase						
Minimum Initial (s)	4.0	5.0	4.0	5.0	4.0	4.0
Minimum Split (s)	9.0	24.0	9.0	23.0	26.0	28.0
Total Split (s)	9.0	37.0	9.0	37.0	26.0	28.0
Total Split (%)	9.0%	37.0%	9.0%	37.0%	26.0%	28.0%
Yellow Time (s)	3.0	5.0	3.0	5.0	4.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	6.0	4.0	6.0	5.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max	None	C-Max	Min	Min

Intersection Summary

Cycle Length: 100

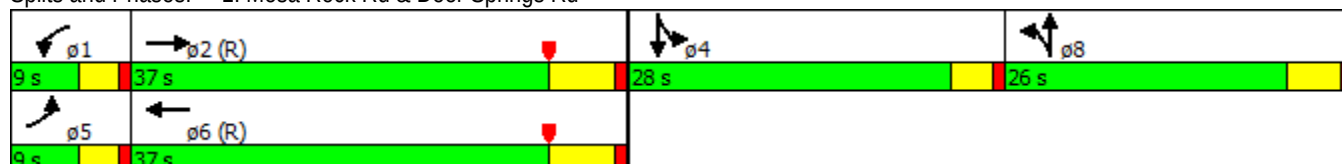
Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow

Natural Cycle: 100

Control Type: Actuated-Coordinated

Splits and Phases: 1: Mesa Rock Rd & Deer Springs Rd



I-15 & Deer Springs Rd Mini Mart
1: Mesa Rock Rd & Deer Springs Rd

Opening Year 2018 Plus Project

Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	1089	11	10	786	132	28	0	21	141	2	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.0		4.0	6.0			5.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			0.94			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.96	
Satd. Flow (prot)	1770	3534		1770	3463			1705			1744	
Flt Permitted	0.95	1.00		0.95	1.00			0.97			0.96	
Satd. Flow (perm)	1770	3534		1770	3463			1705			1744	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	53	1184	12	11	854	143	30	0	23	153	2	38
RTOR Reduction (vph)	0	0	0	0	10	0	0	49	0	0	10	0
Lane Group Flow (vph)	53	1196	0	11	987	0	0	4	0	0	183	0
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												
Actuated Green, G (s)	5.6	56.8		1.0	52.2			7.8			15.4	
Effective Green, g (s)	5.6	56.8		1.0	52.2			7.8			15.4	
Actuated g/C Ratio	0.06	0.57		0.01	0.52			0.08			0.15	
Clearance Time (s)	4.0	6.0		4.0	6.0			5.0			4.0	
Vehicle Extension (s)	2.0	2.5		2.0	2.5			2.0			2.0	
Lane Grp Cap (vph)	99	2007		17	1807			132			268	
v/s Ratio Prot	c0.03	c0.34		0.01	0.29			c0.00			c0.10	
v/s Ratio Perm												
v/c Ratio	0.54	0.60		0.65	0.55			0.03			0.68	
Uniform Delay, d1	45.9	14.1		49.3	16.0			42.6			40.0	
Progression Factor	1.00	1.00		0.86	1.19			1.00			1.00	
Incremental Delay, d2	2.8	1.3		45.9	1.1			0.0			5.6	
Delay (s)	48.7	15.4		88.6	20.2			42.6			45.6	
Level of Service	D	B		F	C			D			D	
Approach Delay (s)		16.8			20.9			42.6			45.6	
Approach LOS		B			C			D			D	
Intersection Summary												
HCM 2000 Control Delay			21.2			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			19.0			
Intersection Capacity Utilization			59.5%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

I-15 & Deer Springs Rd Mini Mart
 2: I-15 SB Ramps & Deer Springs Rd

Opening Year 2018 Plus Project
 Timing Plan: AM Peak

	→	↘	↙	←	↓	↙
Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Configurations	↑	↗	↖	↑	↘	↗↖
Volume (vph)	309	204	267	457	0	965
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	2		1	6	4	
Permitted Phases		2				4
Detector Phase	2	2	1	6	4	4
Switch Phase						
Minimum Initial (s)	6.0	6.0	5.0	6.0	5.0	5.0
Minimum Split (s)	23.0	23.0	10.0	23.8	23.0	23.0
Total Split (s)	34.0	34.0	29.0	63.0	37.0	37.0
Total Split (%)	34.0%	34.0%	29.0%	63.0%	37.0%	37.0%
Yellow Time (s)	4.8	4.8	3.7	4.8	4.1	4.1
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	4.7	5.8	5.1	5.1
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	Min	Min

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated

Splits and Phases: 2: I-15 SB Ramps & Deer Springs Rd

↙ ϕ1	→ ϕ2 (R)	↓ ϕ4
29 s	34 s	37 s
← ϕ6 (R)		
63 s		

I-15 & Deer Springs Rd Mini Mart
2: I-15 SB Ramps & Deer Springs Rd

Opening Year 2018 Plus Project

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	309	204	267	457	0	0	0	0	82	0	965
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.8	5.8	4.7	5.8						5.1	5.1
Lane Util. Factor		1.00	1.00	1.00	1.00						1.00	0.88
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		1863	1583	1770	1863						1770	2787
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		1863	1583	1770	1863						1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	336	222	290	497	0	0	0	0	89	0	1049
RTOR Reduction (vph)	0	0	140	0	0	0	0	0	0	0	0	457
Lane Group Flow (vph)	0	336	82	290	497	0	0	0	0	0	89	592
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2							4		4
Actuated Green, G (s)		37.0	37.0	20.6	62.3						26.8	26.8
Effective Green, g (s)		37.0	37.0	20.6	62.3						26.8	26.8
Actuated g/C Ratio		0.37	0.37	0.21	0.62						0.27	0.27
Clearance Time (s)		5.8	5.8	4.7	5.8						5.1	5.1
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		689	585	364	1160						474	746
v/s Ratio Prot		c0.18		c0.16	0.27							
v/s Ratio Perm			0.05								0.05	c0.21
v/c Ratio		0.49	0.14	0.80	0.43						0.19	0.79
Uniform Delay, d1		24.2	20.9	37.7	9.7						28.2	34.0
Progression Factor		0.77	1.00	1.44	0.98						1.00	1.00
Incremental Delay, d2		2.4	0.5	9.0	0.9						0.2	5.8
Delay (s)		21.0	21.4	63.3	10.4						28.4	39.9
Level of Service		C	C	E	B						C	D
Approach Delay (s)		21.2			29.9			0.0			39.0	
Approach LOS		C			C			A			D	
Intersection Summary												
HCM 2000 Control Delay			32.1			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)				15.6		
Intersection Capacity Utilization			66.9%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												

I-15 & Deer Springs Rd Mini Mart
2: I-15 SB Ramps & Deer Springs Rd

Opening Year 2018 Plus Project

Timing Plan: PM Peak

	→	↘	↙	←	↓	↗
Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Configurations	↑	↑	↘	↑	↘	↗
Volume (vph)	1014	224	176	428	0	472
Turn Type	NA	Perm	Prot	NA	NA	Perm
Protected Phases	2		1	6	4	
Permitted Phases		2				4
Detector Phase	2	2	1	6	4	4
Switch Phase						
Minimum Initial (s)	6.0	6.0	5.0	6.0	5.0	5.0
Minimum Split (s)	23.0	23.0	10.0	23.8	23.0	23.0
Total Split (s)	62.0	62.0	15.0	77.0	23.0	23.0
Total Split (%)	62.0%	62.0%	15.0%	77.0%	23.0%	23.0%
Yellow Time (s)	4.8	4.8	3.7	4.8	4.1	4.1
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8	4.7	5.8	5.1	5.1
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	Min	Min

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow

Natural Cycle: 110

Control Type: Actuated-Coordinated

Splits and Phases: 2: I-15 SB Ramps & Deer Springs Rd



I-15 & Deer Springs Rd Mini Mart
2: I-15 SB Ramps & Deer Springs Rd

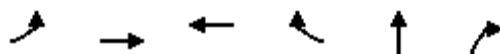
Opening Year 2018 Plus Project

Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1014	224	176	428	0	0	0	0	64	0	472
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.8	5.8	4.7	5.8						5.1	5.1
Lane Util. Factor		1.00	1.00	1.00	1.00						1.00	0.88
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		1863	1583	1770	1863						1770	2787
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		1863	1583	1770	1863						1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1102	243	191	465	0	0	0	0	70	0	513
RTOR Reduction (vph)	0	0	85	0	0	0	0	0	0	0	0	459
Lane Group Flow (vph)	0	1102	158	191	465	0	0	0	0	0	70	54
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2							4		4
Actuated Green, G (s)		57.3	57.3	16.5	78.5						10.6	10.6
Effective Green, g (s)		57.3	57.3	16.5	78.5						10.6	10.6
Actuated g/C Ratio		0.57	0.57	0.16	0.78						0.11	0.11
Clearance Time (s)		5.8	5.8	4.7	5.8						5.1	5.1
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		1067	907	292	1462						187	295
v/s Ratio Prot		c0.59		c0.11	0.25							
v/s Ratio Perm			0.10								0.04	0.02
v/c Ratio		1.03	0.17	0.65	0.32						0.37	0.18
Uniform Delay, d1		21.4	10.1	39.1	3.1						41.6	40.8
Progression Factor		0.97	0.62	0.43	4.01						1.00	1.00
Incremental Delay, d2		34.2	0.4	1.3	0.1						1.3	0.3
Delay (s)		54.9	6.7	18.0	12.5						42.9	41.1
Level of Service		D	A	B	B						D	D
Approach Delay (s)		46.2			14.1			0.0			41.3	
Approach LOS		D			B			A			D	
Intersection Summary												
HCM 2000 Control Delay			36.9			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.88									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			15.6			
Intersection Capacity Utilization			89.3%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

I-15 & Deer Springs Rd Mini Mart
 3: I-15 NB Ramps & Deer Springs Rd

Opening Year 2018 Plus Project
 Timing Plan: AM Peak



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Configurations						
Volume (vph)	225	160	628	99	5	162
Turn Type	Prot	NA	NA	Perm	NA	Perm
Protected Phases	5	2	6		8	
Permitted Phases				6		8
Detector Phase	5	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	24.0	77.0	53.0	53.0	23.0	23.0
Total Split (%)	24.0%	77.0%	53.0%	53.0%	23.0%	23.0%
Yellow Time (s)	3.7	4.8	4.8	4.8	4.1	4.1
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	5.8	5.8	5.8	5.1	5.1
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Max	C-Max	C-Max	Min	Min

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow, Master Intersection
 Natural Cycle: 75
 Control Type: Actuated-Coordinated

Splits and Phases: 3: I-15 NB Ramps & Deer Springs Rd



I-15 & Deer Springs Rd Mini Mart
3: I-15 NB Ramps & Deer Springs Rd

Opening Year 2018 Plus Project

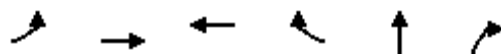
Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	225	160	0	0	628	99	121	5	162	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.8			5.8	5.8		5.1	5.1			
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (prot)	1770	1863			1863	1583		1777	1583			
Flt Permitted	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (perm)	1770	1863			1863	1583		1777	1583			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	245	174	0	0	683	108	132	5	176	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	45	0	0	153	0	0	0
Lane Group Flow (vph)	245	174	0	0	683	63	0	137	23	0	0	0
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	5	2			6			8				
Permitted Phases						6	8		8			
Actuated Green, G (s)	17.9	76.1			53.5	53.5		13.0	13.0			
Effective Green, g (s)	17.9	76.1			53.5	53.5		13.0	13.0			
Actuated g/C Ratio	0.18	0.76			0.54	0.54		0.13	0.13			
Clearance Time (s)	4.7	5.8			5.8	5.8		5.1	5.1			
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0			
Lane Grp Cap (vph)	316	1417			996	846		231	205			
v/s Ratio Prot	c0.14	0.09			c0.37							
v/s Ratio Perm						0.04		0.08	0.01			
v/c Ratio	0.78	0.12			0.69	0.07		0.59	0.11			
Uniform Delay, d1	39.1	3.2			17.1	11.3		41.0	38.4			
Progression Factor	0.82	2.02			1.00	1.00		1.00	1.00			
Incremental Delay, d2	10.5	0.2			3.8	0.2		4.0	0.2			
Delay (s)	42.4	6.5			20.9	11.4		45.1	38.6			
Level of Service	D	A			C	B		D	D			
Approach Delay (s)		27.5			19.6			41.4			0.0	
Approach LOS		C			B			D			A	
Intersection Summary												
HCM 2000 Control Delay			26.3				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)			15.6		
Intersection Capacity Utilization			66.9%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

I-15 & Deer Springs Rd Mini Mart
3: I-15 NB Ramps & Deer Springs Rd

Opening Year 2018 Plus Project

Timing Plan: PM Peak



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Configurations						
Volume (vph)	766	290	319	89	7	442
Turn Type	Prot	NA	NA	Perm	NA	Perm
Protected Phases	5	2	6		8	
Permitted Phases				6		8
Detector Phase	5	2	6	6	8	8
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	51.0	76.0	25.0	25.0	24.0	24.0
Total Split (%)	51.0%	76.0%	25.0%	25.0%	24.0%	24.0%
Yellow Time (s)	3.7	4.8	4.8	4.8	4.1	4.1
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	5.8	5.8	5.8	5.1	5.1
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Max	C-Max	C-Max	Min	Min

Intersection Summary

Cycle Length: 100

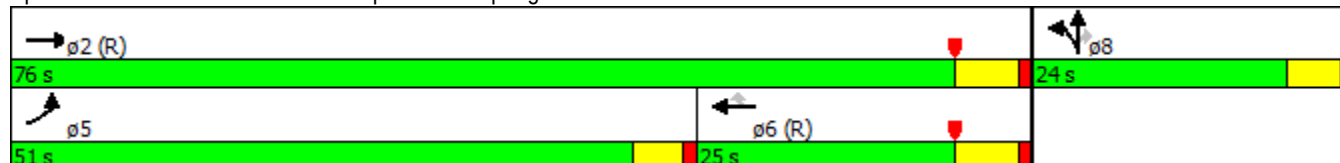
Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow, Master Intersection

Natural Cycle: 90

Control Type: Actuated-Coordinated

Splits and Phases: 3: I-15 NB Ramps & Deer Springs Rd

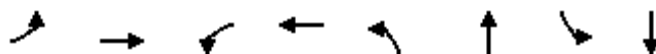


I-15 & Deer Springs Rd Mini Mart
3: I-15 NB Ramps & Deer Springs Rd

Opening Year 2018 Plus Project

Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	766	290	0	0	319	89	302	7	442	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.8			5.8	5.8		5.1	5.1			
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Frt	1.00	1.00			1.00	0.85		1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (prot)	1770	1863			1863	1583		1776	1583			
Flt Permitted	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (perm)	1770	1863			1863	1583		1776	1583			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	833	315	0	0	347	97	328	8	480	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	78	0	0	360	0	0	0
Lane Group Flow (vph)	833	315	0	0	347	19	0	336	120	0	0	0
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			
Actuated Green, G (s)	46.3	70.2			19.2	19.2		18.9	18.9			
Effective Green, g (s)	46.3	70.2			19.2	19.2		18.9	18.9			
Actuated g/C Ratio	0.46	0.70			0.19	0.19		0.19	0.19			
Clearance Time (s)	4.7	5.8			5.8	5.8		5.1	5.1			
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0			
Lane Grp Cap (vph)	819	1307			357	303		335	299			
v/s Ratio Prot	c0.47	0.17			c0.19			c0.19				
v/s Ratio Perm						0.01			0.08			
v/c Ratio	1.02	0.24			0.97	0.06		1.00	0.40			
Uniform Delay, d1	26.9	5.3			40.1	33.0		40.5	35.6			
Progression Factor	1.36	1.31			1.00	1.00		1.00	1.00			
Incremental Delay, d2	20.3	0.1			41.1	0.4		49.9	0.9			
Delay (s)	56.9	7.1			81.2	33.4		90.5	36.5			
Level of Service	E	A			F	C		F	D			
Approach Delay (s)		43.3			70.8			58.7			0.0	
Approach LOS		D			E			E			A	
Intersection Summary												
HCM 2000 Control Delay			53.6				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			1.00									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)			15.6		
Intersection Capacity Utilization			89.3%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↰	↶↷	↰	↶↷		↶↷		↶↷
Volume (vph)	92	102	257	328	98	68	26	456
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		8		4
Permitted Phases					8		4	
Detector Phase	5	2	1	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	4.0	6.0	4.0	6.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.4	23.0	9.4	25.2	28.5	28.5	32.5	32.5
Total Split (s)	16.0	23.0	22.0	29.0	55.0	55.0	55.0	55.0
Total Split (%)	16.0%	23.0%	22.0%	29.0%	55.0%	55.0%	55.0%	55.0%
Yellow Time (s)	4.4	5.2	4.4	5.2	5.5	5.5	5.5	5.5
All-Red Time (s)	0.5	1.0	0.5	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	4.9	6.2	4.9	6.2		6.5		6.5
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	Min	Min	Min	Min

Intersection Summary

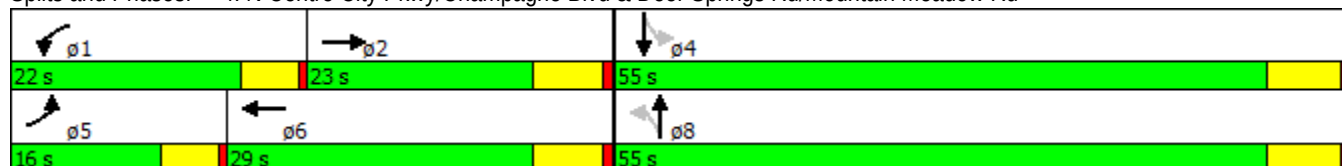
Cycle Length: 100

Actuated Cycle Length: 90.5

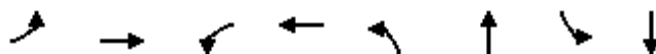
Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Splits and Phases: 4: N Centre City Pkwy/Champagne Blvd & Deer Springs Rd/Mountain Meadow Rd



												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	92	102	130	257	328	18	98	68	58	26	456	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	6.2		4.9	6.2			6.5			6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	0.92		1.00	0.99			0.97			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.98			1.00	
Satd. Flow (prot)	1770	3242		1770	3511			1759			1762	
Flt Permitted	0.95	1.00		0.95	1.00			0.47			0.98	
Satd. Flow (perm)	1770	3242		1770	3511			852			1737	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	100	111	141	279	357	20	107	74	63	28	496	332
RTOR Reduction (vph)	0	127	0	0	4	0	0	11	0	0	21	0
Lane Group Flow (vph)	100	125	0	279	373	0	0	233	0	0	835	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	7.7	9.4		16.7	18.4			47.8			47.8	
Effective Green, g (s)	7.7	9.4		16.7	18.4			47.8			47.8	
Actuated g/C Ratio	0.08	0.10		0.18	0.20			0.52			0.52	
Clearance Time (s)	4.9	6.2		4.9	6.2			6.5			6.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0			2.0	
Lane Grp Cap (vph)	148	333		323	706			445			907	
v/s Ratio Prot	0.06	0.04		c0.16	c0.11							
v/s Ratio Perm								0.27			c0.48	
v/c Ratio	0.68	0.38		0.86	0.53			0.52			0.92	
Uniform Delay, d1	40.7	38.3		36.3	32.7			14.4			20.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	9.2	0.3		19.9	0.3			0.5			14.1	
Delay (s)	49.9	38.6		56.2	33.0			14.9			34.2	
Level of Service	D	D		E	C			B			C	
Approach Delay (s)		41.8			42.9			14.9			34.2	
Approach LOS		D			D			B			C	
Intersection Summary												
HCM 2000 Control Delay			35.9			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.88									
Actuated Cycle Length (s)			91.5			Sum of lost time (s)				17.6		
Intersection Capacity Utilization			96.7%			ICU Level of Service				F		
Analysis Period (min)			15									
c Critical Lane Group												



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	340	279	74	163	123	251	24	121
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA
Protected Phases	5	2	1	6		8		4
Permitted Phases					8		4	
Detector Phase	5	2	1	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	4.0	6.0	4.0	6.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.4	23.0	9.4	25.2	28.5	28.5	32.5	32.5
Total Split (s)	31.0	43.6	14.4	27.0	42.0	42.0	42.0	42.0
Total Split (%)	31.0%	43.6%	14.4%	27.0%	42.0%	42.0%	42.0%	42.0%
Yellow Time (s)	4.4	5.2	4.4	5.2	5.5	5.5	5.5	5.5
All-Red Time (s)	0.5	1.0	0.5	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	4.9	6.2	4.9	6.2		6.5		6.5
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	Min	Min	Min	Min

Intersection Summary

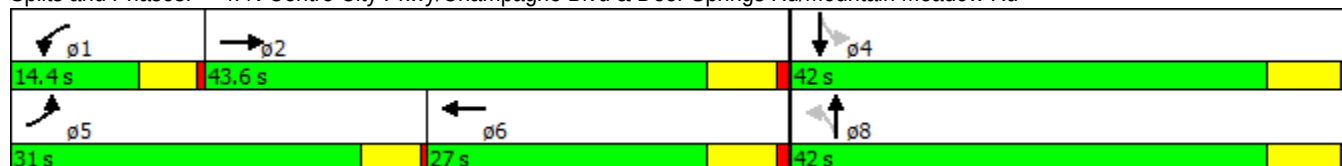
Cycle Length: 100

Actuated Cycle Length: 85.1

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Splits and Phases: 4: N Centre City Pkwy/Champagne Blvd & Deer Springs Rd/Mountain Meadow Rd



												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	340	279	126	74	163	21	123	251	161	24	121	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	6.2		4.9	6.2			6.5			6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	0.95		1.00	0.98			0.96			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1770	3374		1770	3478			1767			1738	
Flt Permitted	0.95	1.00		0.95	1.00			0.81			0.93	
Satd. Flow (perm)	1770	3374		1770	3478			1455			1624	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	370	303	137	80	177	23	134	273	175	26	132	137
RTOR Reduction (vph)	0	58	0	0	11	0	0	14	0	0	28	0
Lane Group Flow (vph)	370	382	0	80	189	0	0	568	0	0	267	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)	21.4	26.1		6.6	11.3			35.9			35.9	
Effective Green, g (s)	21.4	26.1		6.6	11.3			35.9			35.9	
Actuated g/C Ratio	0.25	0.30		0.08	0.13			0.42			0.42	
Clearance Time (s)	4.9	6.2		4.9	6.2			6.5			6.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0			2.0	
Lane Grp Cap (vph)	439	1021		135	455			605			676	
v/s Ratio Prot	c0.21	c0.11		0.05	0.05							
v/s Ratio Perm								c0.39			0.16	
v/c Ratio	0.84	0.37		0.59	0.41			0.94			0.39	
Uniform Delay, d1	30.8	23.6		38.5	34.4			24.1			17.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	13.2	0.1		4.6	0.2			22.1			0.1	
Delay (s)	44.0	23.7		43.1	34.6			46.2			17.7	
Level of Service	D	C		D	C			D			B	
Approach Delay (s)		33.0			37.0			46.2			17.7	
Approach LOS		C			D			D			B	
Intersection Summary												
HCM 2000 Control Delay			35.2			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			86.2			Sum of lost time (s)			17.6			
Intersection Capacity Utilization			89.3%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	60	7	7	162	782	60
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	65	8	8	176	850	65
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					255	
pX, platoon unblocked	0.64	0.64	0.64			
vC, conflicting volume	1074	883	915			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	833	534	585			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	69	98	99			
cM capacity (veh/h)	214	349	632			
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	65	8	184	915		
Volume Left	65	0	8	0		
Volume Right	0	8	0	65		
cSH	214	349	632	1700		
Volume to Capacity	0.31	0.02	0.01	0.54		
Queue Length 95th (ft)	31	2	1	0		
Control Delay (s)	29.1	15.5	0.6	0.0		
Lane LOS	D	C	A			
Approach Delay (s)	27.7		0.6	0.0		
Approach LOS	D					
Intersection Summary						
Average Delay			1.8			
Intersection Capacity Utilization			54.8%	ICU Level of Service		A
Analysis Period (min)			15			

I-15 & Deer Springs Rd Mini Mart
5: N Centre City Pkwy & Project Dwy

Opening Year 2018 Plus Project

Timing Plan: PM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	69	8	8	464	249	69
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	75	9	9	504	271	75
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)					255	
pX, platoon unblocked						
vC, conflicting volume	830	308	346			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	830	308	346			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	78	99	99			
cM capacity (veh/h)	338	732	1213			
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	75	9	513	346		
Volume Left	75	0	9	0		
Volume Right	0	9	0	75		
cSH	338	732	1213	1700		
Volume to Capacity	0.22	0.01	0.01	0.20		
Queue Length 95th (ft)	21	1	1	0		
Control Delay (s)	18.7	10.0	0.2	0.0		
Lane LOS	C	A	A			
Approach Delay (s)	17.8		0.2	0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization			41.3%	ICU Level of Service		A
Analysis Period (min)			15			

APPENDIX G

Vehicle Queuing Synchro Work Sheets

I-15 & Deer Springs Rd Mini Mart
 2: I-15 SB Ramps & Deer Springs Rd

Existing Conditions
 Timing Plan: AM Peak

	→	↘	↙	←	↓	↘
Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	312	211	268	465	77	999
v/c Ratio	0.41	0.27	0.77	0.38	0.18	0.85
Control Delay	20.2	4.4	64.5	9.5	28.5	18.6
Queue Delay	0.5	0.3	0.0	0.7	0.0	49.7
Total Delay	20.7	4.7	64.5	10.2	28.5	68.3
Queue Length 50th (ft)	159	6	186	102	39	114
Queue Length 95th (ft)	82	11	269	192	70	188
Internal Link Dist (ft)	201			713	812	
Turn Bay Length (ft)			250			
Base Capacity (vph)	764	773	430	1217	564	1346
Starvation Cap Reductn	163	212	0	0	0	0
Spillback Cap Reductn	0	0	0	427	0	449
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.38	0.62	0.59	0.14	1.11
Intersection Summary						

I-15 & Deer Springs Rd Mini Mart
 2: I-15 SB Ramps & Deer Springs Rd

Existing Conditions
 Timing Plan: PM Peak

	→	↘	↙	←	↓	↗
Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	1041	232	174	435	58	488
v/c Ratio	0.94	0.23	0.65	0.30	0.33	0.68
Control Delay	35.5	1.9	26.9	12.9	45.4	9.0
Queue Delay	19.1	0.4	0.0	0.2	0.0	0.4
Total Delay	54.6	2.4	26.9	13.1	45.4	9.5
Queue Length 50th (ft)	627	1	74	180	35	0
Queue Length 95th (ft)	#654	22	m95	m325	70	48
Internal Link Dist (ft)	201			713	812	
Turn Bay Length (ft)			250			
Base Capacity (vph)	1105	1020	268	1474	316	899
Starvation Cap Reductn	99	422	0	0	0	0
Spillback Cap Reductn	0	0	0	461	0	120
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.03	0.39	0.65	0.43	0.18	0.63

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.

I-15 & Deer Springs Rd Mini Mart
 3: I-15 NB Ramps & Deer Springs Rd

Existing Conditions
 Timing Plan: AM Peak

						
Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	233	152	636	66	129	132
v/c Ratio	0.76	0.11	0.63	0.07	0.58	0.42
Control Delay	48.7	6.6	20.9	3.2	51.2	11.0
Queue Delay	0.0	0.0	11.0	0.0	0.0	0.0
Total Delay	48.7	6.6	31.9	3.2	51.2	11.0
Queue Length 50th (ft)	159	13	272	0	79	0
Queue Length 95th (ft)	238	105	453	19	132	50
Internal Link Dist (ft)		713	276		625	
Turn Bay Length (ft)	200			200		150
Base Capacity (vph)	349	1426	1014	896	318	391
Starvation Cap Reductn	0	0	352	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	0.11	0.96	0.07	0.41	0.34
Intersection Summary						

I-15 & Deer Springs Rd Mini Mart
 3: I-15 NB Ramps & Deer Springs Rd

Existing Conditions
 Timing Plan: PM Peak

						
Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	792	284	314	51	319	416
v/c Ratio	0.98	0.22	0.86	0.14	0.95	0.66
Control Delay	50.1	6.7	62.7	4.9	80.1	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.1	6.7	62.7	4.9	80.1	10.0
Queue Length 50th (ft)	405	65	196	0	203	6
Queue Length 95th (ft)	m#465	m75	#348	19	#371	95
Internal Link Dist (ft)		713	276		625	
Turn Bay Length (ft)	200			200		150
Base Capacity (vph)	819	1307	365	370	335	627
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	0.97	0.22	0.86	0.14	0.95	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.

I-15 & Deer Springs Rd Mini Mart
2: I-15 SB Ramps & Deer Springs Rd

Existing Plus Project
Timing Plan: AM Peak

	→	↘	↙	←	↓	↘
Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	315	211	276	473	85	999
v/c Ratio	0.42	0.28	0.78	0.39	0.20	0.85
Control Delay	20.7	4.5	65.2	9.9	28.7	19.1
Queue Delay	0.5	0.3	0.0	0.7	0.0	49.8
Total Delay	21.2	4.8	65.2	10.6	28.7	68.9
Queue Length 50th (ft)	163	8	192	103	43	119
Queue Length 95th (ft)	83	10	275	198	75	194
Internal Link Dist (ft)	201			713	812	
Turn Bay Length (ft)			250			
Base Capacity (vph)	751	764	430	1211	564	1337
Starvation Cap Reductn	156	206	0	0	0	0
Spillback Cap Reductn	0	0	0	423	0	454
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.38	0.64	0.60	0.15	1.13
Intersection Summary						

I-15 & Deer Springs Rd Mini Mart
2: I-15 SB Ramps & Deer Springs Rd

Existing Plus Project
Timing Plan: PM Peak

	→	↘	↙	←	↓	↘
Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	1050	232	182	442	65	488
v/c Ratio	0.97	0.23	0.65	0.30	0.36	0.68
Control Delay	40.4	2.0	24.7	13.5	46.0	8.9
Queue Delay	27.0	0.4	0.0	0.3	0.0	0.4
Total Delay	67.4	2.4	24.7	13.7	46.0	9.3
Queue Length 50th (ft)	~657	1	74	206	39	0
Queue Length 95th (ft)	#668	22	m99	m322	77	48
Internal Link Dist (ft)	201			713	812	
Turn Bay Length (ft)			250			
Base Capacity (vph)	1086	1006	281	1470	316	899
Starvation Cap Reductn	99	414	0	0	0	0
Spillback Cap Reductn	0	0	0	456	0	119
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.06	0.39	0.65	0.44	0.21	0.63

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.

I-15 & Deer Springs Rd Mini Mart
 3: I-15 NB Ramps & Deer Springs Rd

Existing Plus Project
 Timing Plan: AM Peak

						
Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	233	166	650	102	129	167
v/c Ratio	0.76	0.12	0.64	0.11	0.58	0.48
Control Delay	48.7	6.8	21.2	3.8	50.6	10.9
Queue Delay	0.0	0.0	13.0	0.0	0.0	0.0
Total Delay	48.7	6.8	34.3	3.8	50.6	10.9
Queue Length 50th (ft)	158	13	281	2	79	0
Queue Length 95th (ft)	#242	113	468	30	131	56
Internal Link Dist (ft)		713	276		625	
Turn Bay Length (ft)	200			200		150
Base Capacity (vph)	347	1424	1014	906	318	420
Starvation Cap Reductn	0	0	347	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	0.12	0.97	0.11	0.41	0.40

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

I-15 & Deer Springs Rd Mini Mart
 3: I-15 NB Ramps & Deer Springs Rd

Existing Plus Project
 Timing Plan: PM Peak

						
Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	792	299	328	87	319	452
v/c Ratio	0.98	0.23	0.90	0.23	0.95	0.69
Control Delay	50.1	6.9	68.1	9.3	80.1	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.1	6.9	68.1	9.3	80.1	10.3
Queue Length 50th (ft)	418	74	207	0	203	6
Queue Length 95th (ft)	m#442	m77	#370	40	#371	101
Internal Link Dist (ft)		713	276		625	
Turn Bay Length (ft)	200			200		150
Base Capacity (vph)	819	1307	365	381	335	656
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	0.97	0.23	0.90	0.23	0.95	0.69

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.

I-15 & Deer Springs Rd Mini Mart
 2: I-15 SB Ramps & Deer Springs Rd

Opening Year 2018
 Timing Plan: AM Peak

	→	↘	↙	←	↓	↗
Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	328	222	283	489	82	1049
v/c Ratio	0.47	0.30	0.79	0.42	0.17	0.87
Control Delay	23.0	5.1	66.3	11.4	27.1	21.6
Queue Delay	0.5	0.3	0.0	0.8	0.0	50.1
Total Delay	23.5	5.4	66.3	12.2	27.1	71.7
Queue Length 50th (ft)	179	18	197	108	39	146
Queue Length 95th (ft)	86	11	281	210	73	235
Internal Link Dist (ft)	201			713	812	
Turn Bay Length (ft)			250			
Base Capacity (vph)	699	733	430	1165	564	1321
Starvation Cap Reductn	120	177	0	0	0	0
Spillback Cap Reductn	0	0	0	389	0	540
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.40	0.66	0.63	0.15	1.34
Intersection Summary						

I-15 & Deer Springs Rd Mini Mart
 2: I-15 SB Ramps & Deer Springs Rd

Opening Year 2018
 Timing Plan: PM Peak

	→	↘	↙	←	↓	↘
Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	1093	243	183	457	61	513
v/c Ratio	1.01	0.24	0.65	0.31	0.34	0.69
Control Delay	50.1	2.0	24.4	13.8	45.1	8.8
Queue Delay	32.9	0.5	0.0	0.3	0.0	0.5
Total Delay	83.0	2.5	24.4	14.1	45.1	9.3
Queue Length 50th (ft)	~763	1	76	207	37	0
Queue Length 95th (ft)	#948	24	m95	m321	73	48
Internal Link Dist (ft)	201			713	812	
Turn Bay Length (ft)			250			
Base Capacity (vph)	1082	1003	283	1468	316	920
Starvation Cap Reductn	99	411	0	0	0	0
Spillback Cap Reductn	0	0	0	478	0	131
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.11	0.41	0.65	0.46	0.19	0.65

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.

I-15 & Deer Springs Rd Mini Mart
 3: I-15 NB Ramps & Deer Springs Rd

Opening Year 2018
 Timing Plan: AM Peak

						
Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	245	160	668	71	137	139
v/c Ratio	0.78	0.11	0.67	0.08	0.60	0.43
Control Delay	48.6	7.4	22.7	3.7	51.2	10.7
Queue Delay	0.0	0.0	19.1	0.0	0.0	0.0
Total Delay	48.6	7.4	41.8	3.7	51.2	10.7
Queue Length 50th (ft)	167	13	303	0	84	0
Queue Length 95th (ft)	#260	112	488	22	138	51
Internal Link Dist (ft)		713	276		625	
Turn Bay Length (ft)	200			200		150
Base Capacity (vph)	350	1418	997	881	318	397
Starvation Cap Reductn	0	0	332	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	0.70	0.11	1.00	0.08	0.43	0.35

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

I-15 & Deer Springs Rd Mini Mart
 3: I-15 NB Ramps & Deer Springs Rd

Opening Year 2018
 Timing Plan: PM Peak

						
Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	833	299	330	54	336	438
v/c Ratio	1.02	0.23	0.92	0.15	1.00	0.70
Control Delay	57.2	7.1	72.9	5.8	92.0	12.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.2	7.1	72.9	5.8	92.0	12.0
Queue Length 50th (ft)	~448	73	208	0	~217	18
Queue Length 95th (ft)	m#450	m73	#372	21	#397	119
Internal Link Dist (ft)		713	276		625	
Turn Bay Length (ft)	200			200		150
Base Capacity (vph)	819	1307	357	363	335	627
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	1.02	0.23	0.92	0.15	1.00	0.70

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.

I-15 & Deer Springs Rd Mini Mart
 2: I-15 SB Ramps & Deer Springs Rd

Opening Year 2018 Plus Project
 Timing Plan: AM Peak

	→	↘	↙	←	↓	↘
Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	336	222	290	497	89	1049
v/c Ratio	0.49	0.31	0.80	0.43	0.19	0.87
Control Delay	23.6	5.1	66.8	11.7	27.2	22.1
Queue Delay	0.5	0.3	0.0	0.9	0.0	50.1
Total Delay	24.2	5.4	66.8	12.5	27.2	72.2
Queue Length 50th (ft)	186	19	202	108	42	150
Queue Length 95th (ft)	88	11	286	216	78	240
Internal Link Dist (ft)	201			713	812	
Turn Bay Length (ft)			250			
Base Capacity (vph)	690	725	430	1161	564	1313
Starvation Cap Reductn	111	171	0	0	0	0
Spillback Cap Reductn	0	0	0	384	0	544
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.40	0.67	0.64	0.16	1.36
Intersection Summary						

	→	↘	↙	←	↓	↘
Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	1050	232	182	442	65	488
v/c Ratio	0.97	0.23	0.65	0.30	0.36	0.68
Control Delay	40.4	2.0	24.7	13.5	46.0	8.9
Queue Delay	27.0	0.4	0.0	0.3	0.0	0.4
Total Delay	67.4	2.4	24.7	13.7	46.0	9.3
Queue Length 50th (ft)	~657	1	74	206	39	0
Queue Length 95th (ft)	#668	22	m99	m322	77	48
Internal Link Dist (ft)	201			713	812	
Turn Bay Length (ft)			250			
Base Capacity (vph)	1086	1006	281	1470	316	899
Starvation Cap Reductn	99	414	0	0	0	0
Spillback Cap Reductn	0	0	0	456	0	119
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.06	0.39	0.65	0.44	0.21	0.63

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.

I-15 & Deer Springs Rd Mini Mart
 3: I-15 NB Ramps & Deer Springs Rd

Opening Year 2018 Plus Project
 Timing Plan: AM Peak

						
Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	245	174	683	108	137	176
v/c Ratio	0.78	0.12	0.69	0.12	0.60	0.49
Control Delay	47.8	7.5	23.2	4.2	51.2	10.8
Queue Delay	0.0	0.0	22.9	0.0	0.0	0.0
Total Delay	47.8	7.5	46.1	4.2	51.2	10.8
Queue Length 50th (ft)	166	14	313	3	84	0
Queue Length 95th (ft)	#260	121	506	32	138	56
Internal Link Dist (ft)		713	276		625	
Turn Bay Length (ft)	200			200		150
Base Capacity (vph)	350	1418	997	892	318	427
Starvation Cap Reductn	0	0	327	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	0.70	0.12	1.02	0.12	0.43	0.41

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

I-15 & Deer Springs Rd Mini Mart
 3: I-15 NB Ramps & Deer Springs Rd

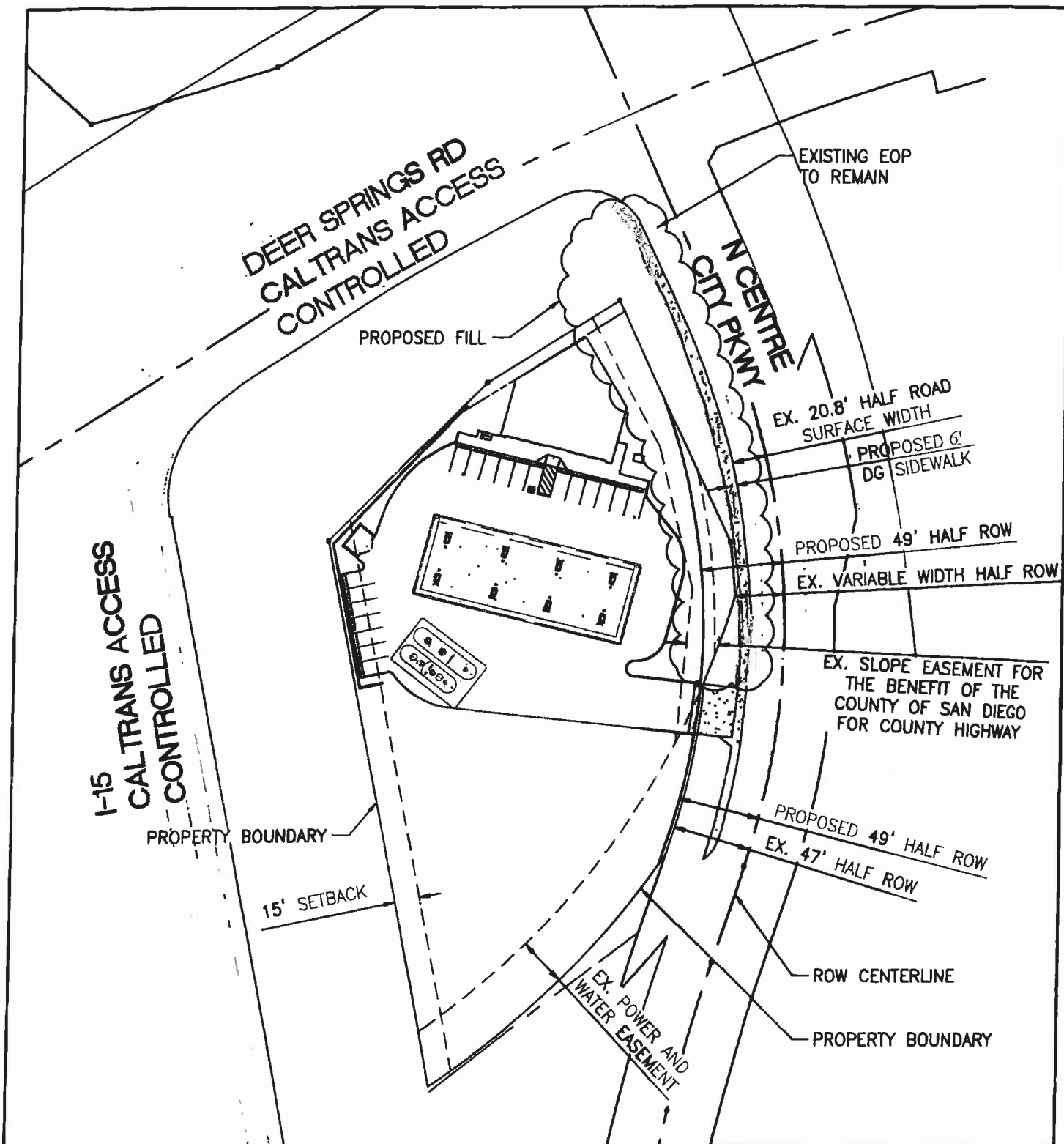
Existing Plus Project
 Timing Plan: PM Peak

						
Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	792	299	328	87	319	452
v/c Ratio	0.98	0.23	0.90	0.23	0.95	0.69
Control Delay	50.1	6.9	68.1	9.3	80.1	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.1	6.9	68.1	9.3	80.1	10.3
Queue Length 50th (ft)	418	74	207	0	203	6
Queue Length 95th (ft)	m#442	m77	#370	40	#371	101
Internal Link Dist (ft)		713	276		625	
Turn Bay Length (ft)	200			200		150
Base Capacity (vph)	819	1307	365	381	335	656
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	0.97	0.23	0.90	0.23	0.95	0.69

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.

APPENDIX H
RIGHT OF WAY IMPROVEMENT EXHIBIT



BCE Job #18442



18215 72ND AVENUE SOUTH
KENT, WA 98032
(425)251-6222
(425)251-8782 FAX

CIVIL ENGINEERING, LAND PLANNING,
SURVEYING, ENVIRONMENTAL SERVICES

FIGURE 11 **RIGHT-OF-WAY/IMPROVEMENT** **EXHIBIT**

KA ENTERPRISES MEGA-MART
26746 MOUNTAIN MEADOW ROAD
ESCONDIDO, CA 92026



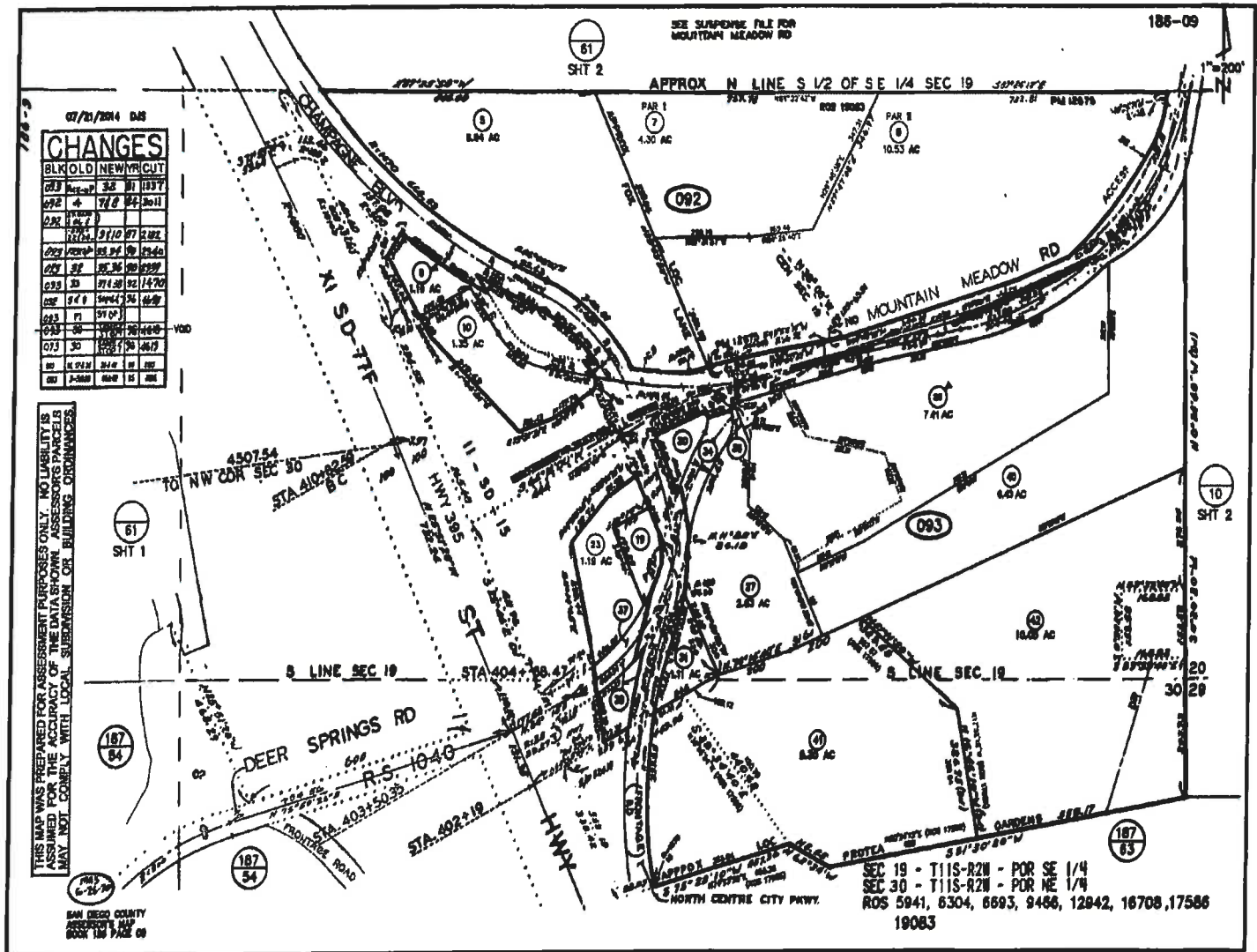
1" = 80'



First American

myFirstAm® Tax Map

Champagne Blvd, Escondido, CA 92026



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County of San Diego

RICHARD E. CROMPTON
DIRECTOR

DEPARTMENT OF PUBLIC WORKS
5510 OVERLAND AVE, SUITE 410
SAN DIEGO, CALIFORNIA 92123-1237
(858) 694-2212 FAX: (858) 694-3597
Web Site: www.sdcountry.ca.gov/dpw/

August 16, 2019

KA Shores
5820 Oberlin Drive Suite 210
San Diego, CA 92121

Dear KA Shores:

REQUEST FOR EXCEPTION(S) TO PUBLIC ROAD STANDARD(S) – KA ENTERPRISES MEGA MART AND GAS STATION LOCATED IN THE UNINCORPORATED PORTION OF SAN DIEGO COUNTY WITHIN THE DEER SPRINGS COMMUNITY PLANNING AREA, APN 189-093-23-00, PDS2017-STP-17-028.

County of San Diego (County) Department of Public Works (DPW) has reviewed your request, dated August 2, 2019, for the following design exception(s) to County Public Road Standard(s):

- Request to approve a required right-of-way half-width dedication without the additional six feet (6') for bike lane as called in Note 8 of Table 2A, Section 4.4 of the County P.R. Standards for N. Center City Parkway. There will be no parking on this section of N. Center City Parkway. .

County staff has assessed the appropriateness of the requested exception, and the County Traffic Engineer has reviewed and supports the request. It has been determined that your request for modification will not adversely affect traffic safety and flow of traffic in the area. This Design Exception Request is hereby approved. All other standards, conditions, and improvements required shall be met.

If you have any questions or need additional information related to this request, please contact Zoubir Ouadah, DPW County Traffic Engineer at (858) 694-3857, or by e-mail at: Zoubir.Ouadah@sdcounty.ca.gov.

KA Shores
August 16, 2019
Page 2

Sincerely,

A handwritten signature in blue ink, appearing to read 'Derek R. Gade', written over the word 'Sincerely,'.

DEREK R. GADE, P.E., Assistant Director
Department of Public Works

cc: PDS2017-STP-17-028 File;
Zoubir Ouadah, Department of Public Works;
KA Shores email: eugene@kaenterprises.net



County of San Diego

RICHARD E. CROMPTON
DIRECTOR

DEPARTMENT OF PUBLIC WORKS
5510 OVERLAND AVE, SUITE 410
SAN DIEGO, CALIFORNIA 92123-1237
(858) 694-2212 FAX: (858) 694-3587
Web Site: www.sdcountry.ca.gov/dpw/

May 28, 2019

Allen Sipe
3883 Ruffin Road Suite B
San Diego, CA 92123

Dear Mr. Sipe:

REQUEST FOR EXCEPTION(S) TO PUBLIC ROAD STANDARD(S) – KA ENTERPRISES MEGA MART AND GAS STATION LOCATED IN THE UNINCORPORATED PORTION OF SAN DIEGO COUNTY WITHIN THE DEER SPRINGS COMMUNITY PLANNING AREA, APN 189-093-23-00, PDS2017-STP-17-028

County of San Diego (County) Department of Public Works (DPW) has reviewed your request, dated April 23, 2019, for the following design exception(s) to County Public Road Standard(s):

- Request to approve the installation of a six-foot (6') decomposed granite (DG) pathway in lieu of curb, gutter and sidewalk along the project's frontage on North Centre City Parkway.

County staff has assessed the appropriateness of the requested exception, and the County Traffic Engineer has reviewed and supports the request. It has been determined that your request for modification will not adversely affect traffic safety and flow of traffic in the area. This Design Exception Request is hereby approved. All other standards, conditions, and improvements required shall be met.

If you have any questions or need additional information related to this request, please contact Zoubir Ouadah, DPW County Traffic Engineer at (858) 694-3857, or by e-mail at: Zoubir.Ouadah@sdcounty.ca.gov.

Sincerely,

DEREK R. GADE, P.E.
Assistant Director

EMS: AB

cc: PDS2017-STP-17-028 File;
Zoubir Ouadah, Department of Public Works;
KA Shores email: eugene@kaenterprises.net



County of San Diego

RICHARD E. CROMPTON
DIRECTOR

DEPARTMENT OF PUBLIC WORKS
5510 OVERLAND AVE, SUITE 410
SAN DIEGO, CALIFORNIA 92123-1237
(858) 694-2212 FAX: (858) 694-3597
Web Site: www.sdcountry.ca.gov/dpw/

May 28, 2019

Allen Sipe
3883 Ruffin Road Suite B
San Diego, CA 92123

REQUEST FOR EXCEPTION(S) TO PUBLIC ROAD STANDARD(S) – KA ENTERPRISES MEGA MART AND GAS STATION LOCATED IN THE UNINCORPORATED PORTION OF SAN DIEGO COUNTY WITHIN THE DEER SPRINGS COMMUNITY PLANNING AREA, APN 189-093-23-00, PDS2017-STP-17-028.

Dear Allen Sipe:

County of San Diego (County) Department of Public Works (DPW) has reviewed your request, dated April 23, 2019, for the following design exception(s) to County Public Road Standard(s):

- Request to approve the use of the prevailing speed of 30 miles per hour (MPH) for southbound traffic based on Speed Survey data provided by Darnell & Associates, dated October 27, 2017, in lieu of the County criteria noted in Section 6.1.E., Table 5 for the intersectional sight distance based on the design speed requirement to be the greater of the current prevailing speed and the minimum design speed of the respective road classification for the proposed private driveway and North Centre City Parkway (4.1 B Major Road). The County's required corner sight distance for a Design Speed of 55 MPH is 550 feet. The existing sight distance is 300 feet looking northerly of the proposed private driveway. The existing sight distance is limited due to the topography of North Centre City Parkway.

County staff has assessed the appropriateness of the requested exceptions to use the collected prevailing speed criteria in lieu of the minimum design speed of the respective road classification, and the County Traffic Engineer has reviewed and supports the request. The sight distance available for southbound traffic on North Centre City Parkway approaching the intersection with the proposed driveway opening(s) complies with the stopping sight distance criteria, based upon the speed data cited in the sight distance certification provided by Darnell & Associates, dated October 27, 2017. It has been determined that your request for modification will not adversely affect traffic safety and

Mr. Sipe
May 28, 2019
Page 2

flow of traffic in the area. This Design Exception Request is hereby approved. All other standards, conditions, and improvements required shall be met.

If you have any questions or need additional information related to this request, please contact Zoubir Ouadah, DPW County Traffic Engineer at (858) 694-3857, or by e-mail at: Zoubir.Ouadah@sdcounty.ca.gov

Sincerely,

A handwritten signature in black ink, appearing to read 'Derek R. Gade', with a long horizontal flourish extending to the right.

DEREK R. GADE, P.E., Assistant Director
Department of Public Works

EMS: AB

cc: PDS2017-STP-17-028 File;
Zoubir Ouadah, Department of Public Works;
KA Shores e-mail: eugene@kaenterprises.net

DEPARTMENT OF PUBLIC WORKS

Request for an Exception to a Road Standard and/or Modification to Project Conditions

Project Number: PDS 2017-STP-17-028 Date of Request: 4/18/2019

Project Location: Southwest Corner of North Centre City Parkway at Deer Springs Road

Thos. Bros. Map/Grid: 1089-D6 APN: 186-093-19-00, 186-093-23-00, & 186-093-37-00

Requestor Name: Bill E. Darnell Telephone: (619) 233-9373

Address: 4411 Mercury Street, Suite 207A, San Diego, CA 92111

Requested Exception/Modification (attach engineering sketches showing existing layout, details and notes):

Request to use prevailing speed of 30 mph for southbound traffic on North Centre City parkway and measurement of the corner sight distance from 10 feet from the existing and/or future bike lane at the project access driveway.

Reason for requested Exception/Modification (provide attachment if additional space is required):

The County Design Speed for North Centre City Parkway is 50 mph and would require 500 feet of corner sight distance. The topography of the roadway ad profile of North Centre City parkway does not provide the 500 feet required. Further, the prevailing speeds for Northbound North Centre City Parkway found the 85th percentile speed to be 30 mph. the prevailing speed was measured and observed at Deer Springs Road and the measurements of traffic flowing on the green light.

List alternatives that could mitigate the requested Exception/Modification (attach engineering sketches showing proposed layouts, details and notes):

The attached exhibits show the available corner sight distance for the existing North Centre City Parkway and future widening of North Centre City Parkway.

Describe the hardship(s) to the property owner(s) and/or neighbor(s) if the request is not approved (see note 3. on reverse):

To provide the 500 feet of corner sight distance would require raising of the project site 5-10 feet and lowering the profile of North Centre City Parkway, Champagne Boulevard/Deer Springs Road and Mountain Meadows Road.

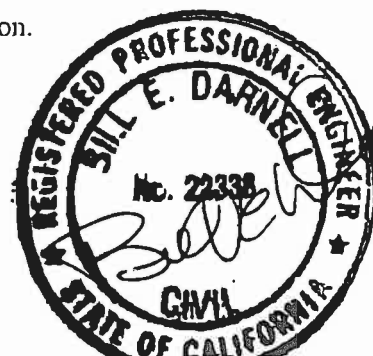
Provide Design and Cost Estimate for meeting the Condition (see note 3. on reverse):

Preparation of designs and cost estimates have not been prepared and is estimated to be expensive

See reverse for important information.

Revised: Aug. 20, 2010

H-8



4/18/2019

This form is to be used for the following:

- A. Request design exception to a Road Standard and/or modify DPW Conditions included in the **Preliminary Approval** prior to the issuance of the Final Approval.
- B. Request design exception to a Road Standard and/or modify DPW Conditions included in the **Final Approval** document(s) prior to the recordation of the map, which may also require an amendment of conditions.

Note: Request for modifications to conditions of a recorded map, in most cases, requires a map modification, which is a separate process.

This request may be initiated by the owner or by an agent or consultant, the local fire prevention district or the local planning group acting on behalf of the owner. Where professional opinions, judgments, analysis, etc are included, these documents shall be signed, sealed and dated by the responsible licensed professional.

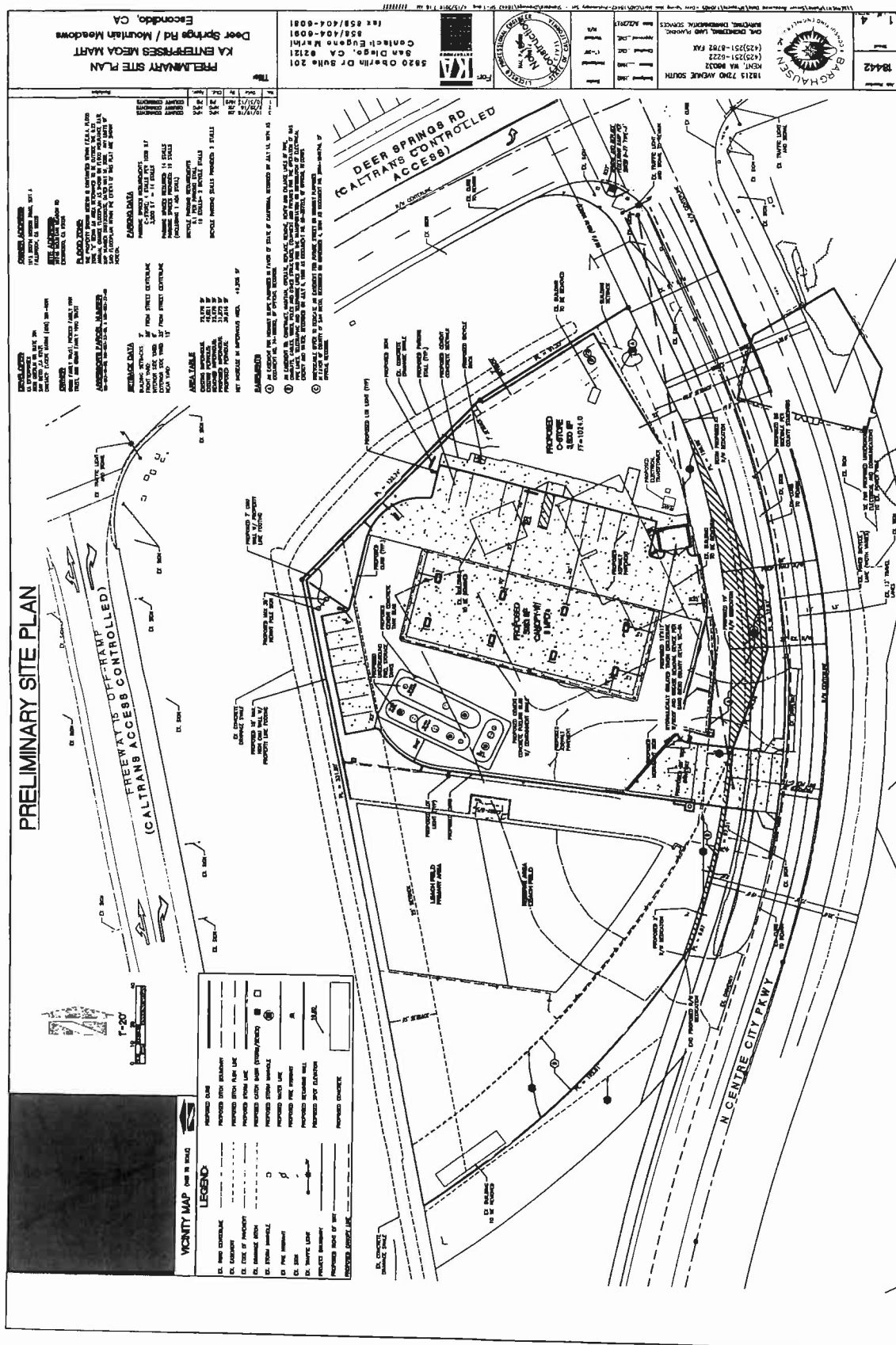
The following guidelines apply to this request:

- 1. Incomplete or unclear requests, or requests not supported by appropriate documents will be returned as incomplete applications. Requests must be specific and clear.
- 2. This request must be completed and submitted with supporting attachments. Attachments may consist of documents from the relevant County departments, regulatory agencies, fire prevention districts, water and utility districts, planning groups. Photos, plan and profile sketches, diagrams, engineering studies, certifications, cost estimates, and other pertinent information may also be included.
- 3. Provide detailed cost estimates for work included in this request. Single figure summary and "bottom line" cost estimates will not be accepted. Please note that financial hardship cannot be the sole basis of a modification request.

Example 1: A request to reduce an intersectional sight distance condition must, as a minimum, be supported by a detailed plan of the intersection showing the right-of-way easements, the available/required line(s) of sight and the existing obstructions to the line(s) of sight, a certification by a registered engineer of the prevailing speed along the major road, certification as to the minimum acceptable sight distance and the availability of such distance, as well as a detailed cost estimate for compliance with the initial condition.

Example 2: A request to reduce road width improvement standard must, as a minimum, cite the reasons necessitating the request, a letter from the local Fire Prevention District stipulating the acceptable changes to the road(s), plan and profile sketches of the road showing centerline stationing, nature, size and location of utilities that are impacted, and a detailed cost estimate for compliance with the initial improvement condition(s).

- 4. The applicant will be contacted if additional information or clarification is required. Your request may be forwarded to the local planning group for input. The DPW Project Team responsible for the project area will evaluate the request and make a recommendation to the Director through the Deputy Director. The Director's decision, which is final, will be conveyed to the applicant in writing, with copies to all parties and agencies concerned.
- 5. Requests take an average of ten (10) working days to process. They may take longer if submitted without the proper supporting documents or if there is insufficient balance in the project account.
- 6. Mail or submit your completed request(s) to the Department of Public Works (DPW), 5201 Ruffin Road (MS-O336), Suite D, San Diego, CA, 92123. An emailed pdf copy is recommended, also.
- 7. Staff time to process this request will be charged against the project account. The applicant will be contacted for additional funds if the account balance is insufficient to cover the estimated charges for processing the request.



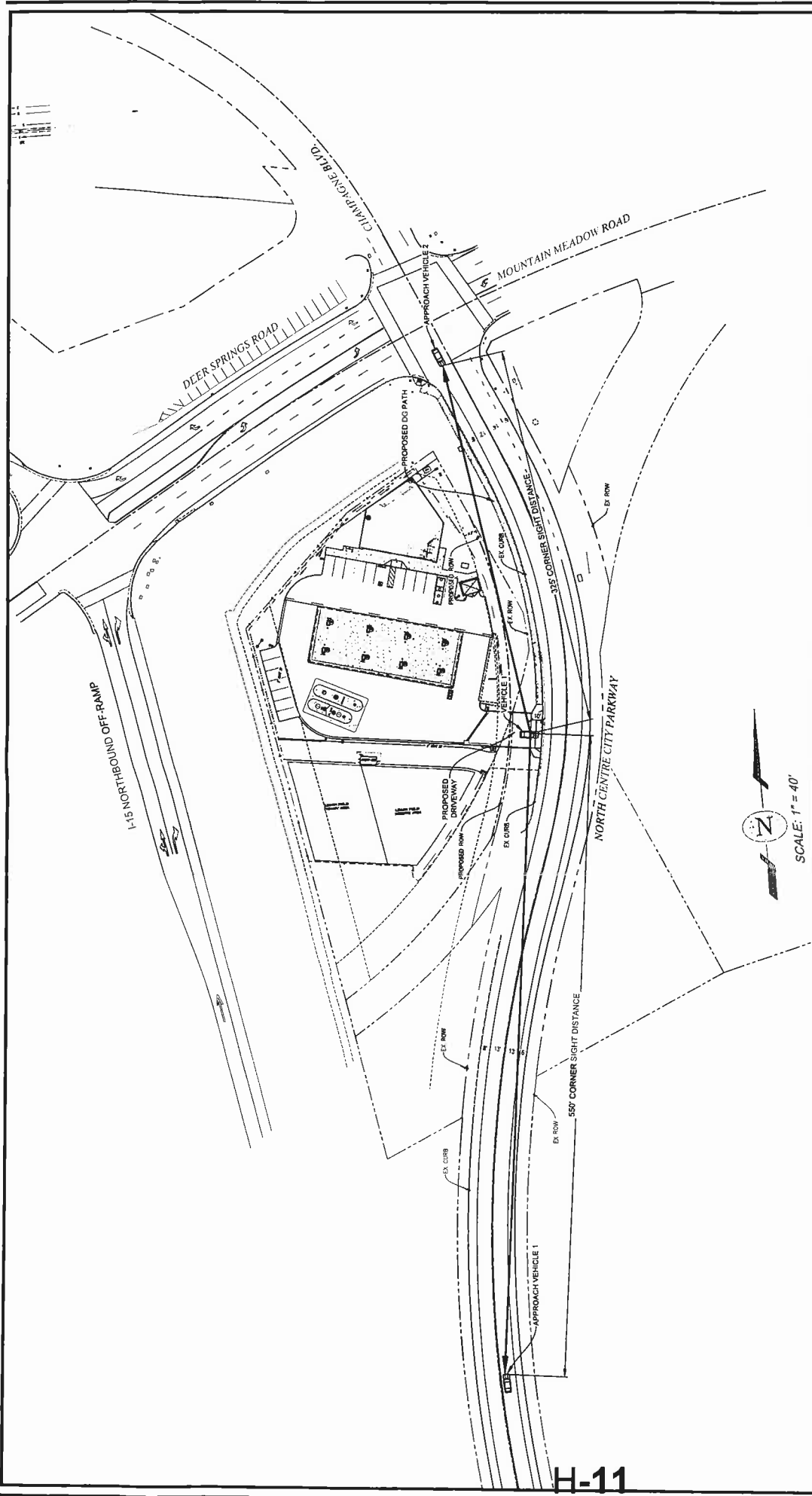


FIGURE 2
CORNER INTERSECTIONAL SIGHT DISTANCE
FOR EXISTING NORTHBOUND (55 MPH) &
SOUTHBOUND (30 MPH) VEHICLES
AT NORTH CENTER CITY PARKWAY
& DEER SPRINGS ROAD - MINI MART PROJECT
MEASURED 10 FEET FROM EXISTING CURB
COUNTY OF SAN DIEGO, CALIFORNIA

SCALE
1" = 40'
WARNING
IF THIS BAR DOES
NOT MEASURE 1"
THEN DRAWING IS
NOT TO SCALE

ENGINEER'S INFORMATION
 PLANS PREPARED UNDER THE SUPERVISION OF
00252018
DATE
DESIGN ENGINEER R.C.E. No. 23318
LICENSE EXPIRES 9/30/19
Darnell & Associates, Inc.
16149 2314375
SAN DIEGO, CA 92111
DATE: Mar 25, 2019
DWG: 11001 Deer Springs Blvd Dm 1B

ENGINEER'S SEAL

