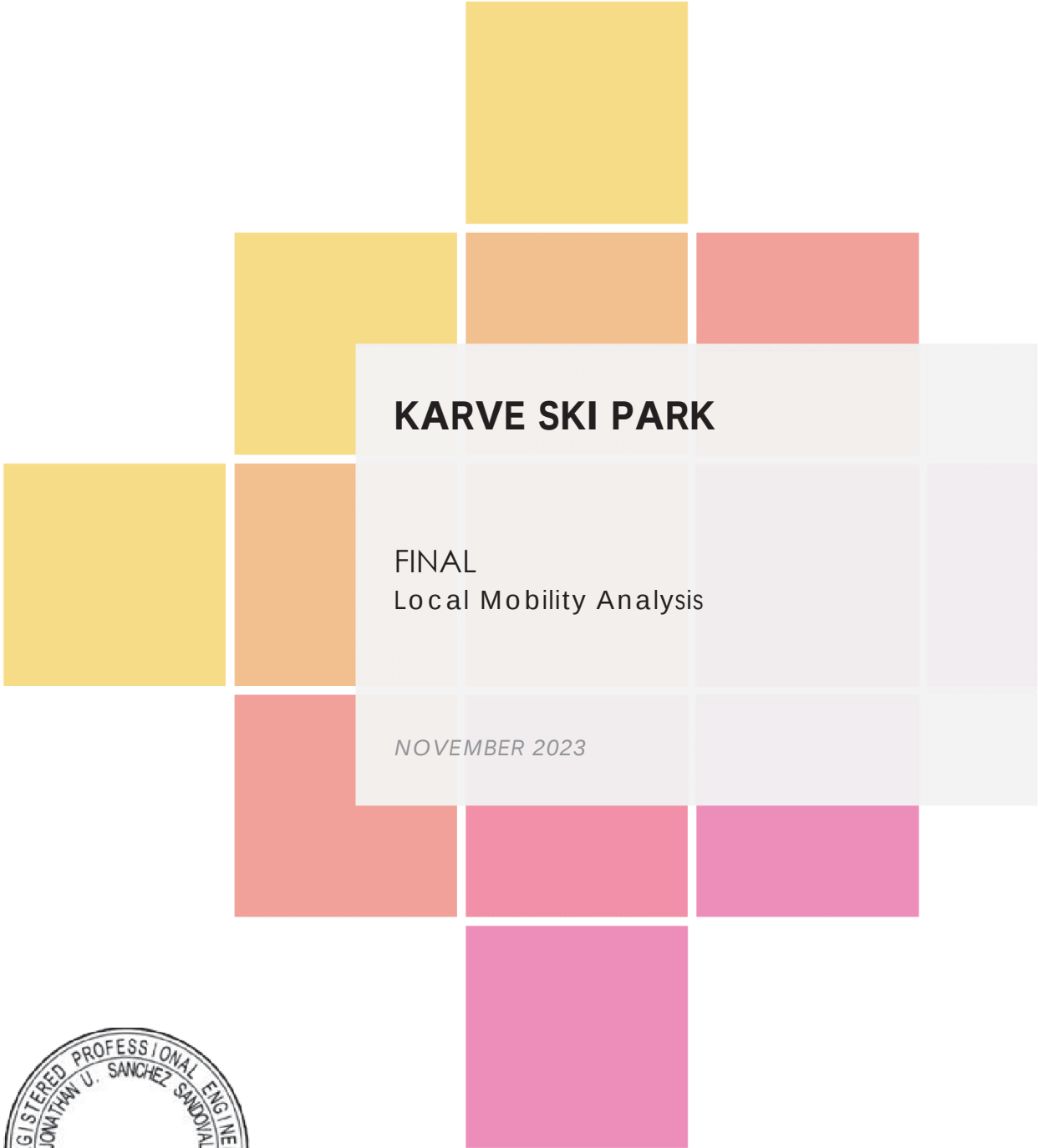




KARVE SKI PARK

FINAL
Local Mobility Analysis

NOVEMBER 2023



Prepared For

SD Ski Partners
8333 Case Street, Suite A
La Mesa, CA 91942

Prepared By



CR Associates
3900 Fifth Avenue, Suite 310
San Diego, CA 92103

Executive Summary

The purpose of this Local Mobility Analysis (LMA) is to evaluate how the proposed Karve Ski Park (the “Project”) will affect the surrounding local transportation network, as well as to determine if additional transportation improvements will be needed.

The Project proposes to develop a 10.15 acres synthetic ski park (also known as dry ski slope) located at 26351 North Centre City Parkway within San Diego County. The ski park will be an outdoor, year-round synthetic show sport facility and recreational park catering to all ages, abilities, and skill levels. The primary activities will be the ones that take place at the artificial ski slope which mimics the attributes of snow for both day and nighttime skiing and snowboarding.

Summary

This section provides a discussion on the findings from the LMA prepared per the County of San Diego Transportation Study Guidelines (County TSG) (2023). **Table ES.1** displays the level of service (LOS) results under the study scenarios.

Table ES.1 – Peak Hour Intersection LOS Results Summary

Intersection	Peak Hour	LOS				
		Existing	Opening Year	Opening Year + Project	Horizon Year	Horizon Year + Project
1. I-15 Southbound Ramps & Deer Springs Road	AM	D	D	D	D	D
	PM	D	D	D	D	D
2. I-15 Northbound Ramps & Deer Springs Road	AM	B	B	B	C	C
	PM	D	D	D	D	D
3. North Centre City Parkway & Deer Springs Road / Mountain Meadow Road	AM	F	F	F	F	F
	PM	F	F	F	F	F
4. North Centre City Parkway & Tierra Libertia Road	AM	C	C	C	D	D
	PM	B	B	B	B	B
5. North Centre City Parkway & Jesmond Dene Road	AM	B	B	B	B	B
	PM	B	B	B	B	B
6. Project Driveway #1 & Tierra Libertia Road	AM	N/A	N/A	A	N/A	A
	PM	N/A	N/A	A	N/A	A
7. Project Driveway #2 & Tierra Libertia Road	AM	N/A	N/A	A	N/A	A
	PM	N/A	N/A	A	N/A	A
8. Project Driveway #3 & Tierra Libertia Road	AM	N/A	N/A	A	N/A	A
	PM	N/A	N/A	A	N/A	A
9. Project Driveway #4 & Jesmond Dene Road	AM	N/A	N/A	A	N/A	A
	PM	N/A	N/A	A	N/A	A

Source: CR Associates (2023)

Note:

Bold indicates substandard LOS E or F

N/A = Not Applicable

Recommended Improvements

Intersection Analysis

Based on the County TSG requirements, the addition of the Project traffic would not trigger improvements at any of the study intersections under the “with Project” study scenarios. Therefore, no intersection improvements are required or proposed.

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1.0 Introduction

The purpose of this Local Mobility Analysis (LMA) is to evaluate how the proposed Karve Ski Park (the “Project”) will affect the surrounding local transportation network, as well as to determine if additional transportation improvements will be needed.

1.1 Project Description

The Project proposes to develop a 10.15 acres synthetic ski park (also known as dry ski slope) located at 26351 North Centre City Parkway within San Diego County. The ski park will be an outdoor, year-round synthetic show sport facility and recreational park catering to all ages, abilities, and skill levels. The primary activities will be the ones that take place at the artificial ski slope which mimics the attributes of snow for both day and nighttime skiing and snowboarding. **Figure 1.1** displays the Project’s regional location. **Figure 1.2** displays the project site plan.

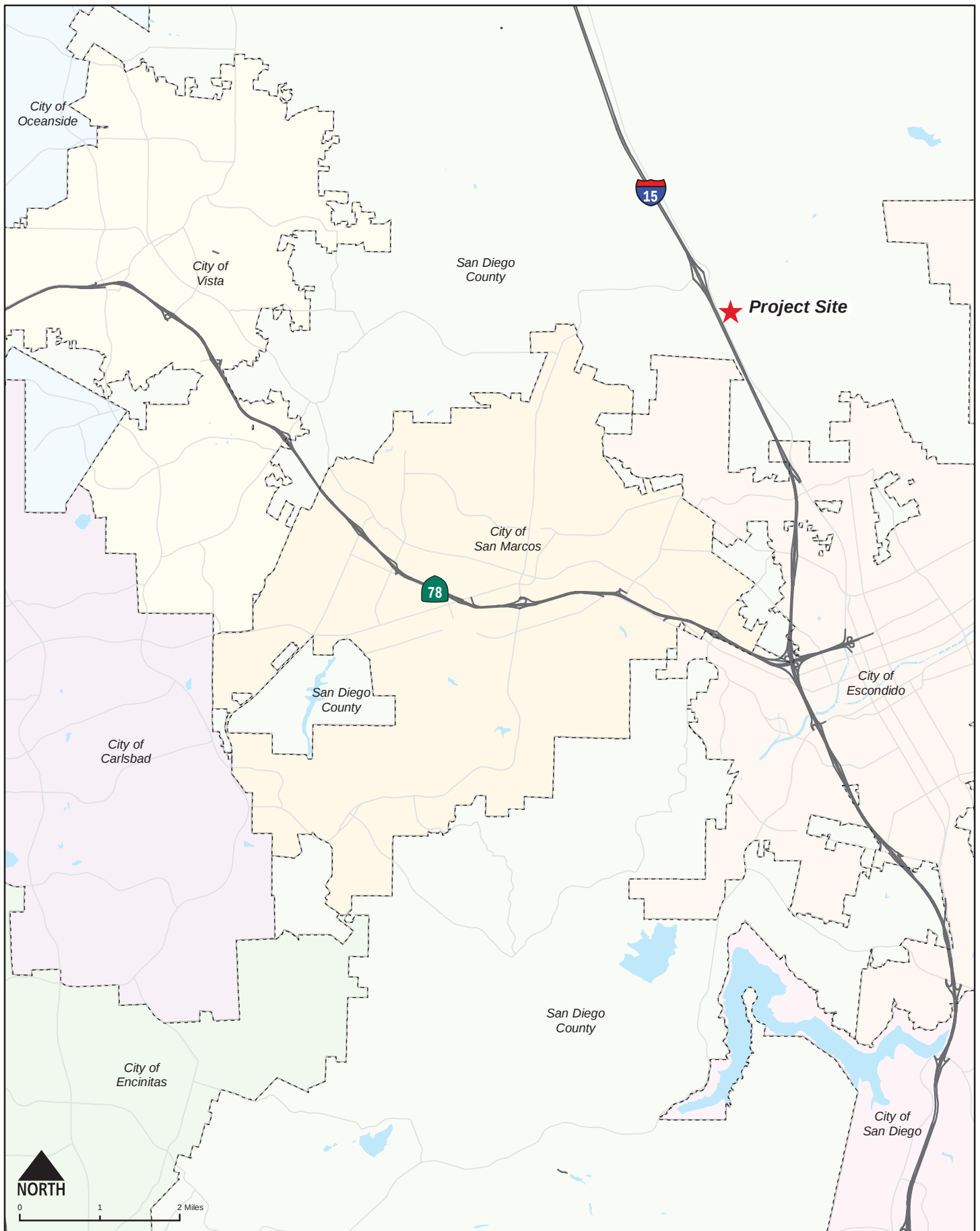
Access to the Project will be provided via four (4) new proposed driveways:

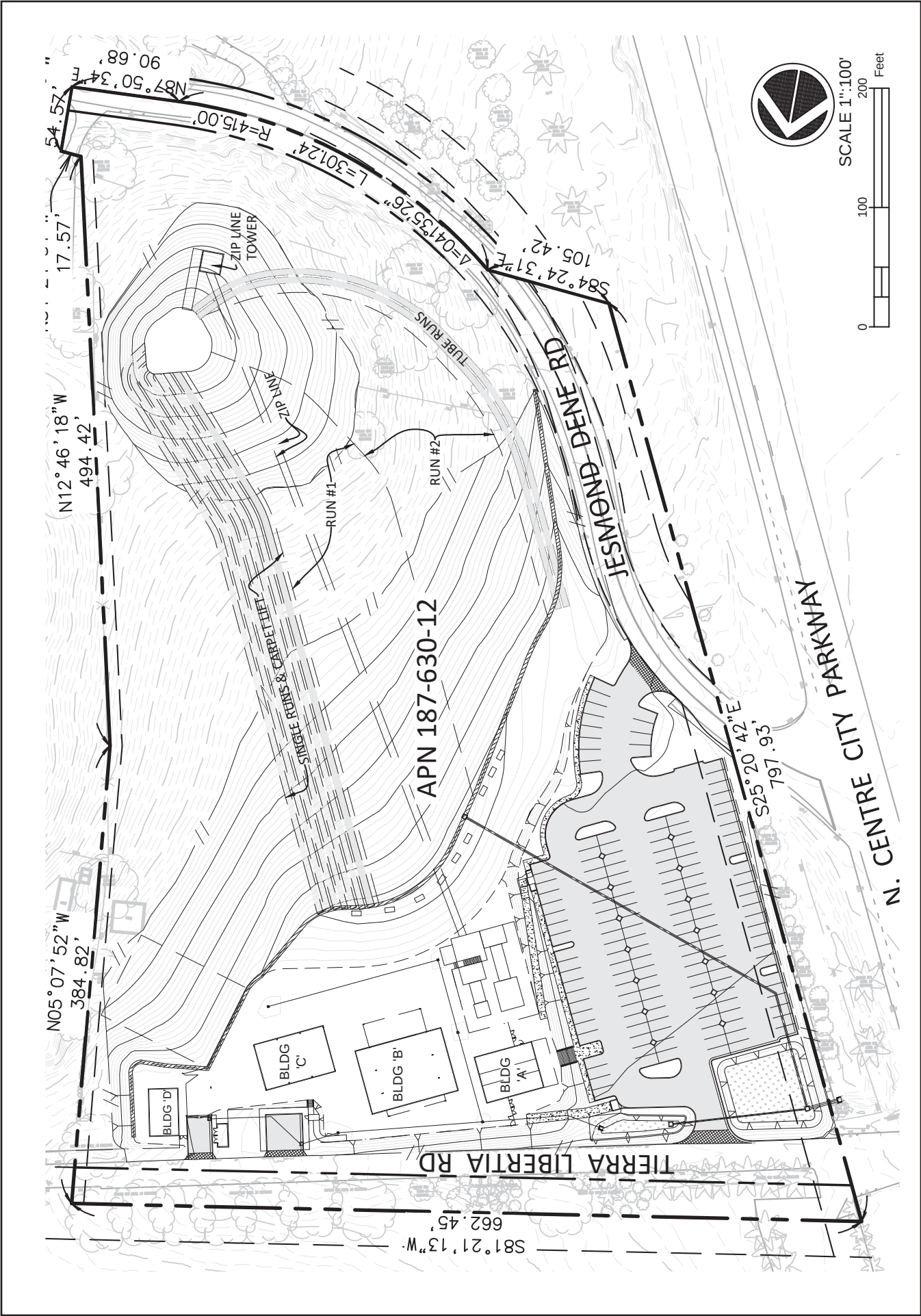
- Driveway #1 – Located approximately 100 feet east of North Centre City Parkway, along Tierra Libertia Road, will function as an *Entrance Only* driveway that will provide access to a newly proposed parking area.
- Driveway #2 – Located approximately 400 feet east of North Centre City Parkway, along Tierra Libertia Road, will function as an in/out driveway and will provide access to Village Area Amenities/Services.
- Driveway #3 – Located approximately 500 feet east of North Centre City Parkway, along Tierra Libertia Road, will function as an in/out driveway and will provide access to Village Area Amenities/Services.
- Driveway #4 – Located along Jesmond Dene Road, approximately 200 feet east of North Centre City Parkway, will function as an *Exit Only* driveway from newly proposed parking area.

1.2 Project Trip Generation

Per the County TSG, the Project’s trip generation is based on rates outlined in the Institute of Transportation Engineer’s (ITE) Trip Generation Manual, 11th Edition. The trip generation rates for a Snow Ski Area (ITE Land Use #466) were utilized for the synthetic ski component of the Project, while the Golf Driving Range (ITE Lane Use #432) were utilized for the Project’s golf component.

It should be noted that the ITE Trip Generation Manual does not include average daily trip (ADT) estimates for snow ski areas but does include AM and PM peak hour estimates. The ITE Trip Generation Manual estimates 24.63 trips per lift during the AM peak hour and 39.33 trips per lift during the weekday PM peak hour. Assuming AM peak hour trips account for 6% of daily trips, and PM peak hour trips account for 10% of daily trips, the higher and more conservative rate of 39.33 trips per lift during the PM peak hour was utilized to estimate 400 ADT per lift ($39.33 \div 0.10 = 400$). **Table 1.1** displays the total project trip generation.





Karve Ski Park
 Local Mobility Analysis
 C+R

Figure 1.2
 Project Site Plan

Table 1.1 – Project Trip Generation

Land Use	Units	Trip Rate	ADT	AM Peak Hour					PM Peak Hour				
				%	Trips	Split	In	Out	%	Trips	Split	In	Out
Ski Resort	1 Lift	400/Lift	400	6%	25	97:3	25	0	10%	40	12:88	5	35
Golf Driving Range	9 Tee Boxes	14/Tee Box	126	3%	4	7:3	3	1	9%	15	5:5	8	7
Total			526	-	29	-	28	1	-	55	-	13	42

Source: Institute of Transportation Engineer's (ITE) Trip Generation Manual, 11th Edition; CR Associates (2023)

As shown, the Project would generate 526 average daily trips, including 29 (28-in/1-out) AM peak hour trips and 55 (13-in/42-out) PM peak hour trips.

1.3 Project Trip Distribution & Assignment

The project trip distribution was developed based on the geographical location of the project, the characteristics of the proposed land use, nearest freeway facilities, and location of major shopping centers, schools, and other communities. **Figure 1.3** displays the project trip distribution pattern for the Project. Based on the project trip generation and distribution, AM/PM peak hour project trips were assigned to the adjacent study intersections as displayed in **Figure 1.4**

1.4 Project Study Area

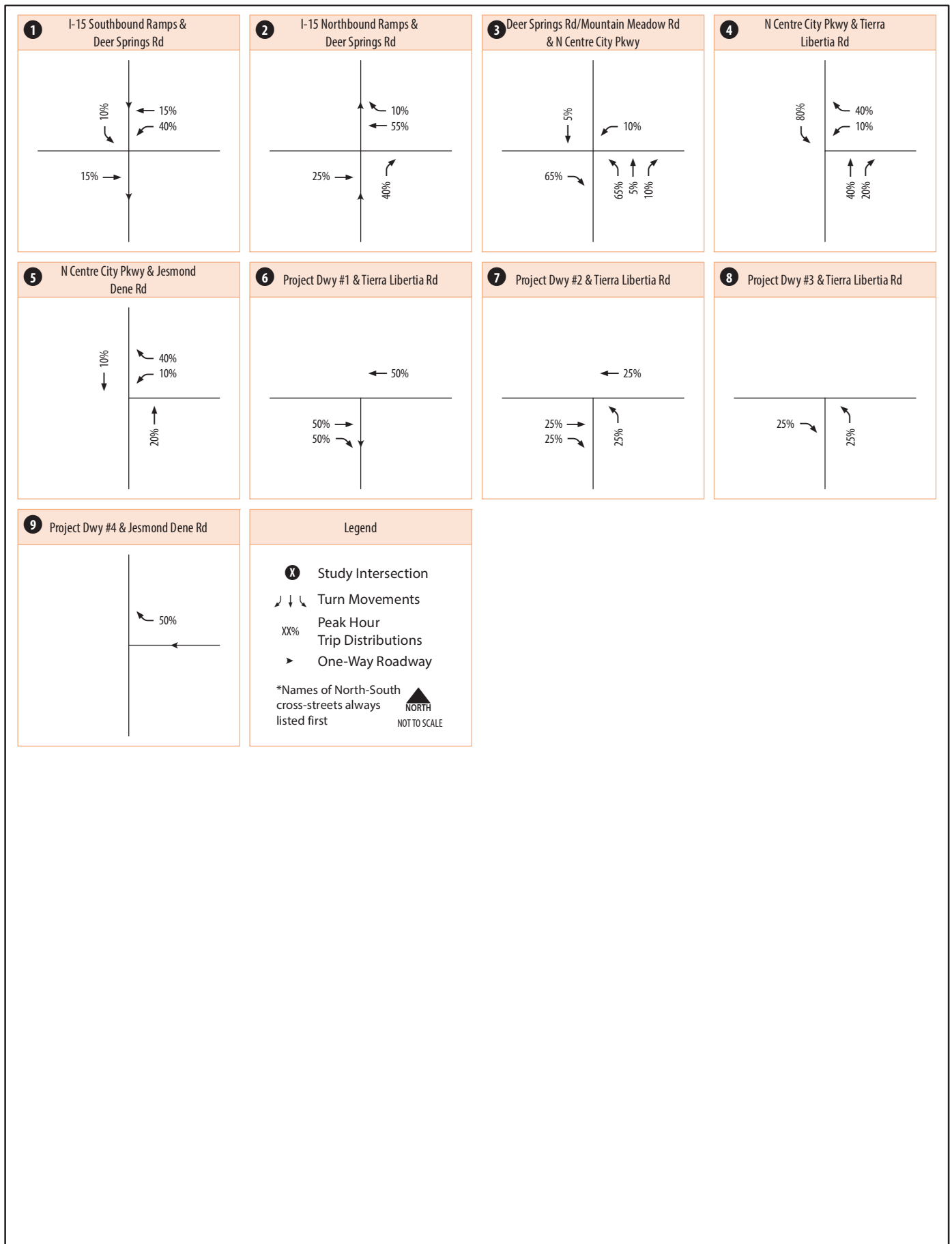
Based on the criteria outlined in the County TSG, intersections are typically the constraint when analyzing traffic operations. Therefore, no roadway segments were analyzed under any scenario. The following intersections were analyzed based on the County TSG:

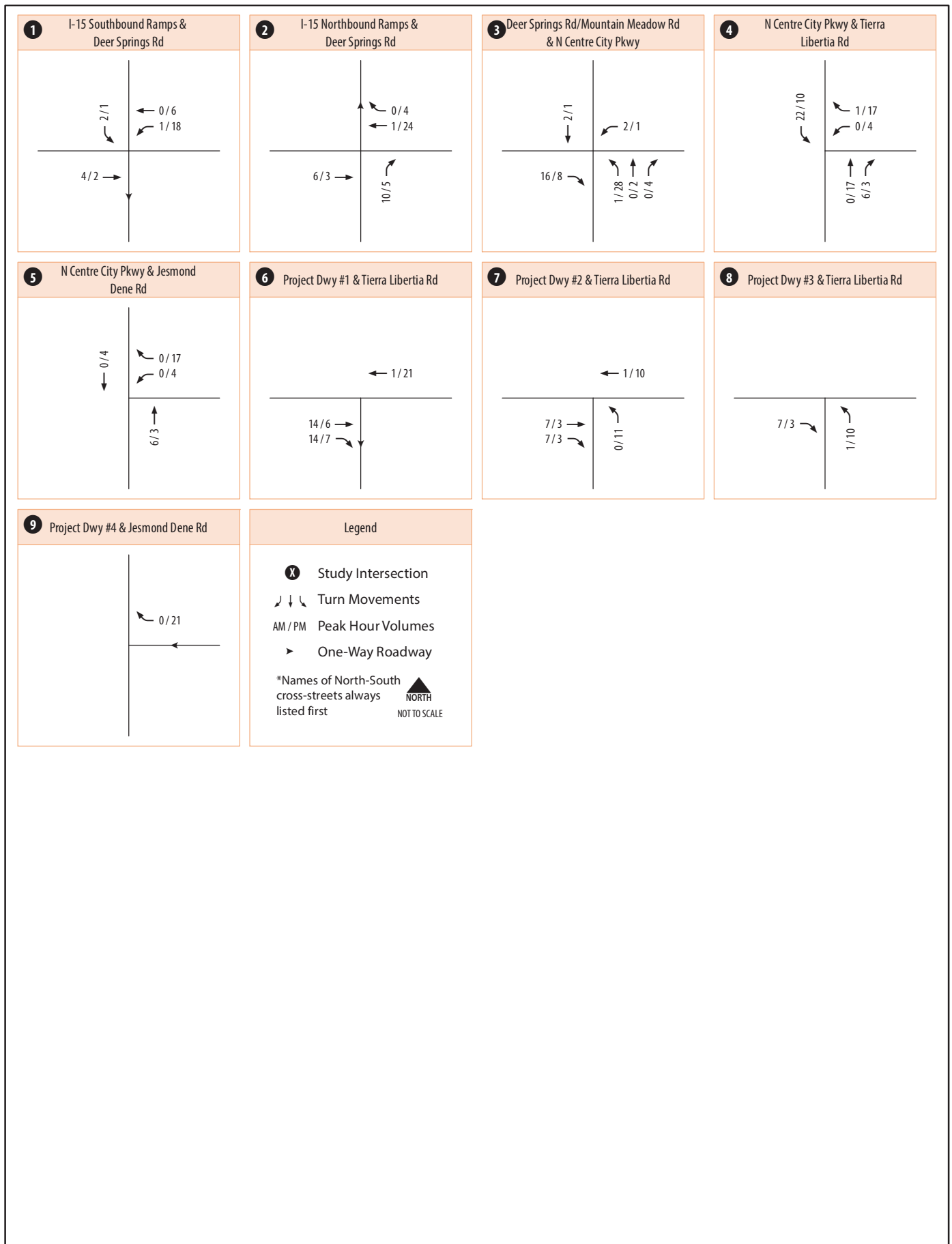
Intersections

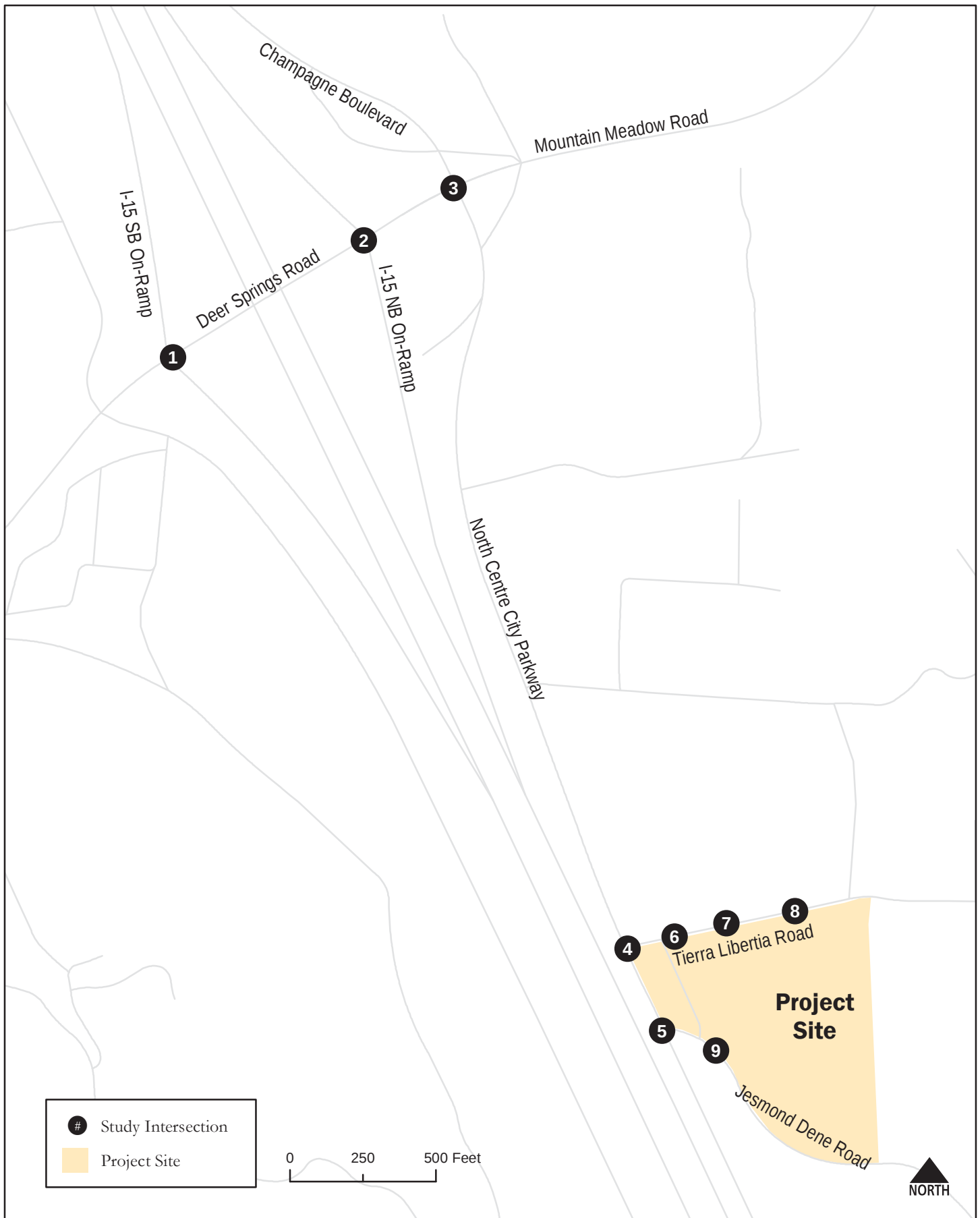
1. I-5 Southbound Ramps & Deer Springs Road
2. I-5 Northbound Ramps & Deer Springs Road
3. Champagne Boulevard/North Centre City Parkway & Deer Springs Road/Mountain Meadow Road
4. North Centre City Parkway & Tierra Libertia Road
5. North Centre City Parkway & Jesmond Dene Road
6. Project Driveway #1 (Entrance Only) & Tierra Libertia Road¹
7. Project Driveway #2 & Tierra Libertia Road¹
8. Project Driveway #3 & Tierra Libertia Road¹
9. Project Driveway #4 (Exit Only) & Jesmond Dene Road¹

¹ Intersection provides project access and does not currently exist; therefore, it is only analyzed under the "with Project" scenarios.

Figure 1.5 displays the project study area.







1.5 Report Organization

Following this introductory chapter, this report is organized into the following chapters:

2. *CEQA VMT Analysis* – This chapter provides a summary and recommendations for the VMT analysis conducted on the Project.
3. *Analysis Methodology* – This chapter reviews the methods utilized to evaluate any potential inconsistencies associated with the implementation of the Project, as required by the County TSG for an LMA.
4. *Project Setting* – This chapter describes the Project’s land uses and associated trip generation. Additional information such as trip distribution patterns and project trip assignment are also included in this chapter, which is used to determine the project study area.
5. *Existing Conditions* – This chapter describes and evaluates the existing transportation network. The operations of the vehicular, pedestrian, bicycle, and transit facilities within the study area are evaluated and substandard facilities are identified. LOS analyses and results are provided for Existing Conditions.
6. *Opening Year 2025 Conditions* – This chapter describes the Opening Year traffic volumes by applying an ambient growth factor to existing traffic volumes. It also analyzes any change in the transportation network caused by the Project. The Project’s generated traffic is added to the Opening Year 2025 conditions volumes to evaluate “with Project” conditions. LOS analyses and results are provided for Opening Year 2025 and Opening Year 2025 with Project conditions.
7. *Horizon Year 2050 Conditions* – This chapter identifies new near-term and long-range traffic effects that were not previously identified. It analyzes future traffic conditions, without and with project, by applying the same ambient growth to the timespan between Existing Conditions and Horizon Year 2050. Under “with Project” conditions, the project trips are added to the Horizon Year volumes. LOS analyses and results are provided for Horizon Year 2050 and Horizon Year 2050 with Project conditions.
8. *Improvements and Recommendations* – This chapter identifies any substandard facilities and provides improvement requirements to improve substandard facilities to acceptable LOS or pre-project conditions.
9. *Site Access and Parking* – This chapter addresses access to the Project site and discusses parking requirements for the Project.

2.0 Analysis Methodology and Thresholds

This LMA was performed in accordance with the standards and requirements identified in the County TSG. The Scoping Agreement for Transportation Studies is included in **Appendix A**.

2.1 Analysis Guidelines

The County TSG provides standards and thresholds to determine the effect a land development project will have on the local transportation network through an LMA. The project is consistent with the General Plan, but plans to generate greater than 500 daily trips, therefore, an LMA is required per the County's TSG. An LMA helps to provide both the project applicant and the County of San Diego an understanding of how the local transportation network will operate with the implementation of the Project and facilitate on-site project access.

2.2 Level of Service (LOS) Definition

LOS is a quantitative measure describing operational conditions within a traffic stream, and the motorist's and/or passengers' perception of operations. A LOS definition generally describes these conditions in terms of such factors as delay, speed, travel time, freedom to maneuver, interruptions in traffic flow, queuing, comfort, and convenience. **Table 2.1** describes generalized definitions of the various LOS categories (A through F) as applied to roadway operations.

Table 2.1 – LOS Definitions

LOS Category	Definition of Operation
A	This LOS represents a completely free-flow condition, where the operation of vehicles is virtually unaffected by the presence of other vehicles and only constrained by the geometric features of the highway and by driver preferences.
B	This LOS represents a relatively free-flow condition, although the presence of other vehicles becomes noticeable. Average travel speeds are the same as in LOS A, but drivers have slightly less freedom to maneuver.
C	At this LOS, the influence of traffic density on operations becomes marked. The ability to maneuver within the traffic stream is clearly affected by other vehicles.
D	At this LOS, the ability to maneuver is notably restricted due to traffic congestion, and only minor disruptions can be absorbed without extensive queues forming and the service deteriorating.
E	This LOS represents operations at or near capacity. LOS E is an unstable level, with vehicles operating with minimum spacing for maintaining uniform flow. At LOS E, disruptions cannot be dissipated readily thus causing deterioration down to LOS F.
F	At this LOS, forced or breakdown of traffic flow occurs, although operations appear to be at capacity, queues form behind these breakdowns. Operations within queues are highly unstable, with vehicles experiencing brief periods of movement followed by stoppages.

Source: Highway Capacity Manual 6th Edition

2.3 Peak Hour Intersection LOS Standards and Thresholds

This section presents the methodologies used to perform peak hour intersection capacity analysis. The following assumptions were utilized in conducting all intersection LOS analyses:

- Peak Hour Factor – PHF was calculated from September 2023 peak hour intersection count data, included in **Appendix B**, and utilized for Existing and Opening Year analysis. A PHF of 0.95 or existing PHF (whichever is greater) was used for Horizon Year conditions.
- Saturation Flow Rate – 1,800 vehicles per hour per lane.
- Heavy Truck Percentage – The minimum recommended value of 3% was utilized.
- Signal Timing – Used traffic signal timing/phasing plans provided by Caltrans and San Diego County (September 2023). Existing signal timings are provided in **Appendix C**. Signal timings were optimized under Horizon Year conditions.
- Lane Utilization Factor – No unusual lane utilization was observed in the field; therefore, HCM 6th Edition defaults were used for all scenarios.

2.3.1 Unsignalized Intersections

Unsignalized intersections were analyzed using the Highway Capacity 6th Edition side-street stop (Chapter 20), all-way stop (Chapter 21), and roundabout (Chapter 22) intersection analysis methodology. The computerized analysis of intersection operations was performed utilizing the Synchro Version 11 traffic analysis software by Trafficware Ltd.

LOS was determined as follows:

- Side-Street Stop Intersections – Reported for the worst-case approach.

The LOS criteria used for the analysis of unsignalized intersections are described in **Table 2.2**.

Table 2.2 – LOS Criteria for Stop-Controlled Unsignalized Intersections

Average Stopped Delay Per Vehicle (Seconds)	LOS Characteristics
0 – 10	A
> 10 – 15	B
> 15 – 25	C
> 25 – 35	D
> 35 – 50	E
> 50	F

Source: Highway Capacity Manual 6th Edition

2.4 Determination of Project Study Area

The extents of study for each mode are determined based on the LMA type and travel mode.

Vehicle

The extent of study for vehicle (intersection) analysis is based on the consistency with the General Plan, forecasted daily project trips, and the criteria listed in **Table 2.3**.

Table 2.3 – Extent of Study for Vehicle (Intersection) Analysis

Consistency with General Plan	Focused LMA	Full LMA
	250-499 Daily Trips	500 or greater Daily Trips
Land Use Consistent with General Plan	Site Access Driveways and Intersections that receive 50% or more of the total peak hour project trips (25 trip minimum) or have known operational concerns	Site Access driveways and intersections where at least 50 project peak hour trips are added or have known operational concerns (if the project does not contribute 50 peak hour trips total to any intersection, then the study intersections will be intersections that receive 50% or more of the total peak hour project generated trips)
Land Use Inconsistent with General Plan	N/A	250 or greater Daily Trips Site Access driveways and intersections where at least 25 project peak hour trips are added or have known operational concerns

Source: County of San Diego Transportation Study Guidelines (2023)

Active Transportation

- Pedestrian – Documentation of existing and planned pedestrian facilities and basic deficiencies (missing sidewalk, curb ramps, and major obstructions) within ¼-mile walking distance measured from each pedestrian access point.
- Bicycle – Documentation of existing and planned bicycle facilities and basic deficiencies (bike lane gaps, obstructions) within one-mile bicycling distance measured from the center of the intersection formed by each project driveway.
- Transit – Identification of the closest transit routes and stops to the project within ¼-mile walking distance and documentation of amenities at existing transit stops (i.e., shelters, maps, benches, etc.).
- Trails – Documentation of all planned trails and pathways identified in the County's Community Trails Master Plan (CTMP) within ¼-mile of the project site.

2.5 Determination of the Need for Off-Site Improvements

In general, a project should consider all feasible improvements to accommodate all modes of project traffic, including vehicular, pedestrian, bicycle, and transit. Improvements should be considered both around the Project's frontage and within the study area. The County TSG provides thresholds and recommendations for improvements associated with study intersections. **Table 2.4** displays the County TSG improvement requirements and recommendations for the study intersections.

Table 2.4 – Improvement Requirements and Recommendations

Intersection Control		Improvement Required If	Typical Improvements
Signalized	Unsignalized	- Consistent with County General Plan Policy, any intersection that is operating at an acceptable LOS or better without project traffic in which the addition of project traffic causes the intersection to degrade to an LOS E or F should identify improvements to improve operations to LOS D or better. - Any signalized study intersection that is operating at LOS E or F without project traffic where the project increased delay by 5.0 or more seconds should identify improvements to offset the increase in delay. - If the left turn volume exceeds 100 vehicles per hour, an exclusive left turn lane is recommended. - If the left turn volume exceeds 150 vehicles per hour and posted speed 45 mph or greater, a protected left turn signal phase is recommended. - If the left turn volume exceeds 300 vehicles per hour, a second left turn lane is recommended. - If the right turn volume exceeds 150 vehicles per hour, a dedicated right turn lane is recommended. - The project causes the 95th percentile queue at a turn lane to exceed the existing turn lane length/storage	- Addition of left or right turn lanes. - Lengthening a turn lane. - Signal timing/phasing/coordination/equipment improvements or transportation system management (TSM). - ADA signal accessible improvements. - The County may also require upgrades to meet current design standards or better accommodate pedestrian and bicycle mobility consistent with the County Active Transportation Plan
		All-Way Stop and Roundabout - The project causes the average intersection delay to be LOS E or F during the peak hour. - The project adds 5 or more seconds of delay to an intersection that is currently operating at LOS E or F during the peak hour. - The intersection meets the peak hour traffic signal warrants after the addition of project traffic per the California Manual on Uniform Traffic Control Devices (CA MUTCD–latest edition). An investigation of the need for a traffic control signal may also include an analysis of factors related to the existing operations and safety at a study intersection and the potential to improve these conditions. A warrant analysis is not required for right turn in/right turn out only intersections or driveways that are physically restricted by raised center median. Side-Street Stop - The project causes the average intersection delay to be LOS E or F during the peak hour. - If the worst-case movement is currently operating at LOS E or F. - The project adds 5 or more seconds of overall intersection. AND - The project adds ten (10) or more trips to the worst-case movement OR 50 or more trips to the overall intersection. - The intersection meets the peak hour traffic signal warrants after the addition of project traffic per the California Manual on Uniform Traffic Control Devices (CA MUTCD–latest edition). An investigation of the need for a traffic control signal may also include an analysis of factors related to the existing operations and safety at a study intersection and the potential to improve these conditions. A warrant analysis is not required for right turn in/right turn out only intersections or driveways that are physically restricted by raised center median.	- Install All-Way Stop Control. - Install Two-Way Stop Control. - Provide Left Turn Lane. - Provide Right Turn Lane. - Install Bypass Lane. - Install Center Acceleration Lane. - Install new traffic control device (Perform intersection control evaluation (ICE), see below). - The County may also require upgrades to meet current design standards or better accommodate pedestrian and bicycle mobility consistent with the County ATP

Source: County of San Diego Transportation Study Guidelines (2023)

3.0 Project Setting

This chapter provides a detailed description of the active transportation facilities within the project study area.

3.1 Vehicular Facilities

Description of all major transportation network facilities located within ½ mile distance of the project site are provided below.

North-South Roadways

North Centre City Parkway – This 2-lane roadway between Deer Springs Road and West Country Club Lane, has a posted speed limit of 55 miles per hour. There are no existing sidewalks and parking is prohibited on both sides of the street. Class II bike lanes are provided in both directions throughout the segment.

Jesmond Dene Road – Jesmond Dene Road, between North Centre City Parkway and Rayford Drive is a 2-lane roadway with a stripped media. Currently, there are no bicycle or pedestrian facilities within the segment, parking is prohibited on both sides of the street, and the posted speed limit is 45 miles per hour.

East-West Roadways

Deer Springs Road – Deer Springs Road is a 2-lane roadway west of North Centre City Parkway with a stripped median. There are no bicycle facilities or sidewalks on either side of Deer Springs Road. Parking is prohibited on both sides of the roadway, and the posted speed limit is 55 miles per hour.

Mountain Meadow Road – This 4-lane roadway east of North Centre City Parkway, has a posted speed limit of 50 miles per hour with Class III bike facilities in both directions. Parking is prohibited on both sides of the segment and there are no sidewalk facilities. There is a striped median along the segment.

3.2 Bicycle Facilities

Table 3.1 summarizes bicycle facilities to the extents required per the County TSG, including existing bicycle facilities and substandard or missing facilities (e.g., missing sidewalks, obstructions). Planned bicycle facilities, per the *County of San Diego Active Transportation Plan* (October 2018), are also identified. **Figure 3.1** displays the existing and planned bicycle facilities within 1-mile of the project's study area.

Table 3.1 – Bicycle Facilities and Conditions

Roadway	Segment	Existing		Ultimate Classification
		Facility	Conditions	
Deer Springs Road	West of North Centre City Parkway	None	N/A	Class III
Deer Springs Road	East of North Centre City Parkway	Class III	Present on both sides. No posted signage.	Class III
Champagne Boulevard	North of Deer Springs Road/Mountain Meadows Road	Class II (Buffered)	Present on both sides.	Class II
North Centre City Parkway	South of Deer Springs Road/Mountain Meadows Road	Class II	Present on both sides.	Class II
Tierra Libertia Road	East of North Centre City Parkway	None	N/A	No bike facility
Jesmond Dene Road	East of North Centre City Parkway	None	N/A	No bike facility

Source: CR Associates (2023)

3.3 Pedestrian Facilities

Table 3.2 summarizes existing pedestrian facilities within ¼-mile walking distance from the project, including substandard or missing pedestrian facilities (e.g., missing sidewalks and curb ramps, narrow sidewalks, other major obstructions).

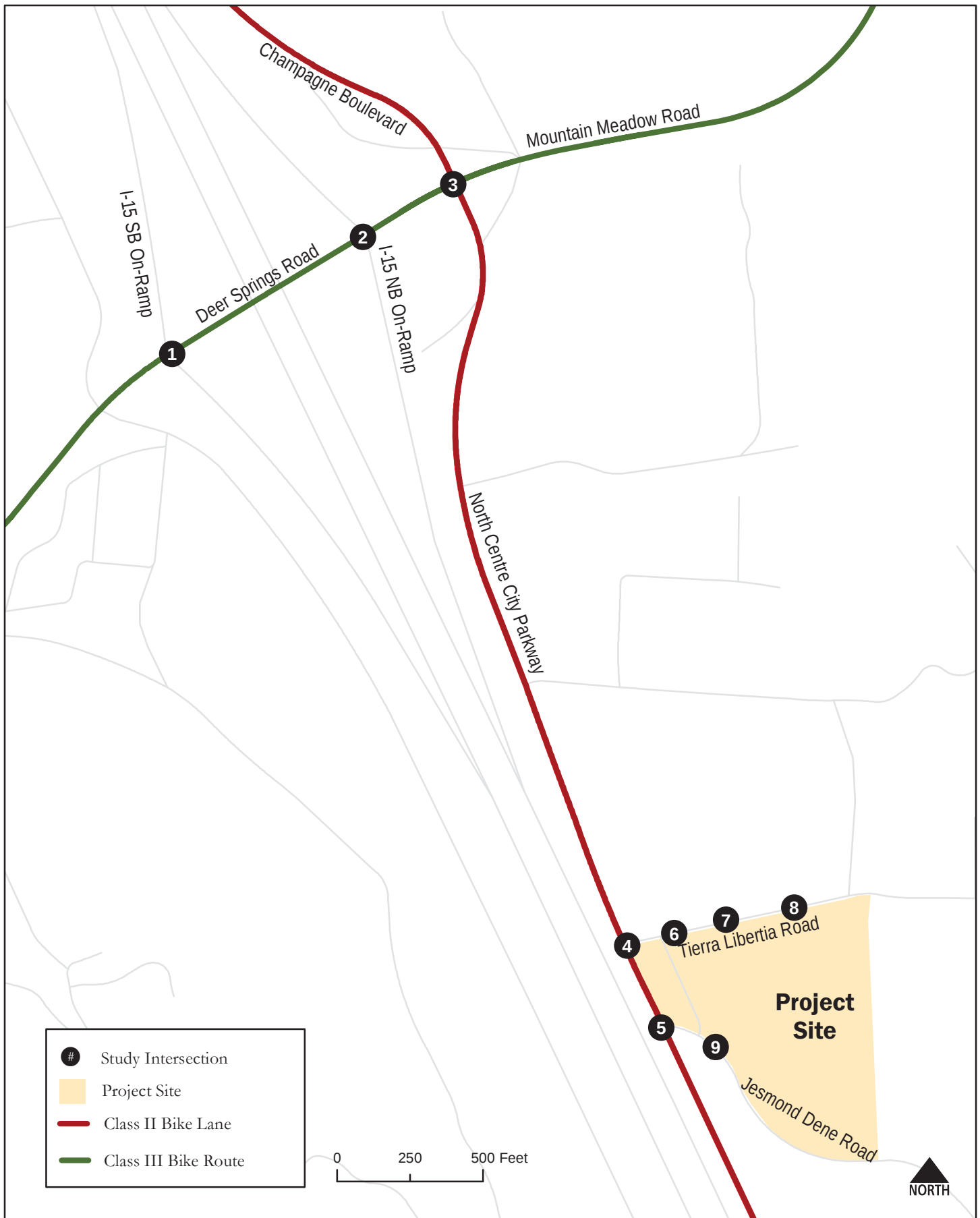
Table 3.2 – Pedestrian Facilities and Conditions

Roadway	Segment	North/East Side		South/West Side	
		Type	Conditions	Type	Conditions
North Centre City Parkway	Silver Tree Lane to ¼-mile south of Jesmond Dene Road	Missing	N/A	Missing	N/A
Tierra Libertia Road	East of North Centre City Parkway	Missing	N/A	Missing	N/A
Jesmond Dene Road	North Centre City Parkway to Rayford Drive	Missing	N/A	Missing	N/A

Source: CR Associates (2023)

3.4 Transit Facilities

There are currently no transit facilities within ¼-mile walking distance of the project site.



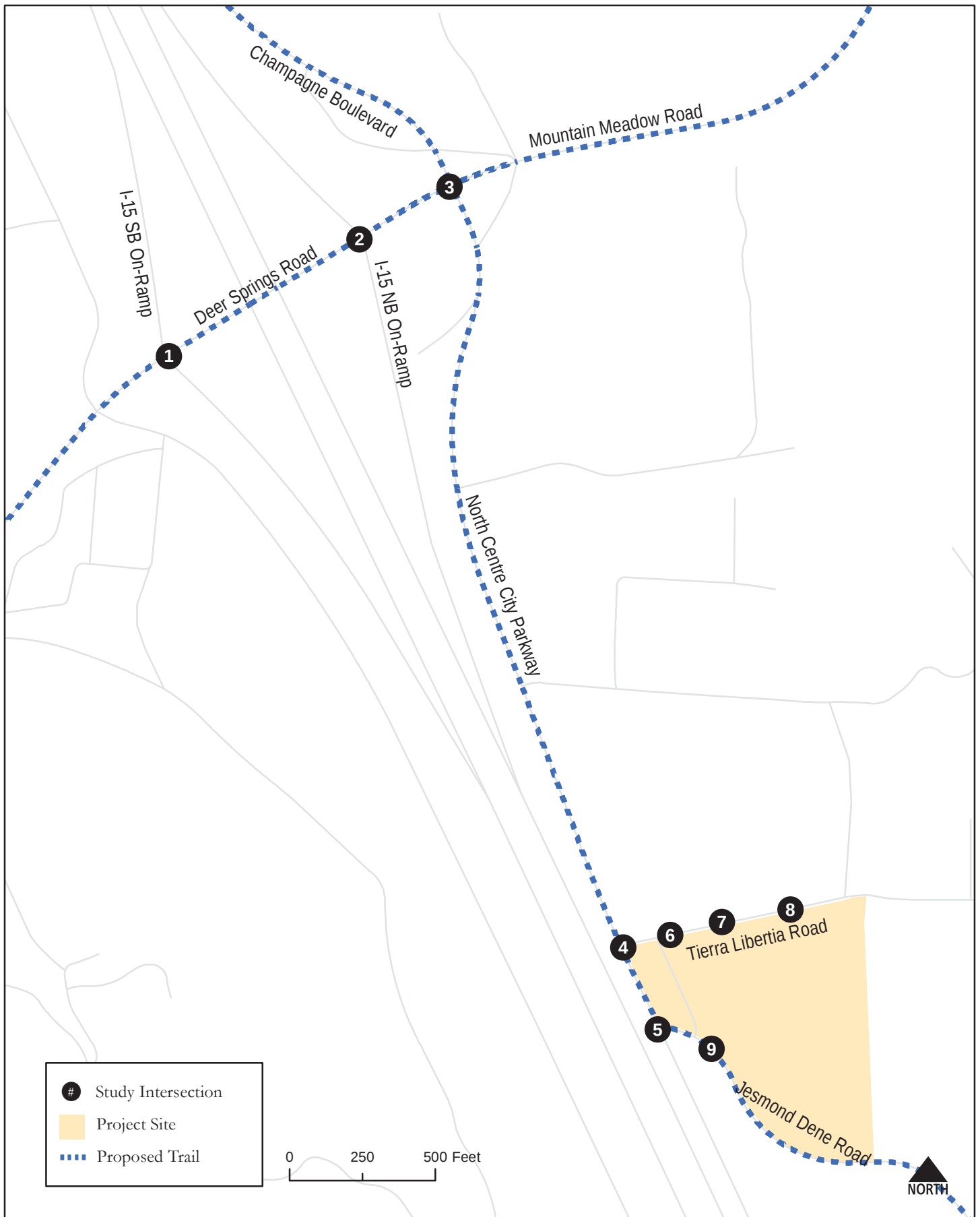
3.5 Trails

Table 3.3 documents the planned trails and pathways located within $\frac{1}{4}$ mile distance of the project site identified in the County’s Community Trail Master Plan (CTMP). **Figure 3.2** displays the existing and planned pedestrian & trail facilities within the project’s study area.

Table 3.3 – Planned Trails and Pathways

Trail Name	Status	Type	Connecting Trails	Trail Length
Mountain Meadows Road North Pathway	Proposed	Pathway	Twin Oaks Valley/Deer Springs Road Pathway, Deer Springs Staging Area, Welk Pathway, Jesmond Dene Road Pathway, Hidden Meadows Road, and Mountain Meadows Road North Pathway	1.33 miles
Jesmond Dene Road Pathway	Proposed	Pathway	Deer Springs Staging Area, Welk Pathway, Mountain Meadows Road south Pathway, Sempra Trails, and Escondido Border	3.10 miles

Source: CR Associates (2023)



4.0 Existing Conditions

This chapter provides an analysis of the existing vehicular operations at the intersections analyzed within the study area.

4.1 Existing Traffic Volumes

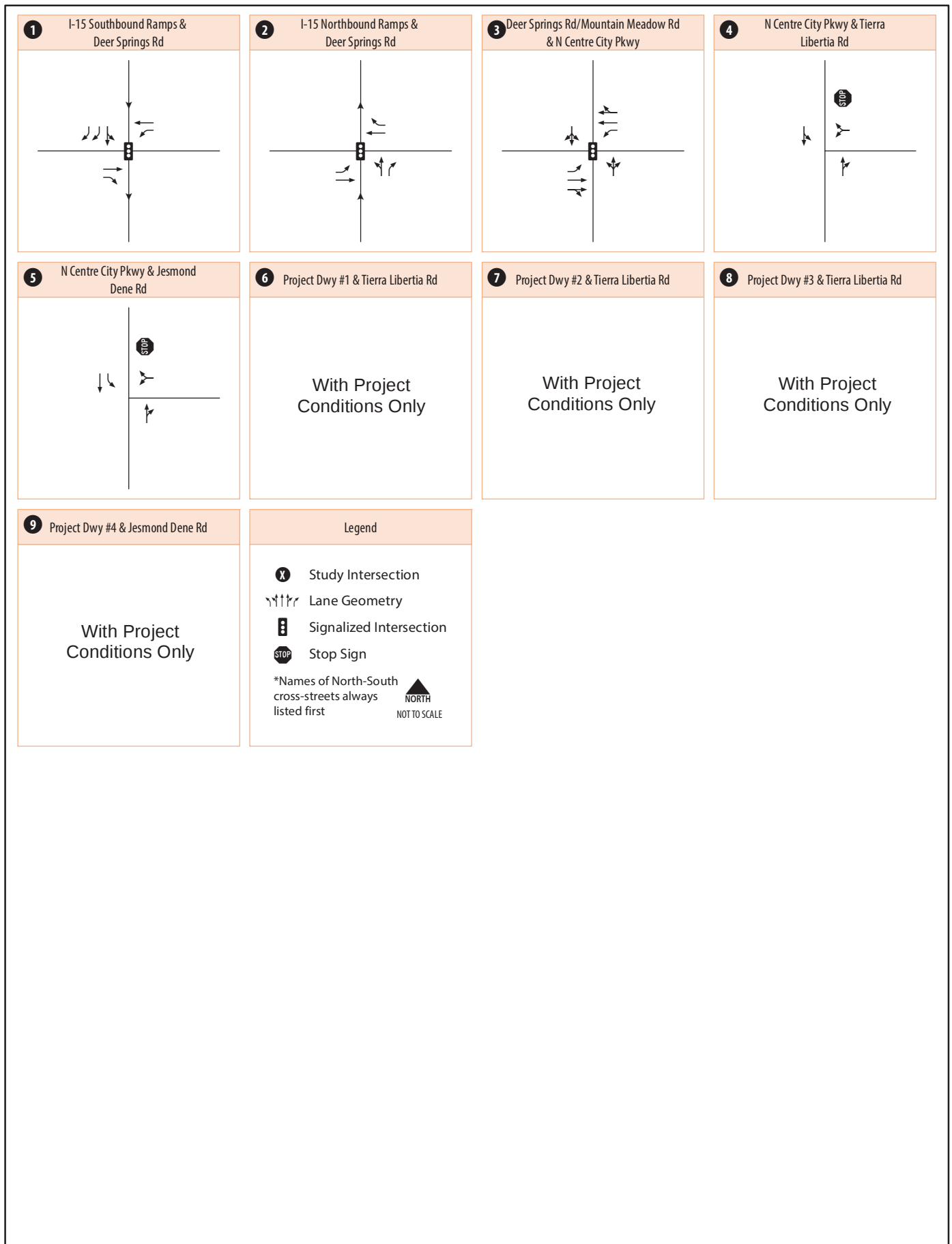
This section presents the existing daily and peak hour traffic volume information. Traffic counts were conducted along the study intersections on September 19, 2023, by Counts Unlimited, Inc. Traffic counts were conducted during AM peak periods (7am–9am) and PM peak periods (4pm–6pm) on a typical weekday, when schools were in session. Existing traffic counts are provided in Appendix B.

Figure 4.1 displays the study area intersection geometrics under Existing conditions. Daily traffic and AM/PM peak hour turning movement volumes for the study intersections are displayed in **Figure 4.2**.

4.2 Existing Traffic Conditions

Table 4.1 displays intersection LOS and average vehicle delay results for the study intersections under Existing conditions. LOS calculation worksheets are provided in **Appendix D**. As shown in the table, all of the study intersections currently operate at acceptable LOS D or better during both the AM and PM peak hours under this scenario, with the exception of the following intersection:

- *North Centre City Parkway & Deer Springs Road/Mountain Meadow Road* – LOS F during the AM and PM peak periods. This is primarily due to the northbound and southbound approaches which experience higher delays than the other approaches.



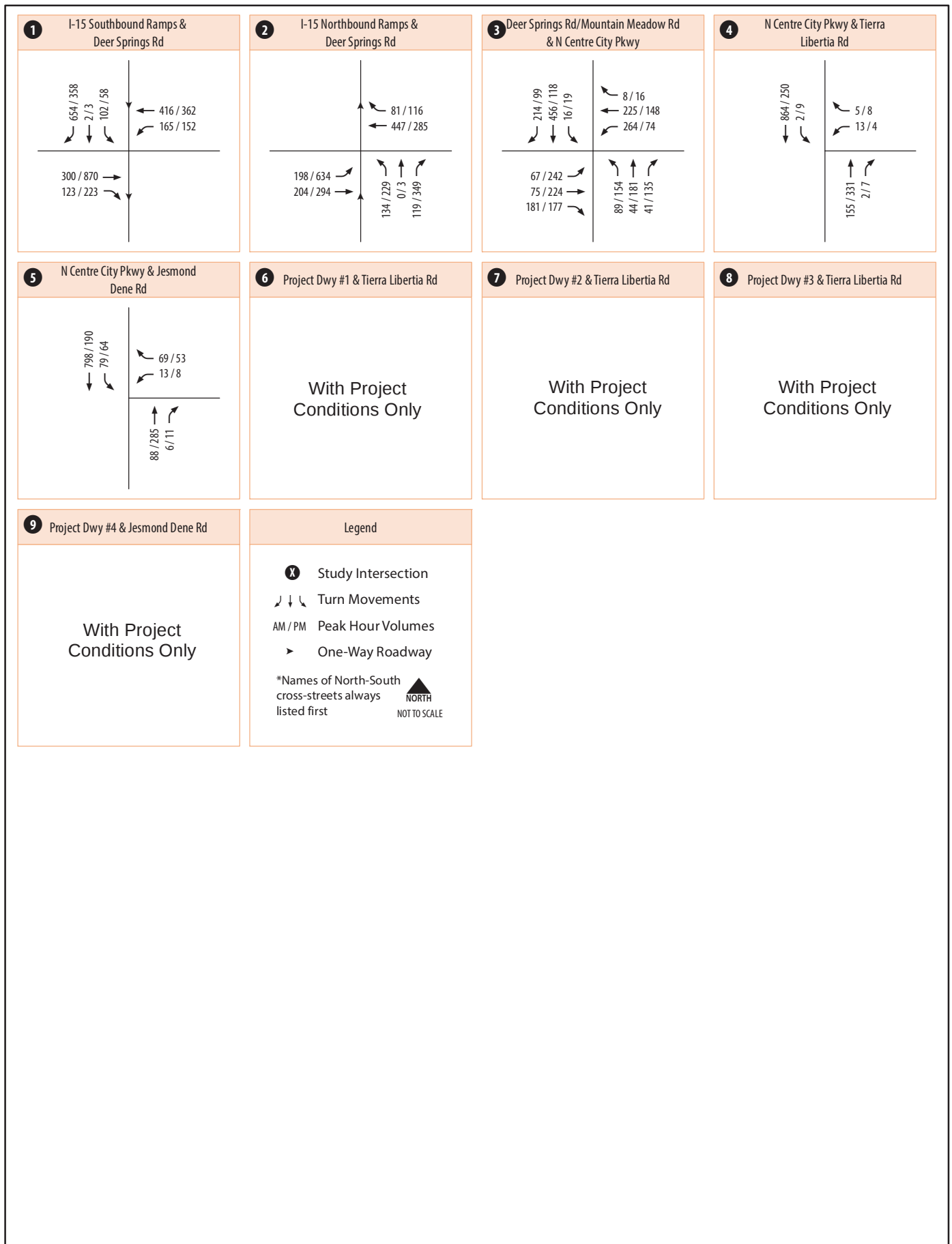


Table 4.1 – Peak Hour Intersection LOS Results – Existing Conditions

Intersection	Peak Hour	Traffic Control	Delay (sec/veh)	LOS
1. I-15 Southbound Ramps & Deer Springs Road	AM	Signal	39.8	D
	PM		40.0	D
2. I-15 Northbound Ramps & Deer Springs Road	AM	Signal	14.6	B
	PM		35.2	D
3. North Centre City Parkway & Deer Springs Road / Mountain Meadow Road	AM	Signal	124.4	F
	PM		92.9	F
4. North Centre City Parkway & Tierra Libertia Road	AM	SSSC	20.2	C
	PM		12.0	B
5. North Centre City Parkway & Jesmond Dene Road	AM	SSSC	11.9	B
	PM		11.1	B

Source: CR Associates (2023)

Note:

SSSC = Side-street stop-controlled intersection and the delay shown is the worst delay experience by any of the approaches.

Bold indicates substandard LOS E or F

5.0 Opening Year 2025 Conditions

This chapter provides an analysis of Opening Year 2025 traffic conditions, the Project's opening year, both with and without the Project. The scenarios analyzed in this section include:

- Opening Year 2025
- Opening Year 2025 with Project

5.1 Opening Year 2025 Traffic Volumes

Functional classifications and intersection geometrics under Opening Year 2025 Conditions were assumed to be identical to Existing conditions.

Ambient Growth

Per the County TSG, Opening Year traffic volumes should be derived by applying an ambient growth to existing traffic volumes. Ambient growth was calculated based on SANDAG TFIC data from 2016 and forecast year 2025. It was determined that within the project study area, traffic volumes are projected to experience an average annual growth rate of 0.4% per year. As a conservative approach, the analysis utilizes an average annual growth rate of 1.0% per year, applied over the two (2) years between existing (Year 2023) and Opening Year (Year 2025). **Appendix E** displays the TFIC Data and the calculated ambient growth.

Intersection Volume Development

Peak hour intersection traffic volumes for Opening Year 2025 conditions were derived by applying the formula¹ below:

$$\text{Future Volume} = \text{Existing Volume} \times \left(1 + \frac{\text{rate}}{100}\right)^{\# \text{ of years}}$$

Where

Future Volume = Future year projected traffic volume (veh/hr)

Existing Volume = Current year traffic volume counts (veh/hr)

Rate = Average yearly growth factor

of Years = Number of years projected out in the future

AM/PM peak hour turning movement volumes for the study intersections under Opening Year 2025 conditions are displayed in **Figure 5.1**.

5.2 Opening Year 2025 Traffic Conditions

Table 5.1 displays intersection LOS and average vehicle delay results for the study intersections under Opening Year 2025 conditions. LOS calculation worksheets are provided in **Appendix F**.

¹ The source of this formula is the Institute of Transportation Engineers (ITE) Manual of Transportation Engineering Studies, 2nd Edition.

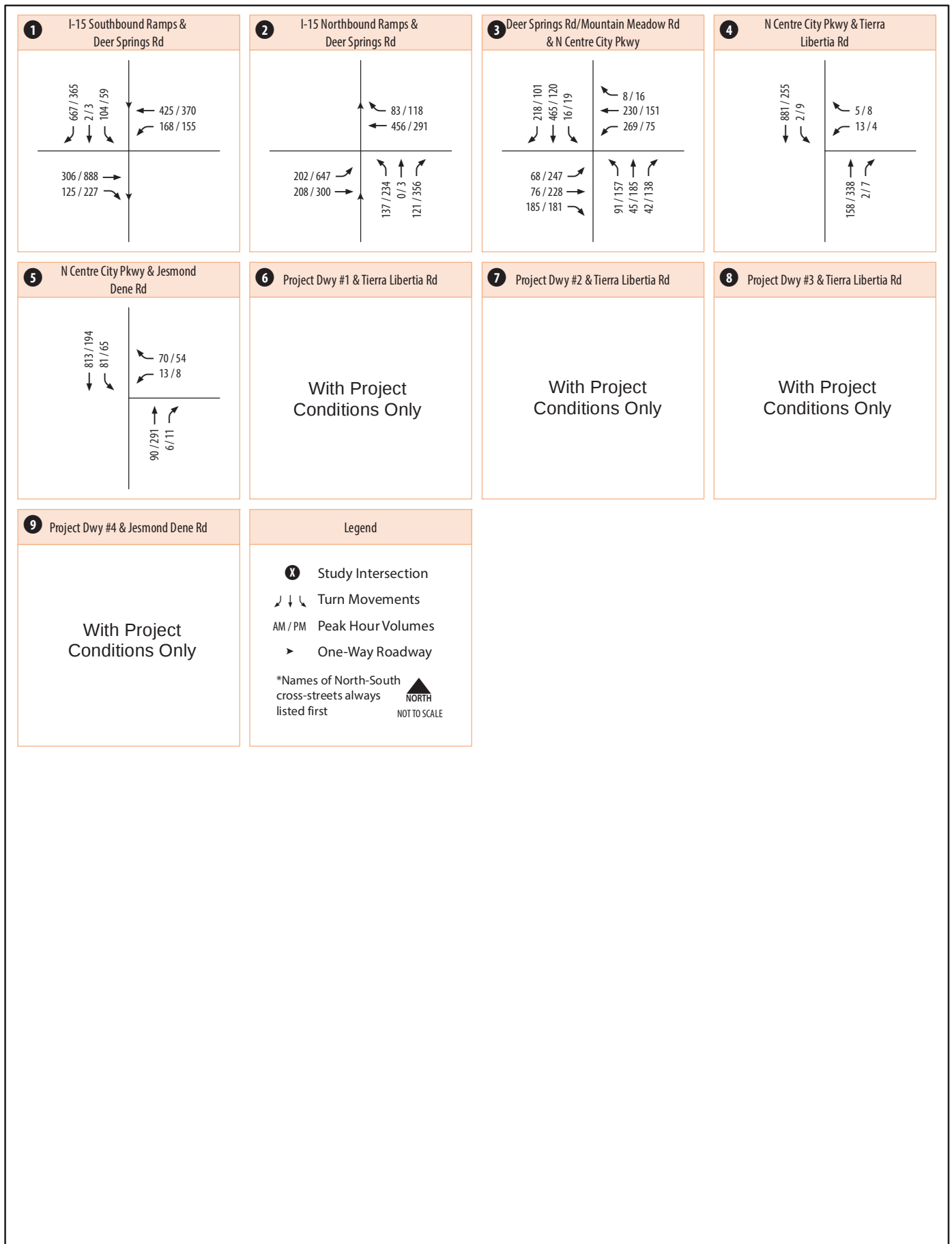


Table 5.1 – Peak Hour Intersection LOS Results – Opening Year 2025 Conditions

Intersection	Peak Hour	Traffic Control	Delay (sec/veh)	LOS
1. I-15 Southbound Ramps & Deer Springs Road	AM	Signal	39.7	D
	PM		50.3	D
2. I-15 Northbound Ramps & Deer Springs Road	AM	Signal	14.9	B
	PM		36.2	D
3. North Centre City Parkway & Deer Springs Road / Mountain Meadow Road	AM	Signal	129.2	F
	PM		96.9	F
4. North Centre City Parkway & Tierra Libertia Road	AM	SSSC	20.7	C
	PM		12.1	B
5. North Centre City Parkway & Jesmond Dene Road	AM	SSSC	12.0	B
	PM		11.2	B

Source: CR Associates (2023)

Note:

SSSC = Side-street stop-controlled intersection and the delay shown is the worst delay experience by any of the approaches

Bold indicates substandard LOS E or F

As shown, all of the study intersections currently operate at acceptable LOS D or better during both the AM and PM peak hours under this scenario, with the exception of the following intersection:

- *North Centre City Parkway & Deer Springs Road/Mountain Meadow Road* – LOS F during the AM and PM peak periods. This is primarily due to the northbound and southbound approaches which experience higher delays than the other approaches.

5.3 Opening Year 2025 with Project Traffic Volumes

Functional classifications and intersection geometrics under Opening Year 2025 with Project Conditions were assumed to be identical to Existing conditions, with the exception of the new proposed project driveways:

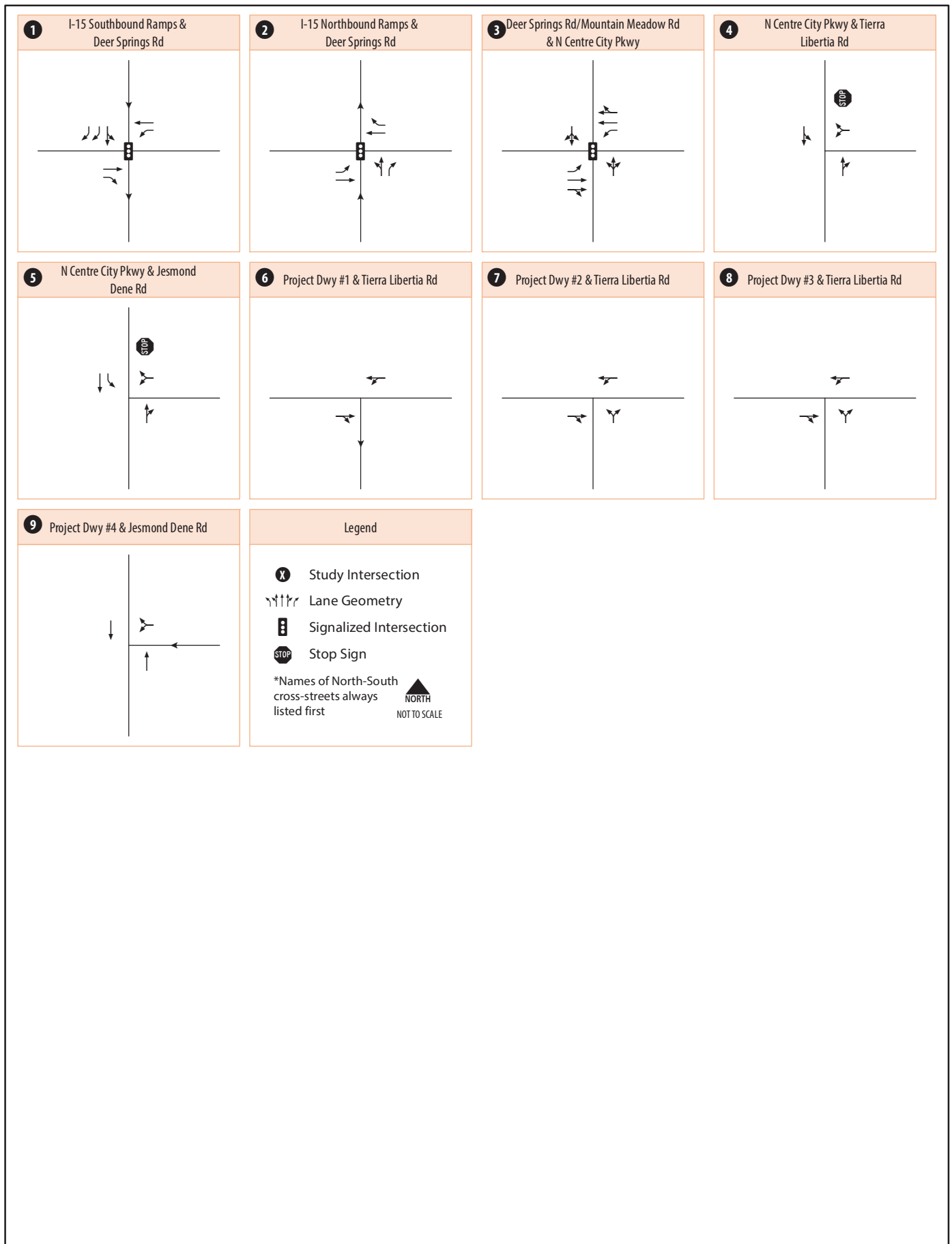
- *Driveway #1* – Located approximately 100 feet east of North Centre City Parkway, along Tierra Libertia Road, will function as an *Entrance Only* driveway that will provide access to a newly proposed parking area.
- *Driveway #2* – Located approximately 400 feet east of North Centre City Parkway, along Tierra Libertia Road, will function as an in/out driveway and will provide access to Village Area Amenities/Services.
- *Driveway #3* – Located approximately 500 feet east of North Centre City Parkway, along Tierra Libertia Road, will function as an in/out driveway and will provide access to Village Area Amenities/Services.
- *Driveway #4* – Located along Jesmond Dene Road, approximately 200 feet east of North Centre City Parkway, will function as an *Exit Only* driveway.

Figure 5.2 displays intersection geometrics under Opening Year 2025 with Project Conditions. Traffic volumes for Opening Year 2025 with Project Conditions were derived by adding the project trips to the Opening Year 2025 traffic volumes. Peak hour intersection volumes for this scenario are displayed in **Figure 5.3**.

5.4 Opening Year 2025 with Project Traffic Conditions

Table 5.2 displays intersection LOS and average vehicle delay results for the study intersections under Opening Year 2025 with Project conditions. LOS calculation worksheets are provided in **Appendix G**. As shown in the table, all of the study intersections are projected to operate at acceptable LOS D or better during both the AM and PM peak hours under this scenario, with the exception of the following intersection:

- *North Centre City Parkway & Deer Springs Road/Mountain Meadow Road* – LOS F during AM and PM peak period. With the addition of Project traffic, this intersection is projected to further deteriorate and continue to operate at substandard LOS F. However, the Project would not add more than 5 seconds of delay during the AM or PM peak hours.



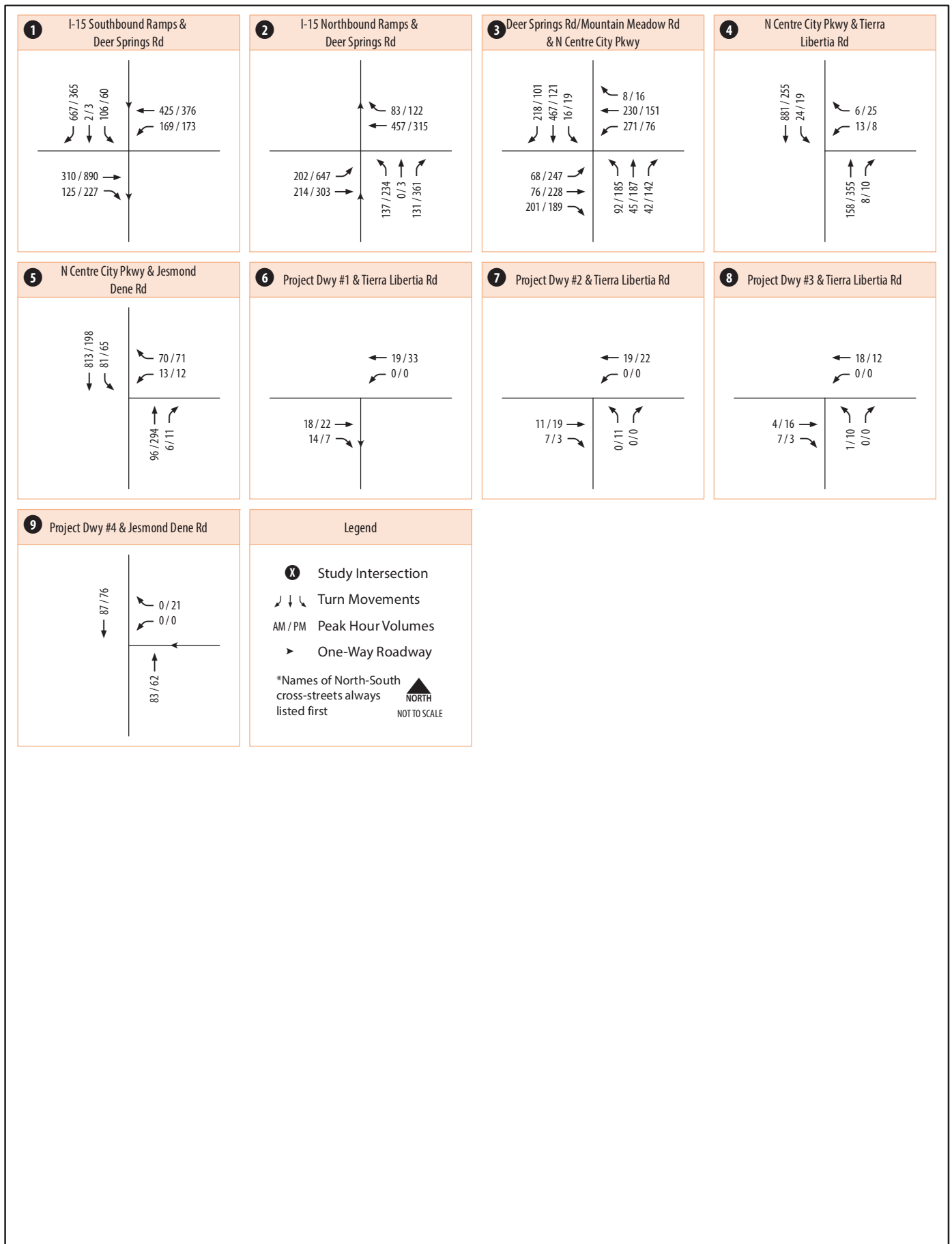


Table 5.2 – Peak Hour Intersection LOS Results – Opening Year 2025 with Project Conditions

Intersection	Peak Hour	Traffic Control	Opening Year 2025 with Project		Opening Year 2025 without Project		Δ Delay
			Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	
1. I-15 Southbound Ramps & Deer Springs Road	AM	Signal	39.8	D	39.7	D	0.1
	PM		50.5	D	50.3	D	0.2
2. I-15 Northbound Ramps & Deer Springs Road	AM	Signal	14.9	B	14.9	B	0.0
	PM		37.5	D	36.2	D	1.3
3. North Centre City Parkway & Deer Springs Road / Mountain Meadow Road	AM	Signal	129.7	F	129.2	F	0.5
	PM		98.9	F	96.9	F	2.0
4. North Centre City Parkway & Tierra Libertia Road	AM	SSSC	21.9	C	20.7	C	1.2
	PM		12.4	B	12.1	B	0.3
5. North Centre City Parkway & Jesmond Dene Road	AM	SSSC	12.1	B	12.0	B	0.1
	PM		11.6	B	11.2	B	0.4
6. Project Driveway #1 & Tierra Libertia Road	AM	SSSC	0.0	A	N/A	N/A	0.0
	PM		0.0	A	N/A	N/A	0.0
7. Project Driveway #2 & Tierra Libertia Road	AM	SSSC	0.0	A	N/A	N/A	0.0
	PM		8.8	A	N/A	N/A	8.8
8. Project Driveway #3 & Tierra Libertia Road	AM	SSSC	8.7	A	N/A	N/A	8.7
	PM		8.7	A	N/A	N/A	8.7
9. Project Driveway #4 & Jesmond Dene Road	AM	SSSC	0.0	A	N/A	N/A	0.0
	PM		8.7	A	N/A	N/A	8.7

Source: CR Associates (2023)

Note:

SSSC = Side-street stop-controlled intersection and the delay shown is the worst delay experience by any of the approaches

Bold indicates substandard LOS E or F

N/A = Not Applicable

6.0 Horizon Year 2050 Conditions

This chapter provides an analysis of Horizon Year 2050 traffic conditions, both with and without the Project. The scenarios analyzed in this section include:

- Horizon Year 2050
- Horizon Year 2050 with Project

6.1 Horizon Year 2050 Traffic Volumes

Functional classifications and intersection geometrics under Horizon Year 2050 Conditions were assumed to be identical to Existing conditions. It is assumed that traffic signals would be adjusted to accommodate growth in traffic volumes between Opening Year 2025 and Horizon Year 2050.

Therefore, under Horizon Year 2050 Conditions, uncoordinated signalized intersections were optimized by cycle and splits and coordinated signalized intersections were optimized by splits only.

Traffic volumes for this scenario were calculated by applying the previously discussed ambient growth of 1.0% (Section 5.1) to the twenty-seven (27) years between Existing Conditions (Year 2023) and Horizon Year (Year 2050). **Figure 6.1** displays the peak hour intersection volumes under Horizon Year 2050 conditions.

6.2 Horizon Year 2050 Traffic Conditions

Table 6.1 displays the intersection LOS and average vehicle delay results for the study intersections under Horizon Year 2050 conditions. LOS calculation worksheets are provided in **Appendix H**. As shown in the table, all of the study intersections would operate at acceptable LOS D or better, with the exception of the following intersection:

- *North Centre City Parkway & Deer Springs Road/Mountain Meadow Road* – LOS F during both the AM and PM peak periods. Under Horizon Year 2050, the northbound and southbound movements continue to have higher delays than the other approaches.

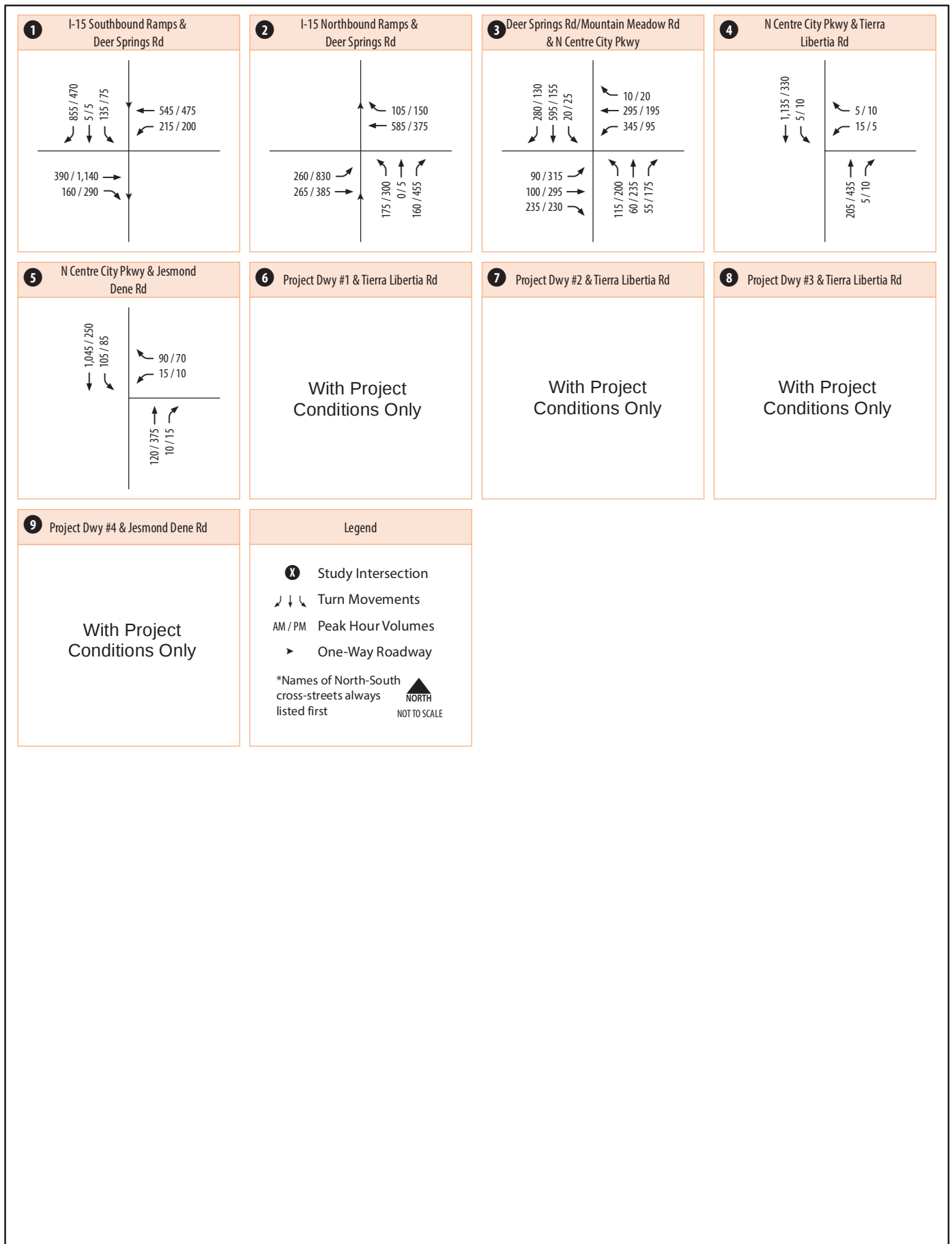


Table 6.1 – Peak Hour intersection LOS Results – Horizon Year 2050 Conditions

Intersection	Peak Hour	Traffic Control	Delay (sec/veh)	LOS
1. I-15 Southbound Ramps & Deer Springs Road	AM	Signal	37.4	D
	PM		48.4	D
2. I-15 Northbound Ramps & Deer Springs Road	AM	Signal	30.4	C
	PM		39.3	D
3. North Centre City Parkway & Deer Springs Road / Mountain Meadow Road	AM	Signal	118.1	F
	PM		97.9	F
4. North Centre City Parkway & Tierra Libertia Road	AM	SSSC	26.9	D
	PM		12.9	B
5. North Centre City Parkway & Jesmond Dene Road	AM	SSSC	14.4	B
	PM		12.5	B

Source: CR Associates (2023)

Note:

SSSC = Side-street stop-controlled intersection and the delay shown is the worst delay experience by any of the approaches

Bold indicates substandard LOS E or F

6.3 Horizon Year 2050 with Project Volumes

Intersection geometrics under Horizon Year with Project conditions were assumed to be identical to Opening Year 2025 with Project conditions, previously discussed in Section 5.3.

Horizon Year with Project traffic volumes were derived by adding the project trips (Figure 1.4) to the Horizon Year traffic volumes (Figure 6.1). Peak hour intersection volumes for this scenario are displayed in **Figure 6.2**.

6.4 Horizon Year 2050 with Project Traffic Conditions

Table 6.2 displays intersection LOS and average vehicle delay results for the study intersections under Horizon Year 2050 with Project conditions. LOS calculation worksheets are provided in **Appendix I**. As shown in the table, all of the study intersections are projected to operate at acceptable LOS D or better during both the AM and PM peak hours under this scenario, with the exception of the following intersection:

- *North Centre City Parkway & Deer Springs Road/Mountain Meadow Road* – LOS F during AM and PM peak period. With the addition of Project traffic, this intersection is projected to further deteriorate and continue to operate at substandard LOS F. However, the Project would not add more than 5 seconds of delay during the AM or PM peak hours.

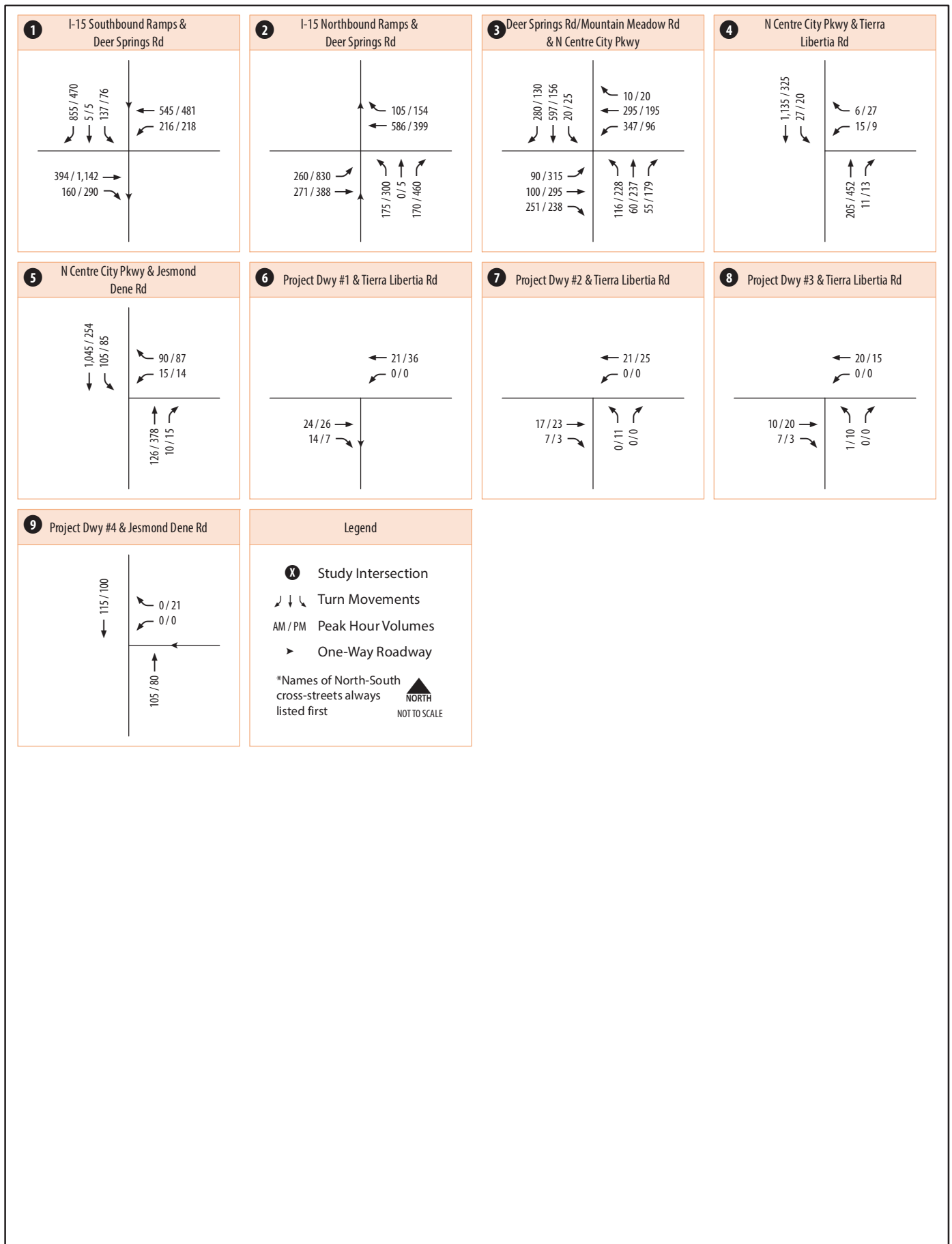


Table 6.2 – Peak Hour Intersection LOS Results – Horizon Year 2050 with Project Conditions

Intersection	Peak Hour	Traffic Control	Horizon Year with Project		Horizon Year without Project	
			Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
1. I-15 Southbound Ramps & Deer Springs Road	AM	Signal	37.5	D	37.4	D
	PM		51.7	D	48.4	D
2. I-15 Northbound Ramps & Deer Springs Road	AM	Signal	30.7	C	30.4	C
	PM		39.9	D	39.3	D
3. North Centre City Parkway & Deer Springs Road / Mountain Meadow Road	AM	Signal	118.7	F	118.1	F
	PM		102.4	F	97.9	F
4. North Centre City Parkway & Tierra Libertia Road	AM	SSSC	29.2	D	26.9	D
	PM		13.2	B	12.9	B
5. North Centre City Parkway & Jesmond Dene Road	AM	SSSC	14.5	B	14.4	B
	PM		13.0	B	12.5	B
6. Project Driveway #1 & Tierra Libertia Road	AM	SSSC	0.0	A	N/A	N/A
	PM		0.0	A	N/A	N/A
7. Project Driveway #2 & Tierra Libertia Road	AM	SSSC	0.0	A	N/A	N/A
	PM		8.8	A	N/A	N/A
8. Project Driveway #3 & Tierra Libertia Road	AM	SSSC	8.7	A	N/A	N/A
	PM		8.7	A	N/A	N/A
9. Project Driveway #4 & Jesmond Dene Road	AM	SSSC	0.0	A	N/A	N/A
	PM		8.8	A	N/A	N/A

Source: CR Associates (2023)

Note:

SSSC = Side-street stop-controlled intersection and the delay shown is the worst delay experience by any of the approaches

Bold indicates substandard LOS E or F

N/A = Not Applicable

7.0 Improvements & Recommendations

This chapter identifies any substandard facilities and provides improvement requirements to improve substandard facilities to acceptable LOS or pre-project conditions.

7.1 **Determination of the Need for Off-Site Improvements to Accommodate Project Traffic – Opening Year 2025 with Project Conditions**

This section identifies recommended off-site improvements under Opening Year 2025 with Project conditions, consistent with the County TSG.

Based upon the LOS analysis results presented above, and the significance criteria presented in the County Guidelines, the addition of Project traffic would not have an adverse effect on traffic operations at any of the study intersections under Opening Year 2025 with Project conditions. Although implementation of the Project would further deteriorate traffic operations at an intersection already operating at unacceptable LOS, the increase in delay would not exceed the threshold of five seconds. Therefore, no off-site improvements are recommended.

7.2 **Determination of the Need for Off-Site Improvements to Accommodate Project Traffic – Horizon Year 2050 with Project Conditions**

This section identifies recommended off-site improvements Horizon Year 2050 with Project conditions, consistent with the County TSG.

Based upon the LOS analysis results presented above, and the significance criteria presented in the County Guidelines, the addition of Project traffic would not have an adverse effect on traffic operations at any of the study intersections under Horizon Year 2050 with Project conditions. Although implementation of the Project would further deteriorate traffic operations at an intersection already operating at unacceptable LOS, the increase in delay would not exceed the threshold of five seconds. Therefore, no off-site improvements are recommended.

8.0 Site Access

This chapter addresses access to the Project site and discusses parking requirements for the Project.

8.1 Vehicular Access

Access to the project will be provided via three (3) project driveways along the south side of Tierra Libertia Road, and one (1) project driveway along the east side of Jesmond Dene Road. As previously mentioned in Section 5.3, Driveway 1 will function as *entrance only* and Driveway 4 as *exit only*. Driveways 3 and 4 will serve as full-access driveways. All driveways will ensure to meet minimum sight distance requirements.

8.2 Parking Analysis

The parking requirements for the Project were evaluated based on the County of San Diego Ordinance No. 10251 (the Parking Ordinance), which provides off-street parking regulations for major land use categories. **Table 8.1** displays the Project's parking requirements and recommendations for both land uses per ITE's Parking Generation Manual. A detailed parking analysis report is provided in **Appendix J**.

Table 8.1 – Project Parking Generation

Land Use	Units	Parking Generation Rate	Parking Required	Parking Provided by Project
Ski Area	600 Daily Lift Tickets Sold	0.22 Parking Spaces per Daily Lift Tickets Sold	132 ¹	147
Golf Driving Range	9 Tee Boxes	The sum of the following: 1 Parking Space per Tee Box 1 Parking Space per Employee (No less than 3)	12	
Total			144	147

Source: CR Associates (2023)

Note:

¹ 106 required parking spaces includes both clients and employees.

As shown, the ski area component is required to provide 132 parking spaces and the golf driving range is required to provide 12 parking spaces, for a total of 144 required parking spaces. The proposed Project will provide a total of 147 parking spaces which is sufficient for the anticipated parking demand for the proposed Project.

Appendix A - Scoping Agreement



Scoping Agreement for Transportation Studies

General Project Information and Description

Project Information

Project Name: Karve Ski Park**Project PDS Number:****Project Location:** 26351 N Centre City Parkway, Escondido, CA 92026

Project Description

Land Uses and Intensities: Synthetic Ski Park (dry slope) (1 Lift), Golf Driving Range (9 Tee Boxes) – It is important to note that there is an existing golf driving range at the site but because the project will redevelop the site, it will not take credit for the existing uses.

Gross and Developable Acreage: 10.15 acres**Number of Vehicle Parking Spaces:** 147 parking spaces. Refer to site plan for more details.**Bicycle Storage Capacity:** TBD**Motorcycle Spaces:** TBD

Consultant

Name of Firm: CR Associates**Project Manager:** Jonathan Sanchez**Address:** 3900 5th Avenue, Suite 310, San Diego CA 92103**Telephone:** 619-468-2739

Trip Generation

Source: Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition**Pass-by Trips:** 0**Total Daily Trips:** 526 (400 trips per lift and 14 trips per tee box)**Diverted Trips:** 0**Internal Capture Rate:** 0**Trip Credit:** 0**Alternative Modes:** 0**Net Daily Trips:** 526

General Plan Consistency

Is this project consistent with the General Plan? ☐ Yes ☒ No

Site Plan

Attach 11x17 copies of the project location/vicinity map and site plan containing the following:

- Driveway locations and access type
- Pedestrian access, bicycle access, and on-site pedestrian circulation
- Location and distance to closest existing transit stop (measure as walking distance to project entrance or middle of parcel)
- Location of any planned trails identified in the Community Trails Master Plan (CTMP) within ¼ mile of the project location

SDC PDS RCVD 05-18-23

CEQA Transportation Analysis Screening

Project Type Screening

1) Select the Land Uses that apply to your project 2) Answer the questions for each Land Use that applies to your project (if "Yes" in any land use category below then that land use (or a portion of the land use) is screened from CEQA Transportation Analysis)	Screened Out Yes	Not Screened Out No
☒ 1. Small Projects:		
a. Does the project result in 110 daily trips or less?	☐	☒
☐ 2. Small Service/Retail Project:		
a. Is the project less than 50,000 square feet?	☐	☐
☐ 3. Mixed-Use Project:		
a. Is the project location screened out based on the SANDAG screening map for VMT/service population?	☐	☐
☒ 4. Locally Serving Retail/Public Facility/Recreational		
a. Is the project locally serving: Retail OR Public Facility OR Recreational?	☐	☒
☒ 5. Redevelopment Project:		
a. Does the project result in a net decrease in total Project VMT than the existing use?	☐	☒
b. If the project is to redevelop an affordable housing site, are all proposed units affordable housing units? Mark "No" for projects that replace affordable housing with market rate units	☐	☒

Project Location Screening (if not screened based on project type) – Part 1

Is this project located within a grey area (area with little to no existing land use) on the applicable County screening maps for the project land use type?	Yes	No
If "yes", the project cannot be screened based on location. If "No", proceed to Part 2.	☐	☒

Project Location Screening (if not screened based on project type) – Part 2

1) Select the Land Uses that apply to your project 2) Answer the questions for each Land Use that applies to your project (if "Yes" in any land use category below then that land use (or a portion of the land use) is screened from CEQA Transportation Analysis)	Screened Out Yes	Not Screened Out No
☐ 1. Residential		
a. Is the project location screened out using the County screening maps for VMT/resident?	☐	☐
☐ 2. Employment		
a. Is the project location screened out using the County screening maps for VMT/employee or VMT/service population?	☐	☐
☒ 3. Retail/Public Facility/Recreational		
a. Is the project location screened out using the County screening maps for VMT/service population?	☐	☒
☐ 4. Infill Screening		
a. Is the project location screened out using the County screening maps for Infill locations?	☐	☐

Local Mobility Analysis

Type of Local Mobility Analysis (LMA)

☐ Site Access Study	249 daily trips or less
☐ Focused LMA	250 to 499 daily trips and consistent with the General Plan
☒ Full LMA	500 or greater daily trips and consistent with the General Plan, or 250 or greater daily trips and inconsistent with the General Plan

Trip Distribution

☐ Select Zone (Model Series _____)	Projects that generate greater than 1,000 daily trips
☒ Manual Estimation	Site Access Studies, Focused LMAs, or project's that generate less than 1,000 daily trips

Provide exhibit detailing trip distribution and trip assignment for review.

Study Intersections (and Roadway Segments) (NOTE: Subject to change based of staff review)

1. I-15 SB Ramps & Deer Springs Rd	6. Project Driveway #1 (Entrance Only) & Tierra Libertia
2. I-15 NB Ramps & Deer Springs Rd	7. Project Driveway #2 & Tierra Libertia
3. N Centre City Pkwy & Deer Springs Rd/Mountain Meadow Rd	8. Project Driveway #3 & Tierra Libertia
4. N Centre City Pkwy & Tierra Libertia Rd	9. Project Driveway #4 (Exit) & Jesmond Dene Rd
5. N Centre City Pkwy & Jesmond Dene Rd	

Attach a separate page if the number of study locations exceeds 10.

Other Jurisdictions

Is this project located within one mile of another Local Jurisdiction? ☒ Yes ☐ No

If so, name of Jurisdiction: Escondido, CA

Specific Issues to be addressed within the Study

(in addition to requirements described in the Guidelines – to be filled out by County Staff)

Near-Term Year 2024 Conditions

Based on SANDAG TFIC data from 2016 and forecast year 2025, traffic volumes within the study area are estimated to grow at an average annual growth rate of 0.4% per year (see Attachment E). As a conservative approach, the analysis will utilize an average annual growth rate of 1.0% per year over the two-year period between 2022 and 2024, for an approximate overall growth of 2.0%.

Recommended by:

<u>Jonathan Sanchez</u>	<u>05/04/2023</u>
Consultant's Representative	Date

Scoping Agreement Submitted on	<u> </u>
	Date

Scoping Agreement Re-submitted on	<u> </u>
	Date

Approved Scoping Agreement:

<u>County of San Diego</u>	<u> </u>
Transportation Specialist	Date

Appendix B - Traffic Counts

City of Escondido
N/S: I-15 Southbound Ramps
E/W: Deer Springs Road
Weather: Clear

File Name : 02_ESC_15S_Deer AM
Site Code : 22923857
Start Date : 9/19/2023
Page No : 1

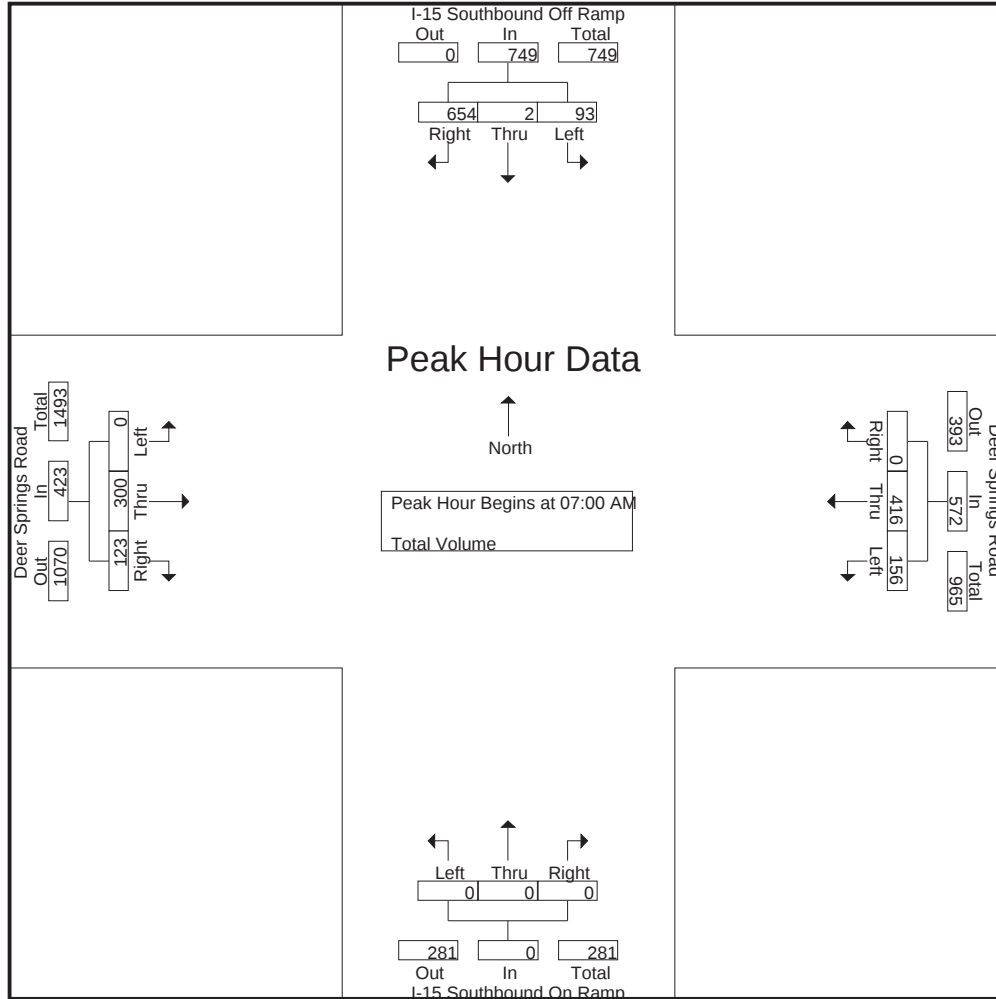
Groups Printed- Total Volume

	I-15 Southbound Off Ramp Southbound				Deer Springs Road Westbound				I-15 Southbound On Ramp Northbound				Deer Springs Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	16	0	167	183	30	127	0	157	0	0	0	0	0	62	23	85	425
07:15 AM	27	2	172	201	41	107	0	148	0	0	0	0	0	73	41	114	463
07:30 AM	26	0	176	202	45	100	0	145	0	0	0	0	0	70	36	106	453
07:45 AM	24	0	139	163	40	82	0	122	0	0	0	0	0	95	23	118	403
Total	93	2	654	749	156	416	0	572	0	0	0	0	0	300	123	423	1744
08:00 AM	15	0	137	152	37	75	0	112	0	0	0	0	0	77	28	105	369
08:15 AM	15	2	115	132	34	82	0	116	0	0	0	0	0	74	35	109	357
08:30 AM	16	2	140	158	35	83	0	118	0	0	0	0	0	55	25	80	356
08:45 AM	19	1	141	161	36	105	0	141	0	0	0	0	0	57	23	80	382
Total	65	5	533	603	142	345	0	487	0	0	0	0	0	263	111	374	1464
Grand Total	158	7	1187	1352	298	761	0	1059	0	0	0	0	0	563	234	797	3208
Apprch %	11.7	0.5	87.8		28.1	71.9	0		0	0	0		0	70.6	29.4		
Total %	4.9	0.2	37	42.1	9.3	23.7	0	33	0	0	0	0	0	17.5	7.3	24.8	

	I-15 Southbound Off Ramp Southbound				Deer Springs Road Westbound				I-15 Southbound On Ramp Northbound				Deer Springs Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	16	0	167	183	30	127	0	157	0	0	0	0	0	62	23	85	425
07:15 AM	27	2	172	201	41	107	0	148	0	0	0	0	0	73	41	114	463
07:30 AM	26	0	176	202	45	100	0	145	0	0	0	0	0	70	36	106	453
07:45 AM	24	0	139	163	40	82	0	122	0	0	0	0	0	95	23	118	403
Total Volume	93	2	654	749	156	416	0	572	0	0	0	0	0	300	123	423	1744
% App. Total	12.4	0.3	87.3		27.3	72.7	0		0	0	0		0	70.9	29.1		
PHF	.861	.250	.929	.927	.867	.819	.000	.911	.000	.000	.000	.000	.000	.789	.750	.896	.942

City of Escondido
N/S: I-15 Southbound Ramps
E/W: Deer Springs Road
Weather: Clear

File Name : 02_ESC_15S_Deer AM
Site Code : 22923857
Start Date : 9/19/2023
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:15 AM			
+0 mins.	16	0	167	183	30	127	0	157	0	0	0	0	0	73	41	114
+15 mins.	27	2	172	201	41	107	0	148	0	0	0	0	0	70	36	106
+30 mins.	26	0	176	202	45	100	0	145	0	0	0	0	0	95	23	118
+45 mins.	24	0	139	163	40	82	0	122	0	0	0	0	0	77	28	105
Total Volume	93	2	654	749	156	416	0	572	0	0	0	0	0	315	128	443
% App. Total	12.4	0.3	87.3		27.3	72.7	0		0	0	0		0	71.1	28.9	
PHF	.861	.250	.929	.927	.867	.819	.000	.911	.000	.000	.000	.000	.000	.829	.780	.939

City of Escondido
N/S: I-15 Southbound Ramps
E/W: Deer Springs Road
Weather: Clear

File Name : 02_ESC_15S_Deer PM
Site Code : 22923857
Start Date : 9/19/2023
Page No : 1

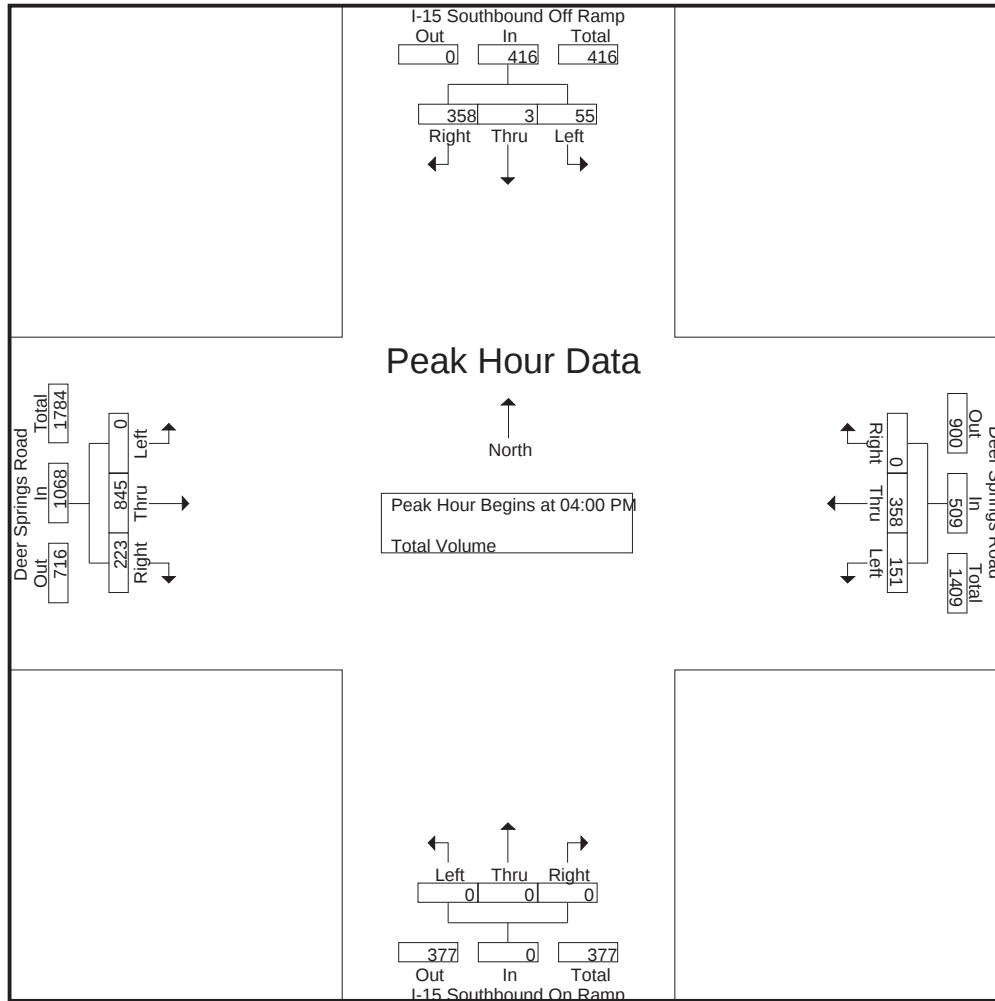
Groups Printed- Total Volume

	I-15 Southbound Off Ramp Southbound				Deer Springs Road Westbound				I-15 Southbound On Ramp Northbound				Deer Springs Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	8	2	83	93	35	87	0	122	0	0	0	0	0	226	48	274	489
04:15 PM	16	0	88	104	43	77	0	120	0	0	0	0	0	212	51	263	487
04:30 PM	16	1	97	114	41	90	0	131	0	0	0	0	0	214	57	271	516
04:45 PM	15	0	90	105	32	104	0	136	0	0	0	0	0	193	67	260	501
Total	55	3	358	416	151	358	0	509	0	0	0	0	0	845	223	1068	1993
05:00 PM	9	0	66	75	45	70	0	115	0	0	0	0	0	202	56	258	448
05:15 PM	12	0	87	99	33	96	0	129	0	0	0	0	0	219	52	271	499
05:30 PM	15	2	79	96	31	88	0	119	0	0	0	0	0	200	38	238	453
05:45 PM	8	0	73	81	35	88	0	123	0	0	0	0	0	216	40	256	460
Total	44	2	305	351	144	342	0	486	0	0	0	0	0	837	186	1023	1860
Grand Total	99	5	663	767	295	700	0	995	0	0	0	0	0	1682	409	2091	3853
Apprch %	12.9	0.7	86.4		29.6	70.4	0		0	0	0		0	80.4	19.6		
Total %	2.6	0.1	17.2	19.9	7.7	18.2	0	25.8	0	0	0	0	0	43.7	10.6	54.3	

	I-15 Southbound Off Ramp Southbound				Deer Springs Road Westbound				I-15 Southbound On Ramp Northbound				Deer Springs Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	8	2	83	93	35	87	0	122	0	0	0	0	0	226	48	274	489
04:15 PM	16	0	88	104	43	77	0	120	0	0	0	0	0	212	51	263	487
04:30 PM	16	1	97	114	41	90	0	131	0	0	0	0	0	214	57	271	516
04:45 PM	15	0	90	105	32	104	0	136	0	0	0	0	0	193	67	260	501
Total Volume	55	3	358	416	151	358	0	509	0	0	0	0	0	845	223	1068	1993
% App. Total	13.2	0.7	86.1		29.7	70.3	0		0	0	0		0	79.1	20.9		
PHF	.859	.375	.923	.912	.878	.861	.000	.936	.000	.000	.000	.000	.000	.935	.832	.974	.966

City of Escondido
N/S: I-15 Southbound Ramps
E/W: Deer Springs Road
Weather: Clear

File Name : 02_ESC_15S_Deer PM
Site Code : 22923857
Start Date : 9/19/2023
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:00 PM				04:30 PM				04:00 PM				04:00 PM			
+0 mins.	8	2	83	93	41	90	0	131	0	0	0	0	0	226	48	274
+15 mins.	16	0	88	104	32	104	0	136	0	0	0	0	0	212	51	263
+30 mins.	16	1	97	114	45	70	0	115	0	0	0	0	0	214	57	271
+45 mins.	15	0	90	105	33	96	0	129	0	0	0	0	0	193	67	260
Total Volume	55	3	358	416	151	360	0	511	0	0	0	0	0	845	223	1068
% App. Total	13.2	0.7	86.1		29.5	70.5	0		0	0	0		0	79.1	20.9	
PHF	.859	.375	.923	.912	.839	.865	.000	.939	.000	.000	.000	.000	.000	.935	.832	.974

Location: Escondido
 N/S: I-15 SB Ramps
 E/W: Deer Springs Road



Date: 9/19/2023
 Day: Tuesday

PEDESTRIANS

	North Leg I-15 SB Ramps	East Leg Deer Springs Road	South Leg I-15 SB Ramps	West Leg Deer Springs Road	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

	North Leg I-15 SB Ramps	East Leg Deer Springs Road	South Leg I-15 SB Ramps	West Leg Deer Springs Road	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

Location: Escondido
 N/S: I-15 SB Ramps
 E/W: Deer Springs Road



Date: 9/19/2023
 Day: Tuesday

BICYCLES

	Southbound I-15 SB Ramps			Westbound Deer Springs Road			Northbound I-15 SB Ramps			Eastbound Deer Springs Road			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	1	0	0	0	0	0	0	0	1
TOTAL VOLUMES:	0	0	0	0	1	0	0	0	0	0	0	0	1

	Southbound I-15 SB Ramps			Westbound Deer Springs Road			Northbound I-15 SB Ramps			Eastbound Deer Springs Road			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	1	0	1

City of Escondido
N/S: I-15 Northbound Ramps
E/W: Deer Springs Road
Weather: Clear

File Name : 03_ESC_15N_Deer AM
Site Code : 22923857
Start Date : 9/19/2023
Page No : 1

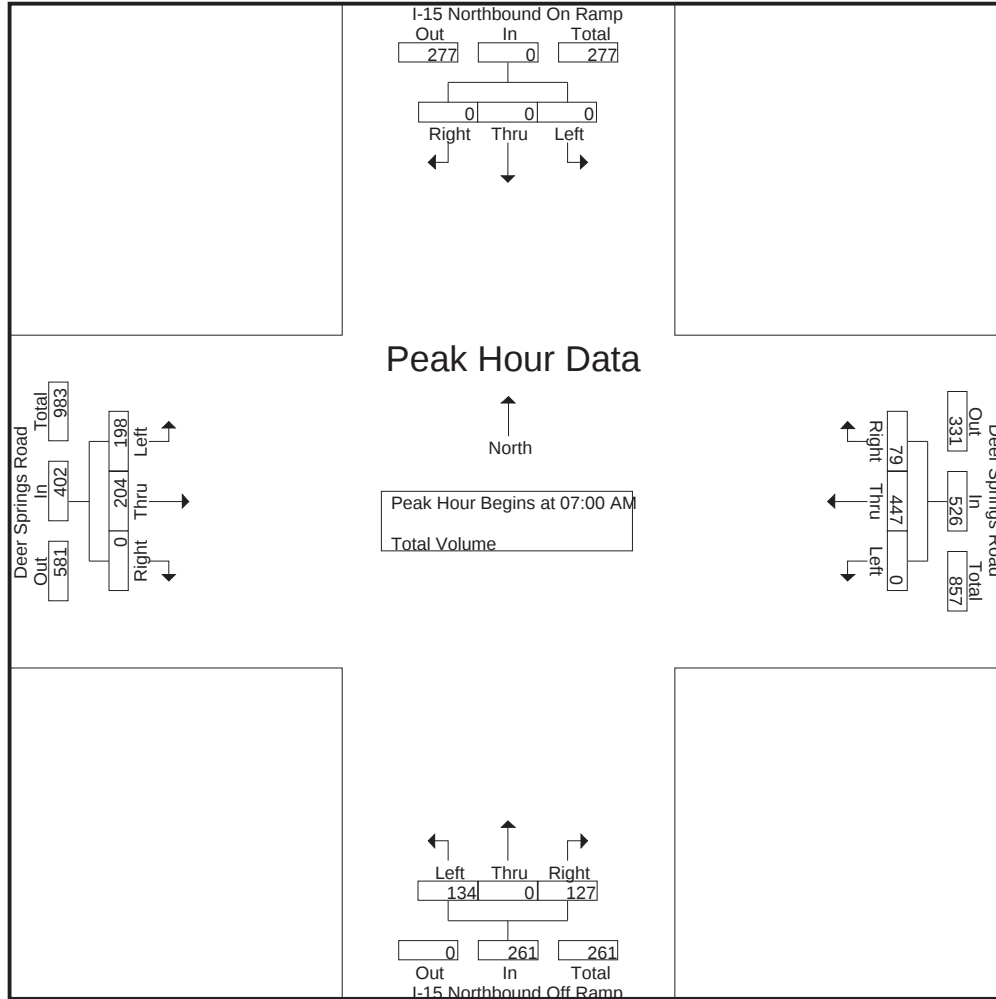
Groups Printed- Total Volume

	I-15 Northbound On Ramp Southbound				Deer Springs Road Westbound				I-15 Northbound Off Ramp Northbound				Deer Springs Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	123	25	148	39	0	24	63	45	35	0	80	291
07:15 AM	0	0	0	0	0	112	19	131	33	0	27	60	55	45	0	100	291
07:30 AM	0	0	0	0	0	122	22	144	30	0	35	65	41	59	0	100	309
07:45 AM	0	0	0	0	0	90	13	103	32	0	41	73	57	65	0	122	298
Total	0	0	0	0	0	447	79	526	134	0	127	261	198	204	0	402	1189
08:00 AM	0	0	0	0	0	87	13	100	23	0	36	59	48	49	0	97	256
08:15 AM	0	0	0	0	0	91	16	107	31	1	42	74	43	40	0	83	264
08:30 AM	0	0	0	0	0	72	15	87	39	0	59	98	34	43	0	77	262
08:45 AM	0	0	0	0	0	110	11	121	33	0	41	74	33	43	0	76	271
Total	0	0	0	0	0	360	55	415	126	1	178	305	158	175	0	333	1053
Grand Total	0	0	0	0	0	807	134	941	260	1	305	566	356	379	0	735	2242
Apprch %	0	0	0		0	85.8	14.2		45.9	0.2	53.9		48.4	51.6	0		
Total %	0	0	0		0	36	6	42	11.6	0	13.6	25.2	15.9	16.9	0	32.8	

	I-15 Northbound On Ramp Southbound				Deer Springs Road Westbound				I-15 Northbound Off Ramp Northbound				Deer Springs Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	123	25	148	39	0	24	63	45	35	0	80	291
07:15 AM	0	0	0	0	0	112	19	131	33	0	27	60	55	45	0	100	291
07:30 AM	0	0	0	0	0	122	22	144	30	0	35	65	41	59	0	100	309
07:45 AM	0	0	0	0	0	90	13	103	32	0	41	73	57	65	0	122	298
Total Volume	0	0	0	0	0	447	79	526	134	0	127	261	198	204	0	402	1189
% App. Total	0	0	0		0	85	15		51.3	0	48.7		49.3	50.7	0		
PHF	.000	.000	.000	.000	.000	.909	.790	.889	.859	.000	.774	.894	.868	.785	.000	.824	.962

City of Escondido
N/S: I-15 Northbound Ramps
E/W: Deer Springs Road
Weather: Clear

File Name : 03_ESC_15N_Deer AM
Site Code : 22923857
Start Date : 9/19/2023
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				08:00 AM				07:15 AM			
+0 mins.	0	0	0	0	0	123	25	148	23	0	36	59	55	45	0	100
+15 mins.	0	0	0	0	0	112	19	131	31	1	42	74	41	59	0	100
+30 mins.	0	0	0	0	0	122	22	144	39	0	59	98	57	65	0	122
+45 mins.	0	0	0	0	0	90	13	103	33	0	41	74	48	49	0	97
Total Volume	0	0	0	0	0	447	79	526	126	1	178	305	201	218	0	419
% App. Total	0	0	0	0	0	85	15		41.3	0.3	58.4		48	52	0	
PHF	.000	.000	.000	.000	.000	.909	.790	.889	.808	.250	.754	.778	.882	.838	.000	.859

City of Escondido
N/S: I-15 Northbound Ramps
E/W: Deer Springs Road
Weather: Clear

File Name : 03_ESC_15N_Deer PM
Site Code : 22923857
Start Date : 9/19/2023
Page No : 1

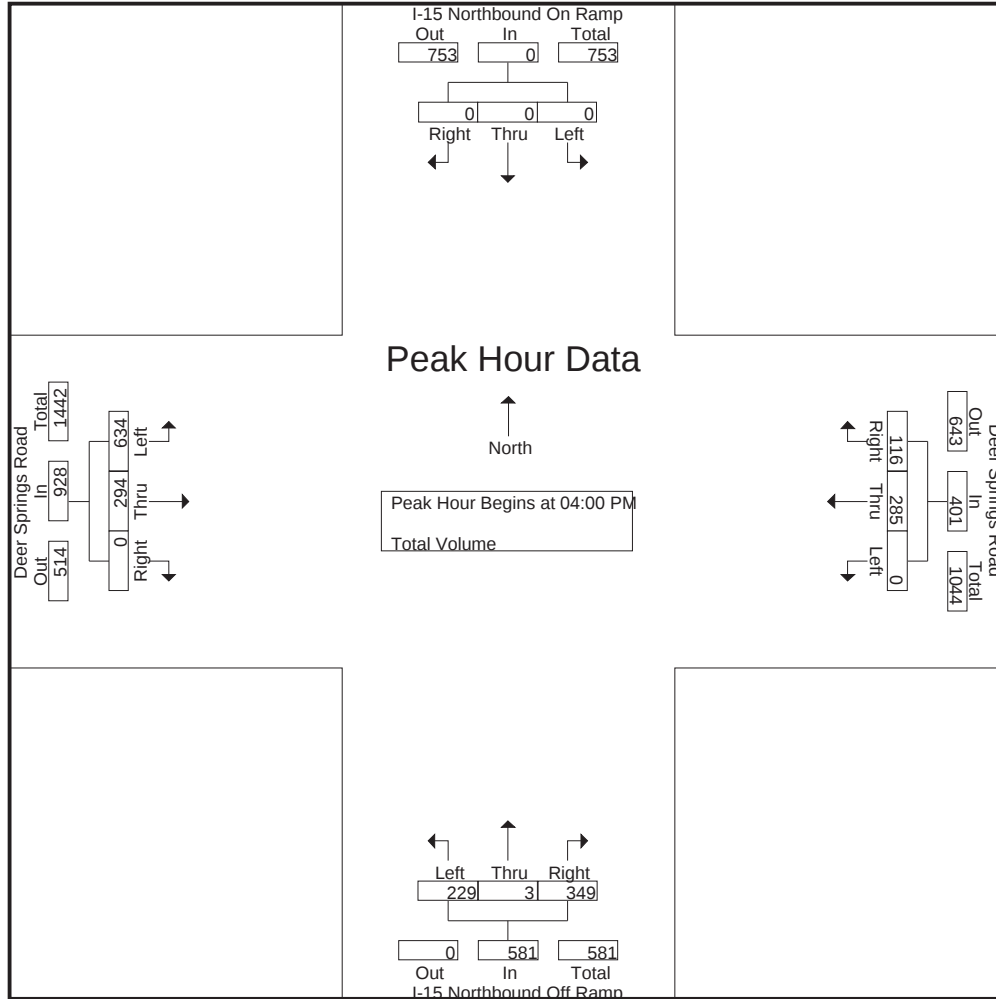
Groups Printed- Total Volume

	I-15 Northbound On Ramp Southbound				Deer Springs Road Westbound				I-15 Northbound Off Ramp Northbound				Deer Springs Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	66	37	103	56	0	76	132	186	67	0	253	488
04:15 PM	0	0	0	0	0	80	28	108	43	3	96	142	135	84	0	219	469
04:30 PM	0	0	0	0	0	64	26	90	63	0	92	155	171	77	0	248	493
04:45 PM	0	0	0	0	0	75	25	100	67	0	85	152	142	66	0	208	460
Total	0	0	0	0	0	285	116	401	229	3	349	581	634	294	0	928	1910
05:00 PM	0	0	0	0	0	62	22	84	44	1	89	134	160	60	1	221	439
05:15 PM	0	0	0	0	0	69	11	80	61	0	90	151	138	71	0	209	440
05:30 PM	0	0	0	0	0	62	15	77	60	0	91	151	155	87	0	242	470
05:45 PM	0	0	0	0	0	61	34	95	58	3	98	159	163	73	0	236	490
Total	0	0	0	0	0	254	82	336	223	4	368	595	616	291	1	908	1839
Grand Total	0	0	0	0	0	539	198	737	452	7	717	1176	1250	585	1	1836	3749
Apprch %	0	0	0		0	73.1	26.9		38.4	0.6	61		68.1	31.9	0.1		
Total %	0	0	0		0	14.4	5.3	19.7	12.1	0.2	19.1	31.4	33.3	15.6	0	49	

	I-15 Northbound On Ramp Southbound				Deer Springs Road Westbound				I-15 Northbound Off Ramp Northbound				Deer Springs Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	66	37	103	56	0	76	132	186	67	0	253	488
04:15 PM	0	0	0	0	0	80	28	108	43	3	96	142	135	84	0	219	469
04:30 PM	0	0	0	0	0	64	26	90	63	0	92	155	171	77	0	248	493
04:45 PM	0	0	0	0	0	75	25	100	67	0	85	152	142	66	0	208	460
Total Volume	0	0	0	0	0	285	116	401	229	3	349	581	634	294	0	928	1910
% App. Total	0	0	0		0	71.1	28.9		39.4	0.5	60.1		68.3	31.7	0		
PHF	.000	.000	.000	.000	.000	.891	.784	.928	.854	.250	.909	.937	.852	.875	.000	.917	.969

City of Escondido
N/S: I-15 Northbound Ramps
E/W: Deer Springs Road
Weather: Clear

File Name : 03_ESC_15N_Deer PM
Site Code : 22923857
Start Date : 9/19/2023
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:00 PM					04:00 PM					05:00 PM					04:00 PM				
+0 mins.	0	0	0	0	0	0	66	37	103		44	1	89	134		186	67	0	253	
+15 mins.	0	0	0	0	0	0	80	28	108		61	0	90	151		135	84	0	219	
+30 mins.	0	0	0	0	0	0	64	26	90		60	0	91	151		171	77	0	248	
+45 mins.	0	0	0	0	0	0	75	25	100		58	3	98	159		142	66	0	208	
Total Volume	0	0	0	0	0	0	285	116	401		223	4	368	595		634	294	0	928	
% App. Total	0	0	0	0	0	0	71.1	28.9			37.5	0.7	61.8			68.3	31.7	0		
PHF	.000	.000	.000	.000	.000	.000	.891	.784	.928		.914	.333	.939	.936		.852	.875	.000	.917	

Location: Escondido
 N/S: I-15 NB Ramps
 E/W: Deer Springs Road



Date: 9/19/2023
 Day: Tuesday

PEDESTRIANS

	North Leg I-15 NB Ramps	East Leg Deer Springs Road	South Leg I-15 NB Ramps	West Leg Deer Springs Road	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

	North Leg I-15 NB Ramps	East Leg Deer Springs Road	South Leg I-15 NB Ramps	West Leg Deer Springs Road	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

Location: Escondido
 N/S: I-15 NB Ramps
 E/W: Deer Springs Road



Date: 9/19/2023
 Day: Tuesday

BICYCLES

	Southbound I-15 NB Ramps			Westbound Deer Springs Road			Northbound I-15 NB Ramps			Eastbound Deer Springs Road			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

	Southbound I-15 NB Ramps			Westbound Deer Springs Road			Northbound I-15 NB Ramps			Eastbound Deer Springs Road			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

City of Escondido
N/S: Champagne Blvd/Centre City Parkway
E/W: Deer Springs Rd/Mountain Meadow Rd
Weather: Clear

File Name : 04_ESC_CC_Deer AM
Site Code : 22923857
Start Date : 9/19/2023
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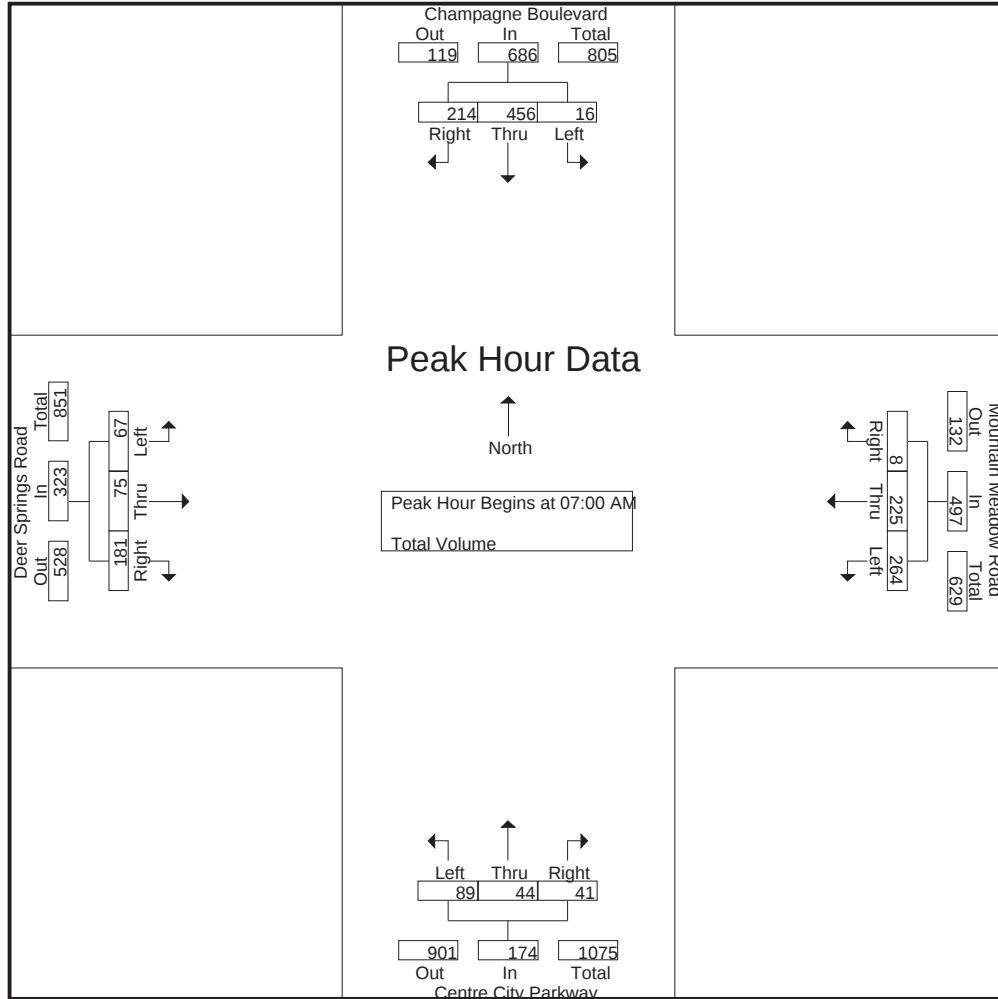
Groups Printed- Total Volume

	Champagne Boulevard Southbound				Mountain Meadow Road Westbound				Centre City Parkway Northbound				Deer Springs Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	6	112	66	184	66	72	2	140	18	10	7	35	11	19	29	59	418
07:15 AM	0	128	54	182	51	50	1	102	24	10	10	44	13	14	45	72	400
07:30 AM	4	108	52	164	85	61	5	151	29	13	9	51	21	18	55	94	460
07:45 AM	6	108	42	156	62	42	0	104	18	11	15	44	22	24	52	98	402
Total	16	456	214	686	264	225	8	497	89	44	41	174	67	75	181	323	1680
08:00 AM	4	117	32	153	48	41	1	90	21	21	23	65	24	25	35	84	392
08:15 AM	3	99	41	143	40	48	2	90	24	13	17	54	30	34	29	93	380
08:30 AM	2	117	39	158	36	32	1	69	18	16	9	43	24	36	32	92	362
08:45 AM	10	108	70	188	35	36	3	74	17	21	16	54	18	31	34	83	399
Total	19	441	182	642	159	157	7	323	80	71	65	216	96	126	130	352	1533
Grand Total	35	897	396	1328	423	382	15	820	169	115	106	390	163	201	311	675	3213
Apprch %	2.6	67.5	29.8		51.6	46.6	1.8		43.3	29.5	27.2		24.1	29.8	46.1		
Total %	1.1	27.9	12.3	41.3	13.2	11.9	0.5	25.5	5.3	3.6	3.3	12.1	5.1	6.3	9.7	21	

	Champagne Boulevard Southbound				Mountain Meadow Road Westbound				Centre City Parkway Northbound				Deer Springs Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	6	112	66	184	66	72	2	140	18	10	7	35	11	19	29	59	418
07:15 AM	0	128	54	182	51	50	1	102	24	10	10	44	13	14	45	72	400
07:30 AM	4	108	52	164	85	61	5	151	29	13	9	51	21	18	55	94	460
07:45 AM	6	108	42	156	62	42	0	104	18	11	15	44	22	24	52	98	402
Total Volume	16	456	214	686	264	225	8	497	89	44	41	174	67	75	181	323	1680
% App. Total	2.3	66.5	31.2		53.1	45.3	1.6		51.1	25.3	23.6		20.7	23.2	56		
PHF	.667	.891	.811	.932	.776	.781	.400	.823	.767	.846	.683	.853	.761	.781	.823	.824	.913

City of Escondido
N/S: Champagne Blvd/Centre City Parkway
E/W: Deer Springs Rd/Mountain Meadow Rd
Weather: Clear

File Name : 04_ESC_CC_Deer AM
Site Code : 22923857
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Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				08:00 AM				07:30 AM			
+0 mins.	6	112	66	184	66	72	2	140	21	21	23	65	21	18	55	94
+15 mins.	0	128	54	182	51	50	1	102	24	13	17	54	22	24	52	98
+30 mins.	4	108	52	164	85	61	5	151	18	16	9	43	24	25	35	84
+45 mins.	6	108	42	156	62	42	0	104	17	21	16	54	30	34	29	93
Total Volume	16	456	214	686	264	225	8	497	80	71	65	216	97	101	171	369
% App. Total	2.3	66.5	31.2		53.1	45.3	1.6		37	32.9	30.1		26.3	27.4	46.3	
PHF	.667	.891	.811	.932	.776	.781	.400	.823	.833	.845	.707	.831	.808	.743	.777	.941

City of Escondido
N/S: Champagne Blvd/Centre City Parkway
E/W: Deer Springs Rd/Mountain Meadow Rd
Weather: Clear

File Name : 04_ESC_CC_Deer PM
Site Code : 22923857
Start Date : 9/19/2023
Page No : 1

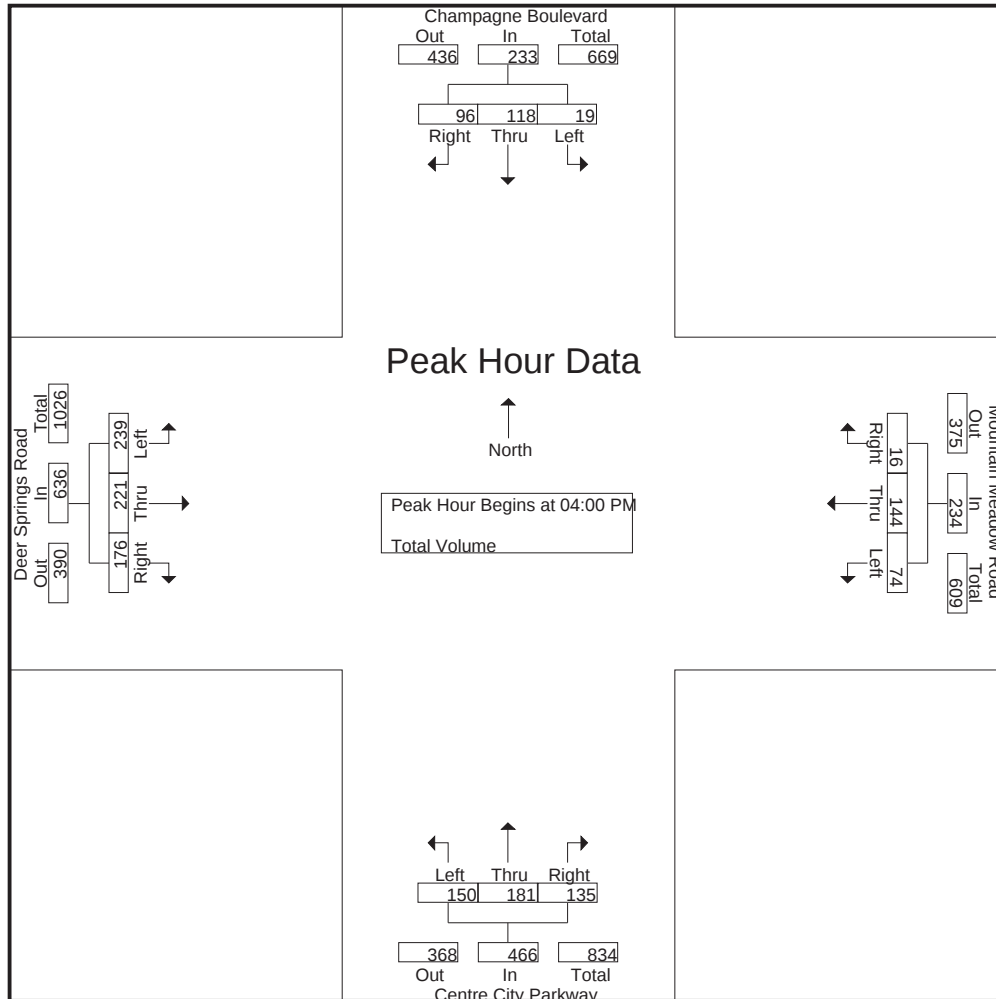
Groups Printed- Total Volume

	Champagne Boulevard Southbound				Mountain Meadow Road Westbound				Centre City Parkway Northbound				Deer Springs Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	6	34	20	60	19	38	6	63	43	55	38	136	61	44	37	142	401
04:15 PM	5	25	27	57	16	41	2	59	36	32	33	101	63	53	51	167	384
04:30 PM	3	36	20	59	28	29	4	61	38	56	34	128	64	67	49	180	428
04:45 PM	5	23	29	57	11	36	4	51	33	38	30	101	51	57	39	147	356
Total	19	118	96	233	74	144	16	234	150	181	135	466	239	221	176	636	1569
05:00 PM	2	33	28	63	15	29	6	50	26	38	26	90	39	71	28	138	341
05:15 PM	4	40	27	71	17	32	5	54	16	50	30	96	50	70	38	158	379
05:30 PM	1	14	25	40	20	33	2	55	32	57	19	108	57	65	52	174	377
05:45 PM	5	24	26	55	12	27	2	41	37	35	30	102	61	65	49	175	373
Total	12	111	106	229	64	121	15	200	111	180	105	396	207	271	167	645	1470
Grand Total	31	229	202	462	138	265	31	434	261	361	240	862	446	492	343	1281	3039
Apprch %	6.7	49.6	43.7		31.8	61.1	7.1		30.3	41.9	27.8		34.8	38.4	26.8		
Total %	1	7.5	6.6	15.2	4.5	8.7	1	14.3	8.6	11.9	7.9	28.4	14.7	16.2	11.3	42.2	

	Champagne Boulevard Southbound				Mountain Meadow Road Westbound				Centre City Parkway Northbound				Deer Springs Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	6	34	20	60	19	38	6	63	43	55	38	136	61	44	37	142	401
04:15 PM	5	25	27	57	16	41	2	59	36	32	33	101	63	53	51	167	384
04:30 PM	3	36	20	59	28	29	4	61	38	56	34	128	64	67	49	180	428
04:45 PM	5	23	29	57	11	36	4	51	33	38	30	101	51	57	39	147	356
Total Volume	19	118	96	233	74	144	16	234	150	181	135	466	239	221	176	636	1569
% App. Total	8.2	50.6	41.2		31.6	61.5	6.8		32.2	38.8	29		37.6	34.7	27.7		
PHF	.792	.819	.828	.971	.661	.878	.667	.929	.872	.808	.888	.857	.934	.825	.863	.883	.916

City of Escondido
N/S: Champagne Blvd/Centre City Parkway
E/W: Deer Springs Rd/Mountain Meadow Rd
Weather: Clear

File Name : 04_ESC_CC_Deer PM
Site Code : 22923857
Start Date : 9/19/2023
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Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:30 PM				04:00 PM				04:00 PM				05:00 PM			
+0 mins.	3	36	20	59	19	38	6	63	43	55	38	136	39	71	28	138
+15 mins.	5	23	29	57	16	41	2	59	36	32	33	101	50	70	38	158
+30 mins.	2	33	28	63	28	29	4	61	38	56	34	128	57	65	52	174
+45 mins.	4	40	27	71	11	36	4	51	33	38	30	101	61	65	49	175
Total Volume	14	132	104	250	74	144	16	234	150	181	135	466	207	271	167	645
% App. Total	5.6	52.8	41.6		31.6	61.5	6.8		32.2	38.8	29		32.1	42	25.9	
PHF	.700	.825	.897	.880	.661	.878	.667	.929	.872	.808	.888	.857	.848	.954	.803	.921

Location: Escondido
 N/S: Champagne Blvd/Centre City Pkwy
 E/W: Deer Springs Rd/Mtn Meadow Rd



Date: 9/19/2023
 Day: Tuesday

PEDESTRIANS

	North Leg Champagne Boulevard	East Leg Mountain Meadow Road	South Leg Centre City Parkway	West Leg Deer Springs Road	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	1	0	0	1
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	0	1	0	0	1

	North Leg Champagne Boulevard	East Leg Mountain Meadow Road	South Leg Centre City Parkway	West Leg Deer Springs Road	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	1	0	0	2	3
5:30 PM	1	0	0	0	1
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	2	0	0	2	4

Location: Escondido
 N/S: Champagne Blvd/Centre City Pkwy
 E/W: Deer Springs Rd/Mtn Meadow Rd



Date: 9/19/2023
 Day: Tuesday

BICYCLES

	Southbound Champagne Boulevard			Westbound Mountain Meadow Road			Northbound Centre City Parkway			Eastbound Deer Springs Road			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	1	0	0	0	0	0	1
TOTAL VOLUMES:	0	0	0	0	0	0	1	1	0	0	0	0	2

	Southbound Champagne Boulevard			Westbound Mountain Meadow Road			Northbound Centre City Parkway			Eastbound Deer Springs Road			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	2	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	3	0	0	0	0	3

City of Escondido
N/S: Centre City Parkway
E/W: Tierra Libertia Road
Weather: Clear

File Name : 05_ESC_CC_TL AM
Site Code : 22923857
Start Date : 9/19/2023
Page No : 1

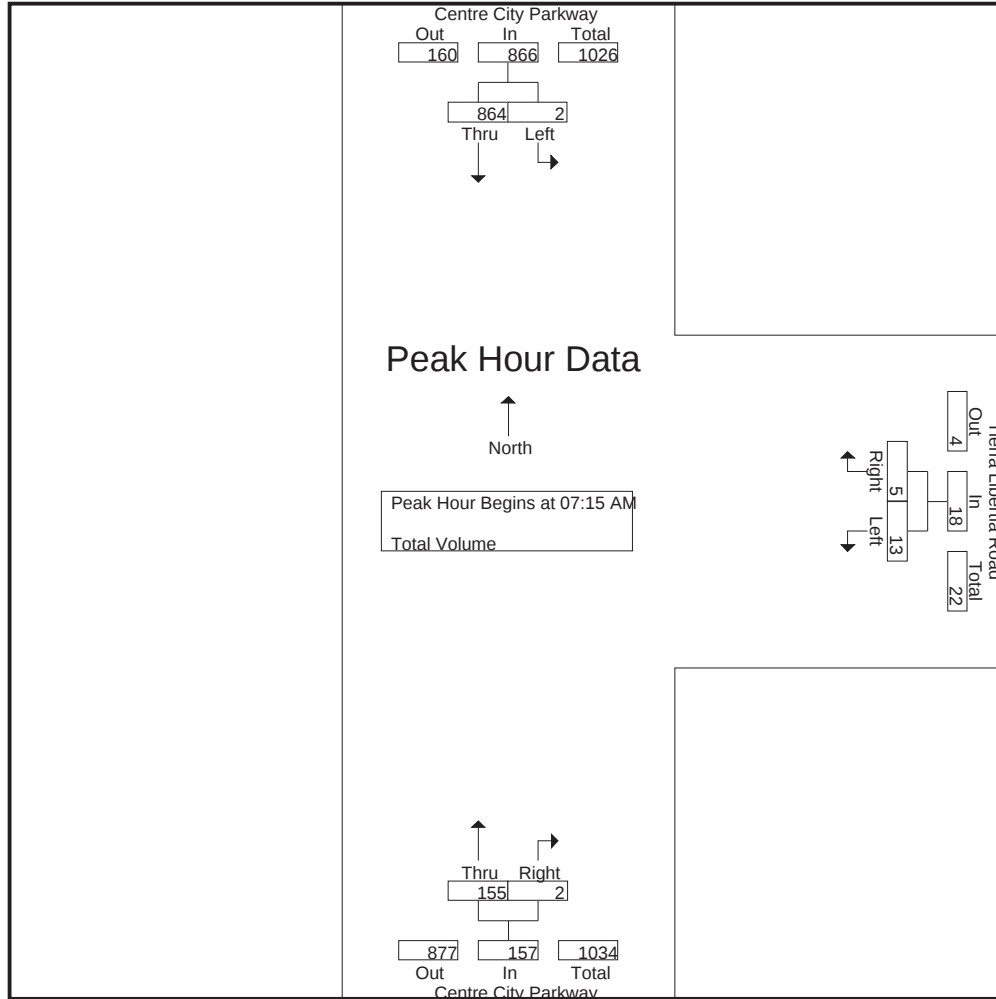
Groups Printed- Total Volume

	Centre City Parkway Southbound			Tierra Libertia Road Westbound			Centre City Parkway Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	0	191	191	5	0	5	23	2	25	221
07:15 AM	1	233	234	2	3	5	31	0	31	270
07:30 AM	0	223	223	5	1	6	31	0	31	260
07:45 AM	0	223	223	3	1	4	32	1	33	260
Total	1	870	871	15	5	20	117	3	120	1011
08:00 AM	1	185	186	3	0	3	61	1	62	251
08:15 AM	1	162	163	3	0	3	37	0	37	203
08:30 AM	3	153	156	3	3	6	31	0	31	193
08:45 AM	0	173	173	1	2	3	42	1	43	219
Total	5	673	678	10	5	15	171	2	173	866
Grand Total	6	1543	1549	25	10	35	288	5	293	1877
Apprch %	0.4	99.6		71.4	28.6		98.3	1.7		
Total %	0.3	82.2	82.5	1.3	0.5	1.9	15.3	0.3	15.6	

	Centre City Parkway Southbound			Tierra Libertia Road Westbound			Centre City Parkway Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	1	233	234	2	3	5	31	0	31	270
07:30 AM	0	223	223	5	1	6	31	0	31	260
07:45 AM	0	223	223	3	1	4	32	1	33	260
08:00 AM	1	185	186	3	0	3	61	1	62	251
Total Volume	2	864	866	13	5	18	155	2	157	1041
% App. Total	0.2	99.8		72.2	27.8		98.7	1.3		
PHF	.500	.927	.925	.650	.417	.750	.635	.500	.633	.964

City of Escondido
N/S: Centre City Parkway
E/W: Tierra Libertia Road
Weather: Clear

File Name : 05_ESC_CC_TL AM
Site Code : 22923857
Start Date : 9/19/2023
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Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			08:00 AM		
+0 mins.	0	191	191	5	0	5	61	1	62
+15 mins.	1	233	234	2	3	5	37	0	37
+30 mins.	0	223	223	5	1	6	31	0	31
+45 mins.	0	223	223	3	1	4	42	1	43
Total Volume	1	870	871	15	5	20	171	2	173
% App. Total	0.1	99.9		75	25		98.8	1.2	
PHF	.250	.933	.931	.750	.417	.833	.701	.500	.698

City of Escondido
N/S: Centre City Parkway
E/W: Tierra Libertia Road
Weather: Clear

File Name : 05_ESC_CC_TL PM
Site Code : 22923857
Start Date : 9/19/2023
Page No : 1

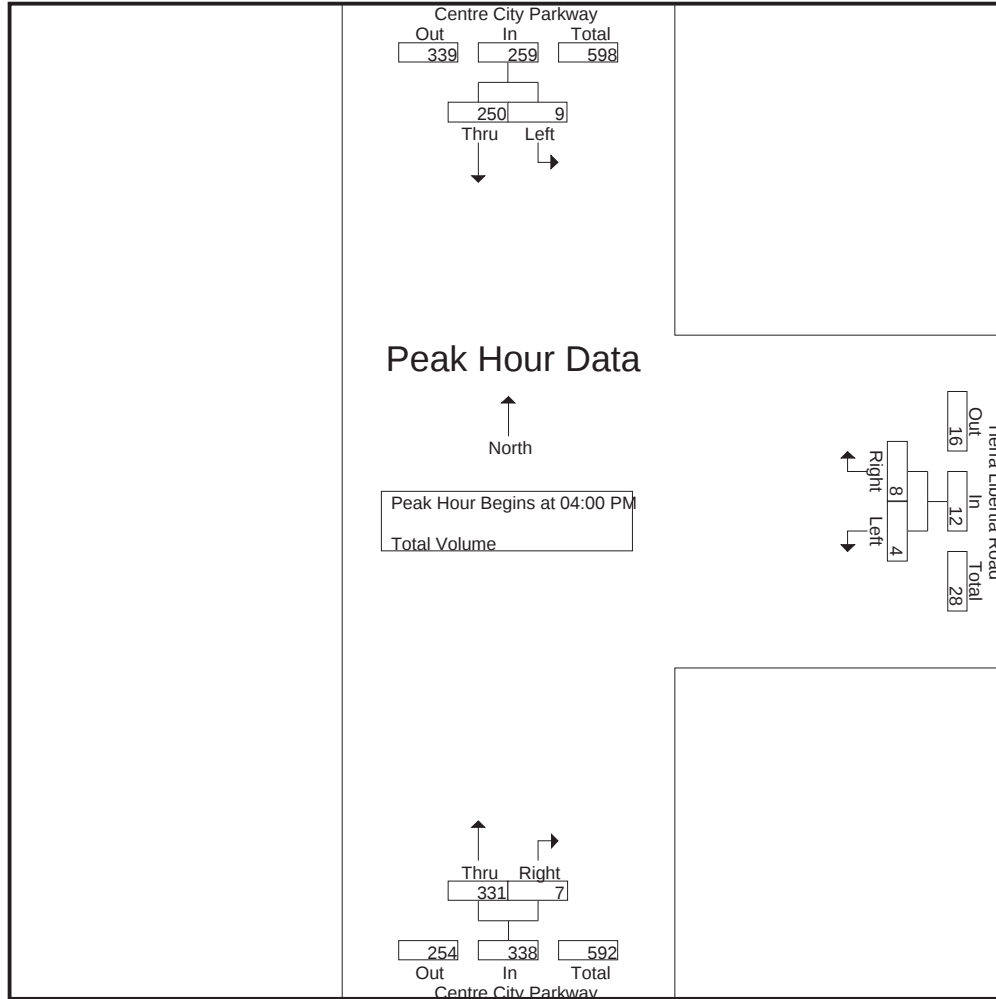
Groups Printed- Total Volume

	Centre City Parkway Southbound			Tierra Libertia Road Westbound			Centre City Parkway Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	1	61	62	0	4	4	94	3	97	163
04:15 PM	3	65	68	1	2	3	68	2	70	141
04:30 PM	3	74	77	1	2	3	98	2	100	180
04:45 PM	2	50	52	2	0	2	71	0	71	125
Total	9	250	259	4	8	12	331	7	338	609
05:00 PM	1	48	49	0	1	1	73	0	73	123
05:15 PM	1	82	83	0	0	0	81	3	84	167
05:30 PM	3	56	59	1	1	2	75	1	76	137
05:45 PM	3	44	47	4	1	5	72	0	72	124
Total	8	230	238	5	3	8	301	4	305	551
Grand Total	17	480	497	9	11	20	632	11	643	1160
Apprch %	3.4	96.6		45	55		98.3	1.7		
Total %	1.5	41.4	42.8	0.8	0.9	1.7	54.5	0.9	55.4	

	Centre City Parkway Southbound			Tierra Libertia Road Westbound			Centre City Parkway Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	1	61	62	0	4	4	94	3	97	163
04:15 PM	3	65	68	1	2	3	68	2	70	141
04:30 PM	3	74	77	1	2	3	98	2	100	180
04:45 PM	2	50	52	2	0	2	71	0	71	125
Total Volume	9	250	259	4	8	12	331	7	338	609
% App. Total	3.5	96.5		33.3	66.7		97.9	2.1		
PHF	.750	.845	.841	.500	.500	.750	.844	.583	.845	.846

City of Escondido
N/S: Centre City Parkway
E/W: Tierra Libertia Road
Weather: Clear

File Name : 05_ESC_CC_TL PM
Site Code : 22923857
Start Date : 9/19/2023
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:30 PM			04:00 PM			04:00 PM		
+0 mins.	3	74	77	0	4	4	94	3	97
+15 mins.	2	50	52	1	2	3	68	2	70
+30 mins.	1	48	49	1	2	3	98	2	100
+45 mins.	1	82	83	2	0	2	71	0	71
Total Volume	7	254	261	4	8	12	331	7	338
% App. Total	2.7	97.3		33.3	66.7		97.9	2.1	
PHF	.583	.774	.786	.500	.500	.750	.844	.583	.845

Location: Escondido
 N/S: Centre City Parkway
 E/W: Tierra Libertia Road



Date: 9/19/2023
 Day: Tuesday

PEDESTRIANS

	North Leg Centre City Parkway	East Leg Tierra Libertia Road	South Leg Centre City Parkway	West Leg Dead End	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	1	0	0	1
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	1	0	0	1
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	0	2	0	0	2

	North Leg Centre City Parkway	East Leg Tierra Libertia Road	South Leg Centre City Parkway	West Leg Dead End	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

Location: Escondido
 N/S: Centre City Parkway
 E/W: Tierra Libertia Road



Date: 9/19/2023
 Day: Tuesday

BICYCLES

		Southbound Centre City Parkway			Westbound Tierra Libertia Road			Northbound Centre City Parkway			Eastbound Dead End			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
TOTAL VOLUMES:		0	0	0	0	0	0	0	2	0	0	0	0	2

		Southbound Centre City Parkway			Westbound Tierra Libertia Road			Northbound Centre City Parkway			Eastbound Dead End			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
	4:00 PM	0	0	0	0	0	0	0	1	1	0	0	0	2
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	2	0	0	0	0	2
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:		0	0	0	0	0	0	0	3	1	0	0	0	4

City of Escondido
N/S: Centre City Parkway
E/W: Jesmond Dene Road
Weather: Clear

File Name : 05_ESC_CC_Jes AM
Site Code : 22923857
Start Date : 9/19/2023
Page No : 1

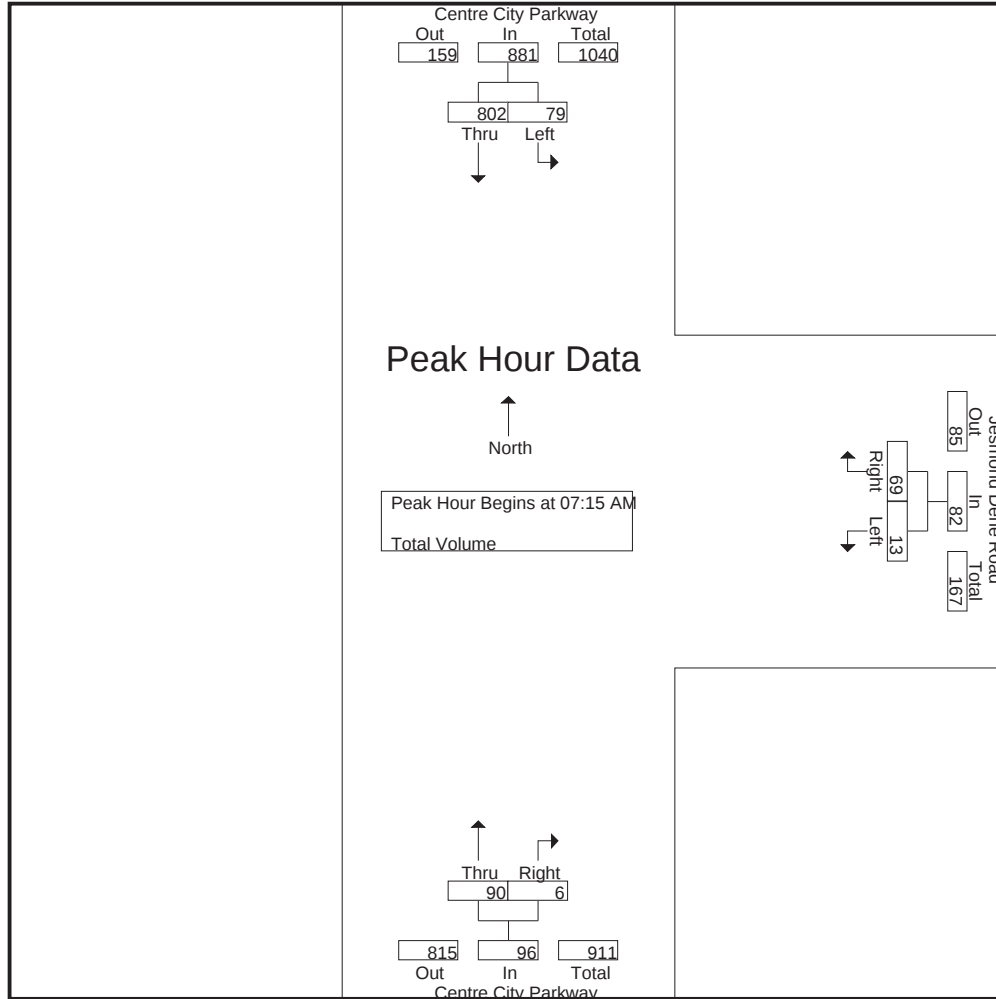
Groups Printed- Total Volume

	Centre City Parkway Southbound			Jesmond Dene Road Westbound			Centre City Parkway Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	9	189	198	1	7	8	18	1	19	225
07:15 AM	20	212	232	3	14	17	19	2	21	270
07:30 AM	19	204	223	1	14	15	18	0	18	256
07:45 AM	29	202	231	3	13	16	20	2	22	269
Total	77	807	884	8	48	56	75	5	80	1020
08:00 AM	11	184	195	6	28	34	33	2	35	264
08:15 AM	7	161	168	5	9	14	31	1	32	214
08:30 AM	11	151	162	3	9	12	22	1	23	197
08:45 AM	7	164	171	1	13	14	30	3	33	218
Total	36	660	696	15	59	74	116	7	123	893
Grand Total	113	1467	1580	23	107	130	191	12	203	1913
Apprch %	7.2	92.8		17.7	82.3		94.1	5.9		
Total %	5.9	76.7	82.6	1.2	5.6	6.8	10	0.6	10.6	

	Centre City Parkway Southbound			Jesmond Dene Road Westbound			Centre City Parkway Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	20	212	232	3	14	17	19	2	21	270
07:30 AM	19	204	223	1	14	15	18	0	18	256
07:45 AM	29	202	231	3	13	16	20	2	22	269
08:00 AM	11	184	195	6	28	34	33	2	35	264
Total Volume	79	802	881	13	69	82	90	6	96	1059
% App. Total	9	91		15.9	84.1		93.8	6.2		
PHF	.681	.946	.949	.542	.616	.603	.682	.750	.686	.981

City of Escondido
N/S: Centre City Parkway
E/W: Jesmond Dene Road
Weather: Clear

File Name : 05_ESC_CC_Jes AM
Site Code : 22923857
Start Date : 9/19/2023
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:00 AM			07:15 AM			08:00 AM		
+0 mins.	9	189	198	3	14	17	33	2	35
+15 mins.	20	212	232	1	14	15	31	1	32
+30 mins.	19	204	223	3	13	16	22	1	23
+45 mins.	29	202	231	6	28	34	30	3	33
Total Volume	77	807	884	13	69	82	116	7	123
% App. Total	8.7	91.3		15.9	84.1		94.3	5.7	
PHF	.664	.952	.953	.542	.616	.603	.879	.583	.879

City of Escondido
N/S: Centre City Parkway
E/W: Jesmond Dene Road
Weather: Clear

File Name : 05_ESC_CC_Jes PM
Site Code : 22923857
Start Date : 9/19/2023
Page No : 1

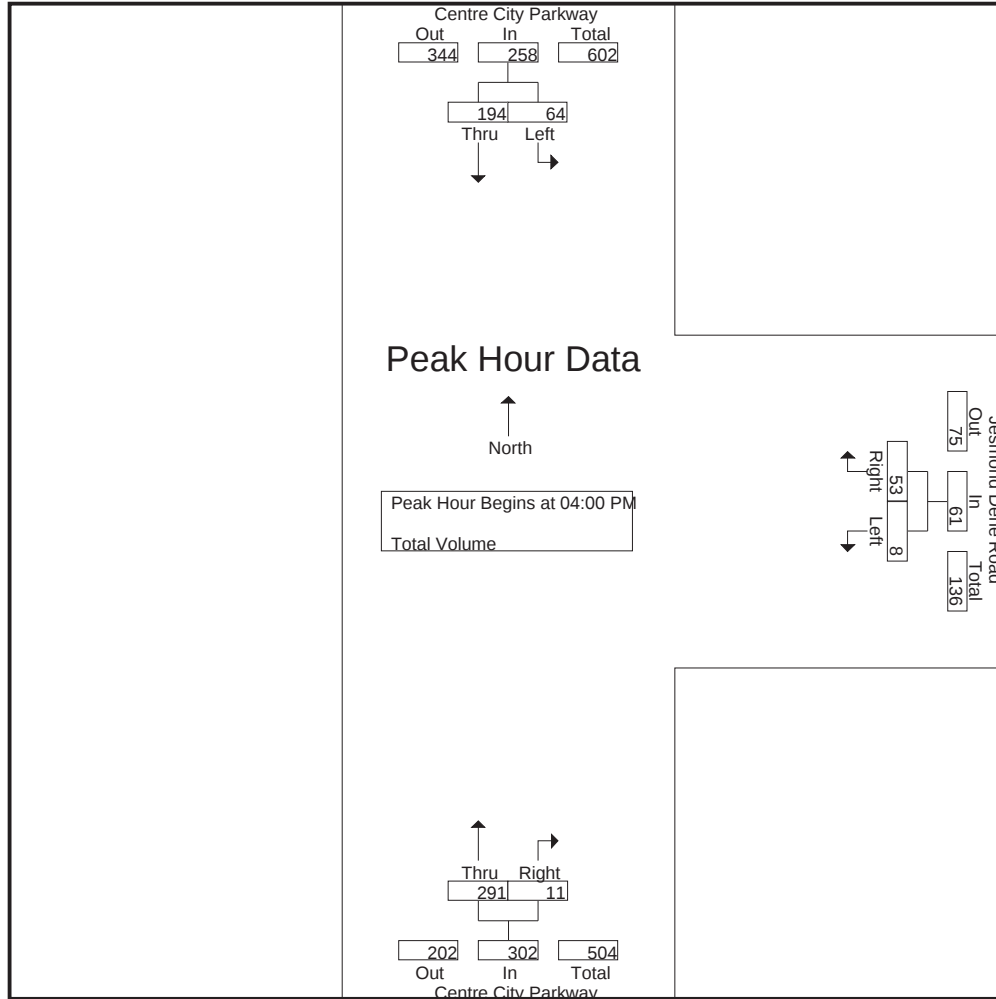
Groups Printed- Total Volume

	Centre City Parkway Southbound			Jesmond Dene Road Westbound			Centre City Parkway Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	13	51	64	3	21	24	79	0	79	167
04:15 PM	15	50	65	2	5	7	67	4	71	143
04:30 PM	22	51	73	1	14	15	85	2	87	175
04:45 PM	14	42	56	2	13	15	60	5	65	136
Total	64	194	258	8	53	61	291	11	302	621
05:00 PM	7	41	48	2	14	16	59	5	64	128
05:15 PM	17	65	82	0	15	15	72	1	73	170
05:30 PM	22	36	58	2	9	11	64	1	65	134
05:45 PM	14	34	48	0	13	13	61	3	64	125
Total	60	176	236	4	51	55	256	10	266	557
Grand Total	124	370	494	12	104	116	547	21	568	1178
Apprch %	25.1	74.9		10.3	89.7		96.3	3.7		
Total %	10.5	31.4	41.9	1	8.8	9.8	46.4	1.8	48.2	

	Centre City Parkway Southbound			Jesmond Dene Road Westbound			Centre City Parkway Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	13	51	64	3	21	24	79	0	79	167
04:15 PM	15	50	65	2	5	7	67	4	71	143
04:30 PM	22	51	73	1	14	15	85	2	87	175
04:45 PM	14	42	56	2	13	15	60	5	65	136
Total Volume	64	194	258	8	53	61	291	11	302	621
% App. Total	24.8	75.2		13.1	86.9		96.4	3.6		
PHF	.727	.951	.884	.667	.631	.635	.856	.550	.868	.887

City of Escondido
N/S: Centre City Parkway
E/W: Jesmond Dene Road
Weather: Clear

File Name : 05_ESC_CC_Jes PM
Site Code : 22923857
Start Date : 9/19/2023
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:30 PM			04:00 PM			04:00 PM		
+0 mins.	22	51	73	3	21	24	79	0	79
+15 mins.	14	42	56	2	5	7	67	4	71
+30 mins.	7	41	48	1	14	15	85	2	87
+45 mins.	17	65	82	2	13	15	60	5	65
Total Volume	60	199	259	8	53	61	291	11	302
% App. Total	23.2	76.8		13.1	86.9		96.4	3.6	
PHF	.682	.765	.790	.667	.631	.635	.856	.550	.868

Location: Escondido
 N/S: Centre City Parkway
 E/W: Jesmond Dene Road



Date: 9/19/2023
 Day: Tuesday

PEDESTRIANS

	North Leg Centre City Parkway Pedestrians	East Leg Jesmond Dene Road Pedestrians	South Leg Centre City Parkway Pedestrians	West Leg Dead End Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	1	0	0	1
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	1	0	0	1
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	0	2	0	0	2

	North Leg Centre City Parkway Pedestrians	East Leg Jesmond Dene Road Pedestrians	South Leg Centre City Parkway Pedestrians	West Leg Dead End Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0

Location: Escondido
 N/S: Centre City Parkway
 E/W: Jesmond Dene Road



Date: 9/19/2023
 Day: Tuesday

BICYCLES

		Southbound Centre City Parkway			Westbound Jesmond Dene Road			Northbound Centre City Parkway			Eastbound Dead End			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
TOTAL VOLUMES:		0	0	0	0	0	0	0	2	0	0	0	0	2

		Southbound Centre City Parkway			Westbound Jesmond Dene Road			Northbound Centre City Parkway			Eastbound Dead End			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
	4:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	2
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	1	0	0	0	0	0	1	0	0	0	0	2
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
	5:30 PM	0	0	0	0	0	0	0	2	0	0	0	0	2
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:		0	2	0	0	0	1	0	4	0	0	0	0	7

Appendix C - Signal Timing Sheets

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	1	7		1	1	7			CLK RST	EV SEL	0	PERMIT	1	2	4	5	6		0	
1 DONT WALK	1	10		1	1	10				RR1 CLR	15	RED LOCK	1					1		
2 MIN GREEN	5	6		5	5	6				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		2.0	2.0	2.0				EVB CLR	5	PED PHASES	2		6			5		
6 MAX GAP	2.0	2.0		2.0	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	25	35		20	20	40				EVD DLY	0	DBL ENTRY						8		
9 MAX 2	35				30				YR	EVD CLR	5	MAX 2 PHASES	1		5			9		
A MAX 3									MO	MAX EV	255	LAG PHASES	READ ONLY						A	
B									DAY	RR2 CLR	15	RED REST						B		
C REDUCE BY	0.0	0.0		0.0	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

F0C LONG FAILURE	
F0D SHORT FAILURE	
FOE	0
FOF	5

F0O	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									1
2												GAPOUT CP2	1	LAG FZ CP 2	1		4	6			2
3 FZ3 GRN FCTR	0	0	0			0	0	0				GAPOUT CP3	1	LAG FZ CP 3	1		4	6			3
4 FZ4 GRN FCTR	10	10	15			10	10	10		PERM TIME		GAPOUT CP4	1	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	1	LAG FZ CP 6	1		4	6			6
7 FZ7 GRN FCTR	0	0	0			0	0	0		LONG GRN		GAPOUT CP7	1	LAG FZ CP 7	1		4	6			7
8 FZ8 GRN FCTR	0	0	0			0	0	0		NO GREEN		GAPOUT CP8	1	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

FEATURE	OFF		ON		OFF		ON	
	1	2	3	4	5	6	7	8
CO1 MANUAL CP								
CO2 MASTER CP								
CO3 CURRENT CP								
CO4 LAST CP								
CO7 TRNSMT CP								
COD MANUAL OFFSET								
CAQ LOCAL CYCLE TIMER								
CBO MASTER CYCLE TIMER								
CAA LOCAL OFFSET								
CBA MASTER OFFSET								

CCB/CDB OFFSET TIMER
 CCC/CDC LAG GREEN TIMER
 CCD/CDD FORCE OFF TIMER
 CCE/CDE LONG GREEN TIMER
 CCF/CDF NO GREEN TIMER

COO = 2

PAGE 3

D-E-E = C8 VERSION NUMBER
D-E-F = LITHIUM BATTERY C

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													

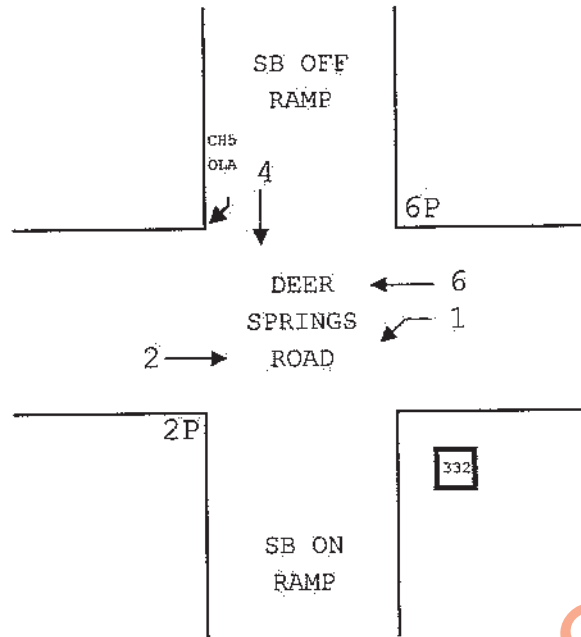
8 ENERGIZE AUX OUTPUT-YELLOW

- 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: 5/23/07

LOCATION: Rte 15 SB @ Deer Springs Road

CONFLICT MONITOR PROGRAM



Do Not Reproduce

INTERVAL	PHASE TIMING								PRE-EMPTION	F											
	1	2	3	4	5	6	7	8		9	E	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	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		25		EVD DLY	0	DBL ENTRY		4			8	8	8		
9 MAX 2					65				YR	EVD CLR	5	MAX 2 PHASES			5				9		
A MAX 3						45			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
FOE	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
FDS PERMISSIVE	0
FD8 OS SEEKING	1

CO5 FLASH TYPE	1
CC2 DOWNLOAD	1

	CONTROL PLANS									Y-COORD			LAG PHASE		FLAG							
	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	
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	2	4	5			8	
3 FZ3 GRN FCTR		0	0			0	0	0				GAPOUT CP3	LAG FZ CP 3	0	2	2	4	5			8	
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	40	57		LAG OFFSET		GAPOUT CP5	LAG FZ CP 5								5	
6										FORCE OFF		GAPOUT CP6	LAG FZ CP 6	1	2	2	4	5			8	
7 FZ7 GRN FCTR		0	0			0	0	0		LONG GRN		GAPOUT CP7	LAG FZ CP 7	0	2	2	4	5			8	
8 FZ8 GRN FCTR		15	20			12	22	20		NO GREEN		GAPOUT CP8	LAG FZ CP 8	0	2	2	4	5			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	
															1	2	3	4	5	6	7	8

CO1 MANUAL CP
CO2 MASTER CP
CO3 CURRENT CP SYSTEM MASTER:
CO4 LAST CP RTE 15 NB RAMP
CO7 TRNSMT CP
COD MANUAL OFFSET
CAO LOCAL CYCLE TIMER
CBO MASTER CYCLE TIMER
CAA LOCAL OFFSET
CBA MASTER OFFSET

CCB/CDB OFFSET TIMER
CCC/CDC LAG GREEN TIMER
CCD/CDD FORCE OFF TIMER
CCE/CDE LONG GREEN TIMER
CCF/CDF NO GREEN TIMER

FEATURE	OFF	ON	LOCATION	OFF	ON
1			1		1
2			2		
3			3		
4			4		
5			5		
6			6		
7			7		
8			8		

COO = 1

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

RCPL 1 = TIME OF DAY MAX RECALL (CALL ACTIVE LIGHTS)	RCPL 2 = TIME OF DAY MAX RECALL (CALL ACTIVE LIGHTS)	PHASES
		PHASES
		PHASES

LAST FLASH TIME REGISTER

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

D-E-E = C8 VERSION NUMBER
D-E-F = LITHIUM BATTERY CODE
84 = BAD
85 = GOOD

[illegible]

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

8
7
6
5
4
3
2
1

4

[illegible]

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

```

[illegible]

### 8. ENERGIZE AUX OUTPUT-YELLOW

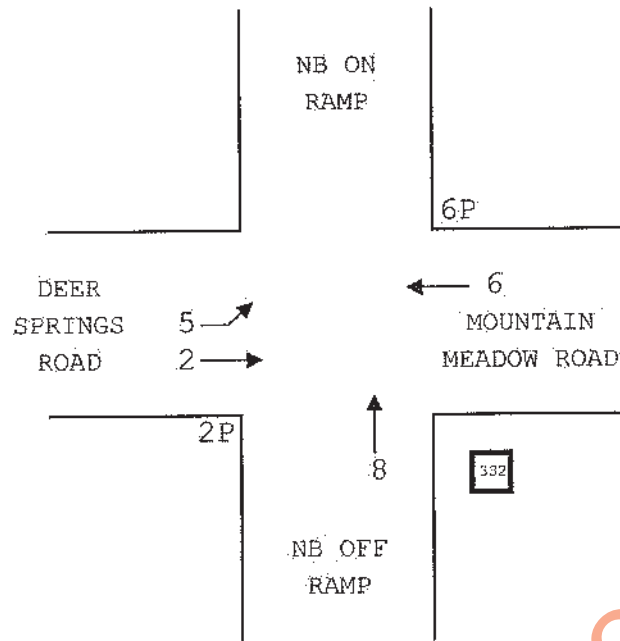
- 9 TIME OF DAY MAX RECALL (1ST SELECT)
- A TRAFFIC ACT. MAX 2 OPERATION
- B TIME OF DAY MAX RECALL (2ND SELECT)
- C YELLOW YIELD COORDINATION
- D YELLOW YIELD COORDINATION
- E TIME OF DAY FREE OPERATION
- F FLASHING OPERATION

[illegible]

DATE: 4/29/04

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

### CONFLICT MONITOR PROGRAM



Do Not Reproduce

**INTERSECTION: Deer Spgs @ Mnt Meadow @ NCCP**Group Assignment: **NONE**Field Master Assignment: **NONE**System Reference Number: **119**N/S Street Name: **Mnt Meadow @ NCCP**E/W Street Name: **Deer Spgs**

Page 1 (of 5)

Last Database Change: **1/20/2017 11:11**

| Change Record |    |      |        |         |
|---------------|----|------|--------|---------|
| Change        | By | Date | Change | By Date |
|               |    |      |        |         |
|               |    |      |        |         |
|               |    |      |        |         |
|               |    |      |        |         |
|               |    |      |        |         |
|               |    |      |        |         |

Notes:

|                 |              |           |
|-----------------|--------------|-----------|
| Drop Number     | <b>6</b>     | <C+0+0>   |
| Zone Number     | <b>0</b>     | <C+0+1>   |
| Area Number     | <b>2</b>     | <C+0+2>   |
| Area Address    | <b>6</b>     | <C+0+3>   |
| QuicNet Channel | <b>COM1:</b> | (QuicNet) |

**Communication Addresses**

|               |           |         |
|---------------|-----------|---------|
| Manual Plan   | <b>14</b> | <C+A+1> |
| Manual Offset |           | <C+B+1> |

**Manual Selection**

|               |            |         |
|---------------|------------|---------|
| Max Initial   | <b>30</b>  | <F+0+E> |
| Red Revert    | <b>5.0</b> | <F+0+F> |
| All Red Start | <b>5.0</b> | <F+C+0> |

**Start / Revert Times**

| Phase              |     |     |     |     |     |     |     |     |  |  |
|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|--|--|
| Column Numbers --> | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   |  |  |
| Phase Names -->    |     |     |     |     |     |     |     |     |  |  |
| Ped Walk           | 0   | 0   | 0   | 7   | 0   | 7   | 0   | 7   |  |  |
| Ped FDW            | 0   | 0   | 0   | 19  | 0   | 12  | 0   | 15  |  |  |
| Min Green          | 17  | 25  | 0   | 30  | 20  | 9   | 0   | 30  |  |  |
| Type 3 Limit       | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |  |  |
| Added Initial      | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 |  |  |
| Veh Extension      | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 0.0 | 2.0 |  |  |
| Max Gap            | 2.0 | 2.1 | 0.0 | 2.1 | 2.0 | 2.1 | 0.0 | 2.1 |  |  |
| Min Gap            | 2.0 | 1.5 | 0.0 | 1.5 | 2.0 | 1.5 | 0.0 | 1.5 |  |  |
| Max Limit          | 17  | 25  | 0   | 25  | 17  | 25  | 0   | 25  |  |  |
| Max Limit 2        | 0   | 30  | 0   | 0   | 30  | 0   | 0   | 35  |  |  |
| -----              | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |  |  |
| Call To Phase      | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |  |  |
| Reduce By          | 0.0 | 0.1 | 0.0 | 0.1 | 0.0 | 0.1 | 0.0 | 0.1 |  |  |
| Reduce Every       | 0.0 | 3.8 | 0.0 | 3.8 | 0.0 | 3.8 | 0.0 | 3.8 |  |  |
| Yellow Change      | 4.4 | 5.2 | 0.0 | 5.5 | 4.4 | 5.2 | 0.0 | 5.5 |  |  |
| Red Clear          | 0.5 | 1.0 | 0.0 | 1.0 | 0.5 | 1.0 | 0.0 | 1.0 |  |  |

**Phase Timing - Bank 1**

&lt;F Page&gt;

| Phase              |     |   |   |   |   |   |   |   |  |  |
|--------------------|-----|---|---|---|---|---|---|---|--|--|
| Column Numbers --> | 1   | 2 | 3 | 4 | 5 | 6 | 7 | 8 |  |  |
| Phase Names -->    |     |   |   |   |   |   |   |   |  |  |
| RR-1 Delay         | 0   |   |   |   |   |   |   |   |  |  |
| RR-1 Clear         | 0   |   |   |   |   |   |   |   |  |  |
| EV-A Delay         | 0   |   |   |   |   |   |   |   |  |  |
| EV-A Clear         | 1   |   |   |   |   |   |   |   |  |  |
| EV-B Delay         | 0   |   |   |   |   |   |   |   |  |  |
| EV-B Clear         | 1   |   |   |   |   |   |   |   |  |  |
| EV-C Delay         | 0   |   |   |   |   |   |   |   |  |  |
| EV-C Clear         | 1   |   |   |   |   |   |   |   |  |  |
| EV-D Delay         | 0   |   |   |   |   |   |   |   |  |  |
| EV-D Clear         | 1   |   |   |   |   |   |   |   |  |  |
| RR-2 Delay         | 0   |   |   |   |   |   |   |   |  |  |
| RR-2 Clear         | 0   |   |   |   |   |   |   |   |  |  |
| View EV Delay      | --- |   |   |   |   |   |   |   |  |  |
| View EV Clear      | --- |   |   |   |   |   |   |   |  |  |
| View RR Delay      | --- |   |   |   |   |   |   |   |  |  |
| View RR Clear      | --- |   |   |   |   |   |   |   |  |  |

**Preempt Timing**

| Phase              |   |   |   |   |   |   |   |   |  |  |
|--------------------|---|---|---|---|---|---|---|---|--|--|
| Column Numbers --> | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |  |  |
| Phase Names -->    |   |   |   |   |   |   |   |   |  |  |
| Permit             |   |   |   |   |   |   |   |   |  |  |
| Red Lock           |   |   |   |   |   |   |   |   |  |  |
| Yellow Lock        |   |   |   |   |   |   |   |   |  |  |
| Min Recall         |   |   |   |   |   |   |   |   |  |  |
| Ped Recall         |   |   |   |   |   |   |   |   |  |  |
| View Set Peds      |   |   |   |   |   |   |   |   |  |  |
| Rest In Walk       |   |   |   |   |   |   |   |   |  |  |
| Red Rest           |   |   |   |   |   |   |   |   |  |  |
| Dual Entry         |   |   |   |   |   |   |   |   |  |  |
| Max Recall         |   |   |   |   |   |   |   |   |  |  |
| Soft Recall        |   |   |   |   |   |   |   |   |  |  |
| Max 2              |   |   |   |   |   |   |   |   |  |  |
| Cond. Service      |   |   |   |   |   |   |   |   |  |  |
| Man Cntrl Calls    |   |   |   |   |   |   |   |   |  |  |
| Yellow Start       |   |   |   |   |   |   |   |   |  |  |
| First Phases       |   |   |   |   |   |   |   |   |  |  |

**Phase Functions**

&lt;F Page&gt;

Manual Plan  
0 = Automatic  
1-9 = Plan 1-9  
14 = Free  
15 = Flash

Manual Offset  
0 = Automatic  
1 = Offset A  
2 = Offset B  
3 = Offset C



INTERSECTION: Deer Spgs @ Mnt Meadow @ NCCP

| Row | Time  | Plan | Offset | Day of Week | Time  | Plan | Offset | Day of Week | Time  | Plan | Offset | Day of Week | Time  | Plan | Offset | Day of Week | Row |
|-----|-------|------|--------|-------------|-------|------|--------|-------------|-------|------|--------|-------------|-------|------|--------|-------------|-----|
| 0   | 00:00 | 0    | 0      |             | 14:00 | B    | 23456  |             | 00:00 | 0    | 0      |             | 00:00 | 0    | 0      |             | 0   |
| 1   | 00:00 | 0    | 0      |             | 18:00 | B    | 23456  |             | 00:00 | 0    | 0      |             | 00:00 | 0    | 0      |             | 1   |
| 2   | 00:00 | 0    | 0      |             | 06:00 | B    | 23456  |             | 00:00 | 0    | 0      |             | 00:00 | 0    | 0      |             | 2   |
| 3   | 00:00 | 0    | 0      |             | 08:30 | B    | 23456  |             | 00:00 | 0    | 0      |             | 00:00 | 0    | 0      |             | 3   |
| 4   | 00:00 | 0    | 0      |             | 00:00 | 0    |        |             | 00:00 | 0    | 0      |             | 00:00 | 0    | 0      |             | 4   |
| 5   | 00:00 | 0    | 0      |             | 00:00 | 0    |        |             | 00:00 | 0    | 0      |             | 00:00 | 0    | 0      |             | 5   |
| 6   | 00:00 | 0    | 0      |             | 00:00 | 0    |        |             | 00:00 | 0    | 0      |             | 00:00 | 0    | 0      |             | 6   |
| 7   | 00:00 | 0    | 0      |             | 00:00 | 0    |        |             | 00:00 | 0    | 0      |             | 00:00 | 0    | 0      |             | 7   |
| 8   | 00:00 | 0    | 0      |             | 00:00 | 0    |        |             | 00:00 | 0    | 0      |             | 00:00 | 0    | 0      |             | 8   |
| 9   | 00:00 | 0    | 0      |             | 00:00 | 0    |        |             | 00:00 | 0    | 0      |             | 00:00 | 0    | 0      |             | 9   |
| A   | 00:00 | 0    | 0      |             | 00:00 | 0    |        |             | 00:00 | 0    | 0      |             | 00:00 | 0    | 0      |             | A   |
| B   | 00:00 | 0    | 0      |             | 00:00 | 0    |        |             | 00:00 | 0    | 0      |             | 00:00 | 0    | 0      |             | B   |
| C   | 00:00 | 0    | 0      |             | 00:00 | 0    |        |             | 00:00 | 0    | 0      |             | 00:00 | 0    | 0      |             | C   |
| D   | 00:00 | 0    | 0      |             | 00:00 | 0    |        |             | 00:00 | 0    | 0      |             | 00:00 | 0    | 0      |             | D   |
| E   | 00:00 | 0    | 0      |             | 00:00 | 0    |        |             | 00:00 | 0    | 0      |             | 00:00 | 0    | 0      |             | E   |
| F   | 00:00 | 0    | 0      |             | 00:00 | 0    |        |             | 00:00 | 0    | 0      |             | 00:00 | 0    | 0      |             | F   |

**TOD Coordination**  
<9 Key with C+D+9=0>

**TOD Function**  
<7 Key>

<D Page>

**Holiday #1**  
**TOD Coordination**  
<9 Key with C+D+9=1>

**Holiday #2**  
**TOD Coordination**  
<9 Key with C+D+9=2>

**Holiday #3**  
**TOD Coordination**  
<9 Key with C+D+9=3>

**Plan Select**  
1 thru 9 = Coordination  
Plan 1 thru 9  
14 or E = Free  
15 or F = Flash  
**Offset Select**  
A = Offset A  
B = Offset B  
C = Offset C

**T.O.D. Functions**  
0 = Permitted Phases  
1 = Red Lock  
2 = Yellow Lock  
3 = Veh Min Recall  
4 = Ped Recall  
5 =  
6 = Rest In Walk  
7 = Red Rest  
8 = Double Entry  
9 = Veh Max Recall  
A = Veh Soft Recall  
B = Maximum 2  
C = Conditional Service  
D = Free Lag Phases  
E = Bit 1 - Local Override  
Bit 2 - Phase Bank 2  
Bit 3 - Phase Bank 3  
Bit 4 - Disable Detector  
OFF Monitor  
Bit 7 - Detector Count Monitor  
Bit 8 - Real Time Split Monitor  
F = Output Bits 1 thru 4

**Month Select**  
1 = January  
2 = February  
3 = March  
4 = April  
5 = May  
6 = June  
7 = July  
8 = August  
9 = September  
A = October  
B = November  
C = December

| Row |
|-----|
| A   |
| B   |
| C   |

| Day | Year | Month |
|-----|------|-------|
| 0   | 0    | 0     |
| 0   | 0    | 0     |
| 0   | 0    | 0     |

| Day of Week |
|-------------|
|             |
|             |
|             |

**Holiday Dates**  
<8 Key>

| Holiday # 1 Date |
|------------------|
| Holiday # 2 Date |
| Holiday # 3 Date |

| Row | 1   | 3   |
|-----|-----|-----|
| 0   | 0.0 | 0.0 |
| 1   | 0.0 | 0.0 |
| 2   | 0.0 | 0.0 |
| 3   | 0.0 | 0.0 |
| 4   | 0.0 | 0.0 |
| 5   | 0.0 | 0.0 |
| 6   | 0.0 | 0.0 |
| 7   | 0.0 | 0.0 |
| 8   | 0.0 | 0.0 |
| 9   | 0.0 | 0.0 |
| A   | 0.0 | 0.0 |
| B   | 0.0 | 0.0 |
| C   | 0.0 | 0.0 |
| D   | 0.0 | 0.0 |
| E   | --- | --- |
| F   | --- | --- |

| Detector Name | 332 Input File | Detector Number |
|---------------|----------------|-----------------|
|               | I-1            | 14              |
|               | I-2U           | 1               |
|               | I-2L           | 5               |
|               | I-3U           | 21              |
|               | I-3L           | 25              |
|               | I-4            | 9               |
|               | I-5            | 16              |
|               | I-6U           | 3               |
|               | I-6L           | 7               |
|               | I-7U           | 23              |
|               | I-7L           | 27              |
|               | I-8            | 11              |
|               | I-9U           | 18              |
|               | I-9L           | 20              |
| ---           | ---            | ---             |
| ---           | ---            | ---             |

| Row       | A   | B   | C   | D   |
|-----------|-----|-----|-----|-----|
| Overlap A | 0.0 | 0.0 | 0.0 | 0.0 |
| Overlap B | 0.0 | 0.0 | 0.0 | 0.0 |
| Overlap C | 0.0 | 0.0 | 0.0 | 0.0 |
| Overlap D | 0.0 | 0.0 | 0.0 | 0.0 |

**Overlap Timing** <F Page>

| C             | D         |
|---------------|-----------|
| Yellow Change | Red Clear |
| 0.0           | 0.0       |
| 0.0           | 0.0       |
| 0.0           | 0.0       |
| 0.0           | 0.0       |

| 0             |
|---------------|
| Load-Switch # |
| 0             |
| 0             |
| 0             |

&lt;D Page&gt;

| Row | Detector Numbers |    |    |    |    |    |    |    | E        |
|-----|------------------|----|----|----|----|----|----|----|----------|
| A   | 1                | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 12345678 |
| B   | 9                | 10 | 11 | 12 | -- | -- | -- | -- | 1234     |
| C   | 13               | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 12345678 |
| D   | --               | -- | -- | -- | 21 | 22 | 23 | 24 | 5678     |
| E   | --               | -- | -- | -- | -- | -- | -- | -- | 1234     |
| F   | --               | 25 | 26 | 27 | 28 | -- | -- | -- | 2345     |

Note: Initialized data is for all detectors to be active (ie, all flag bits set). A Detector which is "not flagged", will not be active as a Phase Detector, and WILL NOT call or extend its associated phase. It will still function as a System Detector.

**Active Detectors** <D Page>

| C             | D         |
|---------------|-----------|
| Yellow Change | Red Clear |
| 0.0           | 0.0       |
| 0.0           | 0.0       |
| 0.0           | 0.0       |
| 0.0           | 0.0       |

Note: Initialized data is for all detectors to be active (ie, all flag bits set). A Detector which is "not flagged", will not be active as a Phase Detector, and WILL NOT call or extend its associated phase. It will still function as a System Detector.

| Row   | 2   | 4   |
|-------|-----|-----|
| Delay | 0.0 | 0.0 |
| 1     | 0.0 | 4.7 |
| 2     | 0.0 | 0.0 |
| 3     | 0.0 | 0.0 |
| 4     | 0.0 | 0.0 |
| 5     | 0.0 | 0.0 |
| 6     | 0.0 | 0.0 |
| 7     | 0.0 | 0.0 |
| 8     | 0.0 | 5.0 |
| 9     | 0.0 | 0.0 |
| A     | 0.0 | 0.0 |
| B     | 0.0 | 0.0 |
| C     | 0.0 | 0.0 |
| D     | 0.0 | 0.0 |
| E     | --- | --- |
| F     | --- | --- |

| Detector Name | 332 Input File | Detector Number |
|---------------|----------------|-----------------|
|               | J-1            | 13              |
|               | J-2U           | 2               |
|               | J-2L           | 6               |
|               | J-3U           | 22              |
|               | J-3L           | 26              |
|               | J-4            | 10              |
|               | J-5            | 15              |
|               | J-6U           | 4               |
|               | J-6L           | 8               |
|               | J-7U           | 24              |
|               | J-7L           | 28              |
|               | J-8            | 12              |
|               | J-9U           | 17              |
|               | J-9L           | 19              |
| ---           | ---            | ---             |
| ---           | ---            | ---             |

**Detector Delay & Carryover** <D Page>

| Row             | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|-----------------|---|---|---|---|---|---|---|---|---|
| Detector Number | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| System Det. # 1 |   |   |   |   |   |   |   |   |   |
| System Det. # 2 |   |   |   |   |   |   |   |   |   |
| System Det. # 3 |   |   |   |   |   |   |   |   |   |
| System Det. # 4 |   |   |   |   |   |   |   |   |   |
| System Det. # 5 |   |   |   |   |   |   |   |   |   |
| System Det. # 6 |   |   |   |   |   |   |   |   |   |
| System Det. # 7 |   |   |   |   |   |   |   |   |   |
| System Det. # 8 |   |   |   |   |   |   |   |   |   |

**System Detectors** <D Page>

|                   |    |
|-------------------|----|
| Max ON (minutes)  | 5  |
| Max OFF (minutes) | 60 |

**Detector Failure Monitor**

|                    |     |
|--------------------|-----|
| Phase Number       | 0   |
| Time Before Yellow | 0.0 |

**Advance Warning Beacon - Sign 1**

|                    |     |
|--------------------|-----|
| Phase Number       | 0   |
| Time Before Yellow | 0.0 |

**Advance Warning Beacon - Sign 2**

|               |     |
|---------------|-----|
| Long Failure  | 0.0 |
| Short Failure | 0.0 |

**Power Cycle Correction** (Default = 0.5)

|                |   |
|----------------|---|
| Disable Parity | 0 |
|----------------|---|

**Dial-Up Telephone Communications**  
(If set to a non-zero value, parity will be disabled)

**INTERSECTION: Deer Spgs @ Mnt Meadow @ NCCP**

| Column Numbers ----> |                   | Phase |     |     |     |     |     |     |     |
|----------------------|-------------------|-------|-----|-----|-----|-----|-----|-----|-----|
|                      |                   | 1     | 2   | 3   | 4   | 5   | 6   | 7   | 8   |
| Row                  | Phase Names ----> |       |     |     |     |     |     |     |     |
| 0                    | Ped Walk          | 0     | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| 1                    | Ped FDW           | 0     | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| 2                    | Min Green         | 0     | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| 3                    | Type 3 Limit      | 0     | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| 4                    | Added Initial     | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5                    | Veh Extension     | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 6                    | Max Gap           | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 7                    | Min Gap           | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 8                    | Max Limit         | 0     | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| 9                    | Max Limit 2       | 0     | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| A                    | -----             | 0     | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| B                    | Call To Phase     | 0     | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| C                    | Reduce By         | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| D                    | Reduce Every      | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| E                    | Yellow Change     | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| F                    | Red Clear         | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

|                       |  |          |
|-----------------------|--|----------|
| Phase Timing - Bank 2 |  | <F Page> |
|-----------------------|--|----------|

**Phase Timing - Bank 2**

<F Page>

|                      |                   | Phase |     |     |     |     |     |     |     |
|----------------------|-------------------|-------|-----|-----|-----|-----|-----|-----|-----|
|                      |                   | 1     | 2   | 3   | 4   | 5   | 6   | 7   | 8   |
| Column Numbers ----> | Phase Names ----> |       |     |     |     |     |     |     |     |
|                      | Ped Walk          | 0     | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
|                      | Ped FDW           | 0     | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
|                      | Min Green         | 0     | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
|                      | Type 3 Limit      | 0     | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
|                      | Added Initial     | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
|                      | Veh Extension     | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
|                      | Max Gap           | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
|                      | Min Gap           | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
|                      | Max Limit         | 0     | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
|                      | Max Limit 2       | 0     | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
|                      | -----             | 0     | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
|                      | Call To Phase     | 0     | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
|                      | Reduce By         | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
|                      | Reduce Every      | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
|                      | Yellow Change     | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
|                      | Red Clear         | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Phase Timing - Bank 3

<F Page>

**Phase Timing - Bank 3**

<F Page>

| Row | Delay Only -->           |
|-----|--------------------------|
| 0   |                          |
| 1   |                          |
| 2   |                          |
| 3   |                          |
| 4   |                          |
| 5   |                          |
| 6   |                          |
| 7   |                          |
| 8   | Limited Service Int. --> |
| 9   |                          |
| A   |                          |
| B   |                          |
| C   |                          |
| D   |                          |
| E   |                          |
| F   |                          |

| 7    | 8     | 9    | A       | B         | C            | D             | E         | F      |
|------|-------|------|---------|-----------|--------------|---------------|-----------|--------|
| Time | Dwell | Hold | Advance | Force Off | Vehicle Call | Permit Phases | Ped Omnit | Output |
| 0    | ---   | ---  | ---     | ---       | ---          | ---           | ---       | ---    |
| 1    | 0     |      |         |           |              |               |           |        |
| 2    | 0     |      |         |           |              |               |           |        |
| 3    | 0     |      |         |           |              |               |           |        |
| 4    | 0     |      |         |           |              |               |           |        |
| 5    | 0     |      |         |           |              |               |           |        |
| 6    | 0     |      |         |           |              |               |           |        |
| 7    | 0     |      |         |           |              |               |           |        |
| 8    | 0     |      |         |           |              |               |           |        |
| 9    | 0     |      |         |           |              |               |           |        |
| A    | ---   |      |         |           |              |               |           |        |
| B    | 0     |      |         |           |              |               |           |        |
| C    | 0     |      |         |           |              |               |           |        |
| D    | 0     |      |         |           |              |               |           |        |
| E    | 0     |      |         |           |              |               |           |        |
| F    | 0     |      |         |           |              |               |           |        |

**Special Event Schedule**

<C Page with F+9+F=22>

<-- Limited Service Interval (Set Dwell = 255)

## **Appendix D** - LOS Calculation Worksheets – Existing Conditions

# HCM 6th Signalized Intersection Summary

## 1: I-15 SB Ramps & Deer Springs Rd

Existing Conditions  
AM Peak Hour

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |
| Traffic Volume (veh/h)       | 0                                                                                 | 300                                                                               | 123                                                                               | 165                                                                               | 416                                                                               | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 102                                                                                 | 2                                                                                   | 654                                                                                 |
| Future Volume (veh/h)        | 0                                                                                 | 300                                                                               | 123                                                                               | 165                                                                               | 416                                                                               | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 102                                                                                 | 2                                                                                   | 654                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1758                                                                              | 1758                                                                              | 1758                                                                              | 1758                                                                              | 1758                                                                              | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 1758                                                                                | 1758                                                                                | 1758                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 333                                                                               | 73                                                                                | 181                                                                               | 457                                                                               | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 110                                                                                 | 2                                                                                   | 37                                                                                  |
| Peak Hour Factor             | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              |                                                                                     |                                                                                     |                                                                                     | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 2                                                                                 | 377                                                                               | 320                                                                               | 893                                                                               | 1417                                                                              | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 140                                                                                 | 3                                                                                   | 99                                                                                  |
| Arrive On Green              | 0.00                                                                              | 0.21                                                                              | 0.21                                                                              | 0.53                                                                              | 0.81                                                                              | 0.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 0.08                                                                                | 0.08                                                                                | 0.08                                                                                |
| Sat Flow, veh/h              | 1674                                                                              | 1758                                                                              | 1490                                                                              | 1674                                                                              | 1758                                                                              | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 1646                                                                                | 30                                                                                  | 2622                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 333                                                                               | 73                                                                                | 181                                                                               | 457                                                                               | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 112                                                                                 | 0                                                                                   | 37                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1674                                                                              | 1758                                                                              | 1490                                                                              | 1674                                                                              | 1758                                                                              | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 1676                                                                                | 0                                                                                   | 1311                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 18.4                                                                              | 4.0                                                                               | 5.7                                                                               | 6.8                                                                               | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 6.6                                                                                 | 0.0                                                                                 | 6.1                                                                                 |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 18.4                                                                              | 4.0                                                                               | 5.7                                                                               | 6.8                                                                               | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 6.6                                                                                 | 0.0                                                                                 | 6.1                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 0.98                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 2                                                                                 | 377                                                                               | 320                                                                               | 893                                                                               | 1417                                                                              | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 142                                                                                 | 0                                                                                   | 99                                                                                  |
| V/C Ratio(X)                 | 0.00                                                                              | 0.88                                                                              | 0.23                                                                              | 0.20                                                                              | 0.32                                                                              | 0.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 0.79                                                                                | 0.00                                                                                | 0.37                                                                                |
| Avail Cap(c_a), veh/h        | 335                                                                               | 780                                                                               | 661                                                                               | 893                                                                               | 1417                                                                              | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 168                                                                                 | 0                                                                                   | 139                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.41                                                                              | 0.41                                                                              | 0.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 38.0                                                                              | 32.4                                                                              | 12.2                                                                              | 2.5                                                                               | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 44.9                                                                                | 0.0                                                                                 | 375.1                                                                               |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 24.5                                                                              | 1.7                                                                               | 0.0                                                                               | 0.2                                                                               | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 15.8                                                                                | 0.0                                                                                 | 0.9                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 10.0                                                                              | 1.5                                                                               | 1.9                                                                               | 1.1                                                                               | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 3.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 62.5                                                                              | 34.1                                                                              | 12.2                                                                              | 2.8                                                                               | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 60.7                                                                                | 0.0                                                                                 | 376.0                                                                               |
| LnGrp LOS                    | A                                                                                 | E                                                                                 | C                                                                                 | B                                                                                 | A                                                                                 | A                                                                                 |                                                                                     |                                                                                     |                                                                                     | E                                                                                   | A                                                                                   | F                                                                                   |
| Approach Vol, veh/h          | 406                                                                               |                                                                                   |                                                                                   | 638                                                                               |                                                                                   |                                                                                   | 149                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 57.4                                                                              |                                                                                   |                                                                                   | 5.5                                                                               |                                                                                   |                                                                                   | 139.0                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 | E                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | F                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 59.2                                                                              | 27.3                                                                              |                                                                                   | 13.6                                                                              | 0.0                                                                               | 86.4                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.8                                                                               | * 5.8                                                                             |                                                                                   | 5.1                                                                               | * 4.7                                                                             | 5.8                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 30.0                                                                              | * 44                                                                              |                                                                                   | 10.0                                                                              | * 20                                                                              | 54.4                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 7.7                                                                               | 20.4                                                                              |                                                                                   | 8.6                                                                               | 0.0                                                                               | 8.8                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.2                                                                               | 1.1                                                                               |                                                                                   | 0.1                                                                               | 0.0                                                                               | 1.5                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   | 39.8                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary 2: I-15 NB Ramps & Deer Springs Rd

Existing Conditions  
AM Peak Hour



| Movement                     | EBL  | EBT  | EBR  | WBL  | WBT   | WBR  | NBL  | NBT  | NBR  | SBL | SBT | SBR |
|------------------------------|------|------|------|------|-------|------|------|------|------|-----|-----|-----|
| Lane Configurations          |      |      |      |      |       |      |      |      |      |     |     |     |
| Traffic Volume (veh/h)       | 198  | 204  | 0    | 0    | 447   | 81   | 134  | 0    | 119  | 0   | 0   | 0   |
| Future Volume (veh/h)        | 198  | 204  | 0    | 0    | 447   | 81   | 134  | 0    | 119  | 0   | 0   | 0   |
| Initial Q (Qb), veh          | 0    | 0    | 0    | 0    | 0     | 0    | 0    | 0    | 0    |     |     |     |
| Ped-Bike Adj(A_pbT)          | 1.00 |      | 1.00 | 1.00 |       | 1.00 | 1.00 |      | 1.00 |     |     |     |
| Parking Bus, Adj             | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 |     |     |     |
| Work Zone On Approach        | No   |      |      |      | No    |      |      | No   |      |     |     |     |
| Adj Sat Flow, veh/h/ln       | 1758 | 1758 | 0    | 0    | 1758  | 1758 | 1758 | 1758 | 1758 |     |     |     |
| Adj Flow Rate, veh/h         | 241  | 249  | 0    | 0    | 497   | 28   | 151  | 0    | 0    |     |     |     |
| Peak Hour Factor             | 0.82 | 0.82 | 0.82 | 0.90 | 0.90  | 0.90 | 0.89 | 0.89 | 0.89 |     |     |     |
| Percent Heavy Veh, %         | 3    | 3    | 0    | 0    | 3     | 3    | 3    | 3    | 3    |     |     |     |
| Cap, veh/h                   | 326  | 1131 | 0    | 0    | 602   | 510  | 207  | 0    | 184  |     |     |     |
| Arrive On Green              | 0.19 | 0.64 | 0.00 | 0.00 | 0.34  | 0.34 | 0.12 | 0.00 | 0.00 |     |     |     |
| Sat Flow, veh/h              | 1674 | 1758 | 0    | 0    | 1758  | 1490 | 1674 | 0    | 1490 |     |     |     |
| Grp Volume(v), veh/h         | 241  | 249  | 0    | 0    | 497   | 28   | 151  | 0    | 0    |     |     |     |
| Grp Sat Flow(s),veh/h/ln     | 1674 | 1758 | 0    | 0    | 1758  | 1490 | 1674 | 0    | 1490 |     |     |     |
| Q Serve(g_s), s              | 6.0  | 2.6  | 0.0  | 0.0  | 11.5  | 0.6  | 3.8  | 0.0  | 0.0  |     |     |     |
| Cycle Q Clear(g_c), s        | 6.0  | 2.6  | 0.0  | 0.0  | 11.5  | 0.6  | 3.8  | 0.0  | 0.0  |     |     |     |
| Prop In Lane                 | 1.00 |      | 0.00 | 0.00 |       | 1.00 | 1.00 |      | 1.00 |     |     |     |
| Lane Grp Cap(c), veh/h       | 326  | 1131 | 0    | 0    | 602   | 510  | 207  | 0    | 184  |     |     |     |
| V/C Ratio(X)                 | 0.74 | 0.22 | 0.00 | 0.00 | 0.83  | 0.05 | 0.73 | 0.00 | 0.00 |     |     |     |
| Avail Cap(c_a), veh/h        | 1335 | 3146 | 0    | 0    | 1557  | 1319 | 775  | 0    | 690  |     |     |     |
| HCM Platoon Ratio            | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 |     |     |     |
| Upstream Filter(I)           | 1.00 | 1.00 | 0.00 | 0.00 | 1.00  | 1.00 | 1.00 | 0.00 | 0.00 |     |     |     |
| Uniform Delay (d), s/veh     | 16.8 | 3.3  | 0.0  | 0.0  | 13.3  | 9.8  | 18.7 | 0.0  | 0.0  |     |     |     |
| Incr Delay (d2), s/veh       | 4.6  | 0.0  | 0.0  | 0.0  | 1.1   | 0.0  | 4.9  | 0.0  | 0.0  |     |     |     |
| Initial Q Delay(d3),s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  |     |     |     |
| %ile BackOfQ(50%),veh/ln     | 2.1  | 0.2  | 0.0  | 0.0  | 3.2   | 0.1  | 1.6  | 0.0  | 0.0  |     |     |     |
| Unsig. Movement Delay, s/veh |      |      |      |      |       |      |      |      |      |     |     |     |
| LnGrp Delay(d),s/veh         | 21.4 | 3.3  | 0.0  | 0.0  | 14.5  | 9.8  | 23.6 | 0.0  | 0.0  |     |     |     |
| LnGrp LOS                    | C    | A    | A    | A    | B     | A    | C    | A    | A    |     |     |     |
| Approach Vol, veh/h          | 490  |      |      |      | 525   |      |      | 151  |      |     |     |     |
| Approach Delay, s/veh        | 12.2 |      |      |      | 14.2  |      |      | 23.6 |      |     |     |     |
| Approach LOS                 | B    |      |      |      | B     |      |      | C    |      |     |     |     |
| Timer - Assigned Phs         | 2    |      |      |      | 5     |      | 6    | 8    |      |     |     |     |
| Phs Duration (G+Y+Rc), s     | 34.3 |      |      |      | 13.3  |      | 21.0 | 10.0 |      |     |     |     |
| Change Period (Y+Rc), s      | 5.8  |      |      |      | * 4.7 |      | 5.8  | 4.5  |      |     |     |     |
| Max Green Setting (Gmax), s  | 79.2 |      |      |      | * 35  |      | 39.2 | 20.5 |      |     |     |     |
| Max Q Clear Time (g_c+I1), s | 4.6  |      |      |      | 8.0   |      | 13.5 | 5.8  |      |     |     |     |
| Green Ext Time (p_c), s      | 0.8  |      |      |      | 1.1   |      | 1.7  | 0.6  |      |     |     |     |

## Intersection Summary

|                    |      |
|--------------------|------|
| HCM 6th Ctrl Delay | 14.6 |
| HCM 6th LOS        | B    |

## Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM 6th Signalized Intersection Summary

Existing Conditions

3: N Centre City Pkwy/Champagne Blvd & Deer Springs Rd/Mountain Meadow Rd AM Peak Hour



| Movement                      | EBL  | EBT  | EBR  | WBL   | WBT  | WBR   | NBL  | NBT  | NBR  | SBL   | SBT  | SBR  |
|-------------------------------|------|------|------|-------|------|-------|------|------|------|-------|------|------|
| Lane Configurations           |      |      |      |       |      |       |      |      |      |       |      |      |
| Traffic Volume (veh/h)        | 67   | 75   | 181  | 264   | 225  | 8     | 89   | 44   | 41   | 16    | 456  | 214  |
| Future Volume (veh/h)         | 67   | 75   | 181  | 264   | 225  | 8     | 89   | 44   | 41   | 16    | 456  | 214  |
| Initial Q (Qb), veh           | 0    | 0    | 0    | 0     | 0    | 0     | 0    | 0    | 0    | 0     | 0    | 0    |
| Ped-Bike Adj(A_pbT)           | 1.00 |      | 1.00 | 1.00  |      | 1.00  | 1.00 |      | 0.99 | 1.00  |      | 1.00 |
| Parking Bus, Adj              | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 |
| Work Zone On Approach         | No   |      |      | No    |      |       | No   |      |      | No    |      |      |
| Adj Sat Flow, veh/h/ln        | 1758 | 1758 | 1758 | 1758  | 1758 | 1758  | 1758 | 1758 | 1758 | 1758  | 1758 | 1758 |
| Adj Flow Rate, veh/h          | 82   | 91   | 5    | 322   | 274  | 8     | 105  | 52   | 39   | 17    | 490  | 230  |
| Peak Hour Factor              | 0.82 | 0.82 | 0.82 | 0.82  | 0.82 | 0.82  | 0.85 | 0.85 | 0.85 | 0.93  | 0.93 | 0.93 |
| Percent Heavy Veh, %          | 3    | 3    | 3    | 3     | 3    | 3     | 3    | 3    | 3    | 3     | 3    | 3    |
| Cap, veh/h                    | 369  | 639  | 35   | 226   | 339  | 10    | 210  | 104  | 78   | 14    | 404  | 354  |
| Arrive On Green               | 0.22 | 0.20 | 0.20 | 0.13  | 0.10 | 0.10  | 0.24 | 0.24 | 0.24 | 0.24  | 0.24 | 0.24 |
| Sat Flow, veh/h               | 1674 | 3221 | 176  | 1674  | 3314 | 97    | 884  | 438  | 328  | 59    | 1696 | 1490 |
| Grp Volume(v), veh/h          | 82   | 47   | 49   | 322   | 138  | 144   | 196  | 0    | 0    | 507   | 0    | 230  |
| Grp Sat Flow(s), veh/h/ln     | 1674 | 1670 | 1726 | 1674  | 1670 | 1741  | 1650 | 0    | 0    | 1755  | 0    | 1490 |
| Q Serve(g_s), s               | 5.1  | 2.9  | 3.0  | 17.0  | 10.2 | 10.2  | 13.0 | 0.0  | 0.0  | 30.0  | 0.0  | 17.5 |
| Cycle Q Clear(g_c), s         | 5.1  | 2.9  | 3.0  | 17.0  | 10.2 | 10.2  | 13.0 | 0.0  | 0.0  | 30.0  | 0.0  | 17.5 |
| Prop In Lane                  | 1.00 |      | 0.10 | 1.00  |      | 0.06  | 0.54 |      | 0.20 | 0.03  |      | 1.00 |
| Lane Grp Cap(c), veh/h        | 369  | 331  | 342  | 226   | 171  | 178   | 392  | 0    | 0    | 418   | 0    | 354  |
| V/C Ratio(X)                  | 0.22 | 0.14 | 0.14 | 1.43  | 0.81 | 0.81  | 0.50 | 0.00 | 0.00 | 1.21  | 0.00 | 0.65 |
| Avail Cap(c_a), veh/h         | 398  | 503  | 520  | 226   | 331  | 345   | 458  | 0    | 0    | 418   | 0    | 354  |
| HCM Platoon Ratio             | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 |
| Upstream Filter(I)            | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00  | 1.00 | 0.00 | 0.00 | 1.00  | 0.00 | 1.00 |
| Uniform Delay (d), s/veh      | 40.3 | 41.7 | 41.7 | 54.5  | 55.4 | 55.4  | 41.6 | 0.0  | 0.0  | 48.1  | 0.0  | 43.3 |
| Incr Delay (d2), s/veh        | 0.1  | 0.1  | 0.1  | 215.7 | 3.4  | 3.4   | 0.4  | 0.0  | 0.0  | 116.6 | 0.0  | 3.3  |
| Initial Q Delay(d3),s/veh     | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  |
| %ile BackOfQ(50%),veh/ln      | 2.0  | 1.2  | 1.2  | 20.4  | 4.3  | 4.5   | 5.1  | 0.0  | 0.0  | 26.0  | 0.0  | 6.5  |
| Unsig. Movement Delay, s/veh  |      |      |      |       |      |       |      |      |      |       |      |      |
| LnGrp Delay(d),s/veh          | 40.4 | 41.8 | 41.8 | 270.3 | 58.8 | 58.8  | 41.9 | 0.0  | 0.0  | 164.7 | 0.0  | 46.6 |
| LnGrp LOS                     | D    | D    | D    | F     | E    | E     | D    | A    | A    | F     | A    | D    |
| Approach Vol, veh/h           | 178  |      |      | 604   |      |       | 196  |      |      | 737   |      |      |
| Approach Delay, s/veh         | 41.1 |      |      | 171.5 |      |       | 41.9 |      |      | 127.8 |      |      |
| Approach LOS                  | D    |      |      | F     |      |       | D    |      |      | F     |      |      |
| Timer - Assigned Phs          | 1    | 2    |      | 4     | 5    | 6     |      | 8    |      |       |      |      |
| Phs Duration (G+Y+Rc), s      | 31.9 | 31.2 |      | 36.5  | 34.0 | 19.1  |      | 36.5 |      |       |      |      |
| Change Period (Y+Rc), s       | 4.9  | 6.2  |      | 6.5   | 6.2  | * 6.2 |      | 6.5  |      |       |      |      |
| Max Green Setting (Gmax), s   | 38.0 | 38.0 |      | 30.0  | 30.0 | * 25  |      | 35.0 |      |       |      |      |
| Max Q Clear Time (g_c+1/9), s | 5.0  | 5.0  |      | 32.0  | 7.1  | 12.2  |      | 15.0 |      |       |      |      |
| Green Ext Time (p_c), s       | 0.0  | 0.3  |      | 0.0   | 0.1  | 0.7   |      | 0.5  |      |       |      |      |

## Intersection Summary

HCM 6th Ctrl Delay 124.4

HCM 6th LOS F

## Notes

User approved pedestrian interval to be less than phase max green.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC  
4: Tierra Libertia Rd & N Centre City Pkwy

Existing Conditions  
AM Peak Hour

| Intersection             |                                                                                   |       |                                                                                   |       |        |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-------|--------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 0.4                                                                               |       |                                                                                   |       |        |                                                                                   |
| Movement                 | WBL                                                                               | WBR   | NBT                                                                               | NBR   | SBL    | SBT                                                                               |
| Lane Configurations      |  |       |  |       |        |  |
| Traffic Vol, veh/h       | 13                                                                                | 5     | 155                                                                               | 2     | 2      | 864                                                                               |
| Future Vol, veh/h        | 13                                                                                | 5     | 155                                                                               | 2     | 2      | 864                                                                               |
| Conflicting Peds, #/hr   | 0                                                                                 | 0     | 0                                                                                 | 1     | 0      | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop  | Free                                                                              | Free  | Free   | Free                                                                              |
| RT Channelized           | -                                                                                 | None  | -                                                                                 | None  | -      | None                                                                              |
| Storage Length           | 0                                                                                 | -     | -                                                                                 | -     | -      | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -     | 0                                                                                 | -     | -      | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -     | 0                                                                                 | -     | -      | 0                                                                                 |
| Peak Hour Factor         | 75                                                                                | 75    | 63                                                                                | 63    | 93     | 93                                                                                |
| Heavy Vehicles, %        | 3                                                                                 | 3     | 3                                                                                 | 3     | 3      | 3                                                                                 |
| Mvmt Flow                | 17                                                                                | 7     | 246                                                                               | 3     | 2      | 929                                                                               |
|                          |                                                                                   |       |                                                                                   |       |        |                                                                                   |
| Major/Minor              | Minor1                                                                            |       | Major1                                                                            |       | Major2 |                                                                                   |
| Conflicting Flow All     | 1182                                                                              | 249   | 0                                                                                 | 0     | 250    | 0                                                                                 |
| Stage 1                  | 249                                                                               | -     | -                                                                                 | -     | -      | -                                                                                 |
| Stage 2                  | 933                                                                               | -     | -                                                                                 | -     | -      | -                                                                                 |
| Critical Hdwy            | 6.43                                                                              | 6.23  | -                                                                                 | -     | 4.13   | -                                                                                 |
| Critical Hdwy Stg 1      | 5.43                                                                              | -     | -                                                                                 | -     | -      | -                                                                                 |
| Critical Hdwy Stg 2      | 5.43                                                                              | -     | -                                                                                 | -     | -      | -                                                                                 |
| Follow-up Hdwy           | 3.527                                                                             | 3.327 | -                                                                                 | -     | 2.227  | -                                                                                 |
| Pot Cap-1 Maneuver       | 209                                                                               | 787   | -                                                                                 | -     | 1310   | -                                                                                 |
| Stage 1                  | 790                                                                               | -     | -                                                                                 | -     | -      | -                                                                                 |
| Stage 2                  | 381                                                                               | -     | -                                                                                 | -     | -      | -                                                                                 |
| Platoon blocked, %       |                                                                                   |       | -                                                                                 | -     |        | -                                                                                 |
| Mov Cap-1 Maneuver       | 208                                                                               | 786   | -                                                                                 | -     | 1309   | -                                                                                 |
| Mov Cap-2 Maneuver       | 208                                                                               | -     | -                                                                                 | -     | -      | -                                                                                 |
| Stage 1                  | 789                                                                               | -     | -                                                                                 | -     | -      | -                                                                                 |
| Stage 2                  | 380                                                                               | -     | -                                                                                 | -     | -      | -                                                                                 |
|                          |                                                                                   |       |                                                                                   |       |        |                                                                                   |
|                          |                                                                                   |       |                                                                                   |       |        |                                                                                   |
| Approach                 | WB                                                                                |       | NB                                                                                |       | SB     |                                                                                   |
| HCM Control Delay, s     | 20.2                                                                              |       | 0                                                                                 |       | 0      |                                                                                   |
| HCM LOS                  | C                                                                                 |       |                                                                                   |       |        |                                                                                   |
|                          |                                                                                   |       |                                                                                   |       |        |                                                                                   |
|                          |                                                                                   |       |                                                                                   |       |        |                                                                                   |
| Minor Lane/Major Mvmt    |                                                                                   | NBT   | NBRWBLn1                                                                          | SBL   | SBT    |                                                                                   |
| Capacity (veh/h)         |                                                                                   | -     | -                                                                                 | 261   | 1309   | -                                                                                 |
| HCM Lane V/C Ratio       |                                                                                   | -     | -                                                                                 | 0.092 | 0.002  | -                                                                                 |
| HCM Control Delay (s)    |                                                                                   | -     | -                                                                                 | 20.2  | 7.8    | 0                                                                                 |
| HCM Lane LOS             |                                                                                   | -     | -                                                                                 | C     | A      | A                                                                                 |
| HCM 95th %tile Q(veh)    |                                                                                   | -     | -                                                                                 | 0.3   | 0      | -                                                                                 |

HCM 6th TWSC  
5: N Centre City Pkwy & Jesmond Dene Rd

Existing Conditions  
AM Peak Hour

| Intersection             |                                                                                   |          |                                                                                   |        |                                                                                   |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 1.5                                                                               |          |                                                                                   |        |                                                                                   |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR    | SBL                                                                               | SBT                                                                               |
| Lane Configurations      |  |          |  |        |  |  |
| Traffic Vol, veh/h       | 13                                                                                | 69       | 88                                                                                | 6      | 79                                                                                | 798                                                                               |
| Future Vol, veh/h        | 13                                                                                | 69       | 88                                                                                | 6      | 79                                                                                | 798                                                                               |
| Conflicting Peds, #/hr   | 0                                                                                 | 0        | 0                                                                                 | 0      | 0                                                                                 | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free   | Free                                                                              | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None   | -                                                                                 | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -      | 95                                                                                | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -      | -                                                                                 | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -      | -                                                                                 | 0                                                                                 |
| Peak Hour Factor         | 92                                                                                | 92       | 92                                                                                | 92     | 92                                                                                | 92                                                                                |
| Heavy Vehicles, %        | 3                                                                                 | 3        | 3                                                                                 | 3      | 3                                                                                 | 3                                                                                 |
| Mvmt Flow                | 14                                                                                | 75       | 96                                                                                | 7      | 86                                                                                | 867                                                                               |
| Major/Minor              | Minor1                                                                            | Major1   |                                                                                   | Major2 |                                                                                   |                                                                                   |
| Conflicting Flow All     | 1139                                                                              | 100      | 0                                                                                 | 0      | 103                                                                               | 0                                                                                 |
| Stage 1                  | 100                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Stage 2                  | 1039                                                                              | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Critical Hdwy            | 6.43                                                                              | 6.23     | -                                                                                 | -      | 4.13                                                                              | -                                                                                 |
| Critical Hdwy Stg 1      | 5.43                                                                              | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Critical Hdwy Stg 2      | 5.43                                                                              | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Follow-up Hdwy           | 3.527                                                                             | 3.327    | -                                                                                 | -      | 2.227                                                                             | -                                                                                 |
| Pot Cap-1 Maneuver       | 222                                                                               | 953      | -                                                                                 | -      | 1483                                                                              | -                                                                                 |
| Stage 1                  | 921                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Stage 2                  | 339                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -      |                                                                                   | -                                                                                 |
| Mov Cap-1 Maneuver       | 209                                                                               | 953      | -                                                                                 | -      | 1483                                                                              | -                                                                                 |
| Mov Cap-2 Maneuver       | 209                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Stage 1                  | 921                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Stage 2                  | 319                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Approach                 | WB                                                                                | NB       |                                                                                   | SB     |                                                                                   |                                                                                   |
| HCM Control Delay, s     | 11.9                                                                              | 0        |                                                                                   | 0.7    |                                                                                   |                                                                                   |
| HCM LOS                  | B                                                                                 |          |                                                                                   |        |                                                                                   |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 |                                                                                   | SBL    | SBT                                                                               |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | - 609    |                                                                                   | 1483   | -                                                                                 |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | - 0.146  |                                                                                   | 0.058  | -                                                                                 |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | - 11.9   |                                                                                   | 7.6    | -                                                                                 |                                                                                   |
| HCM Lane LOS             | -                                                                                 | - B      |                                                                                   | A      | -                                                                                 |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | - 0.5    |                                                                                   | 0.2    | -                                                                                 |                                                                                   |

# HCM 6th Signalized Intersection Summary

## 1: I-15 SB Ramps & Deer Springs Rd

Existing Conditions  
PM Peak Hour

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |  |  |
| Traffic Volume (veh/h)       | 0                                                                                 | 870                                                                               | 223                                                                               | 152                                                                               | 362                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 58                                                                                  | 3                                                                                   | 358                                                                                 |
| Future Volume (veh/h)        | 0                                                                                 | 870                                                                               | 223                                                                               | 152                                                                               | 362                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 58                                                                                  | 3                                                                                   | 358                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1758                                                                              | 1758                                                                              | 1758                                                                              | 1758                                                                              | 1758                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1758                                                                                | 1758                                                                                | 1758                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 897                                                                               | 207                                                                               | 162                                                                               | 385                                                                               | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 64                                                                                  | 3                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 2                                                                                 | 868                                                                               | 736                                                                               | 472                                                                               | 1466                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 91                                                                                  | 4                                                                                   | 26                                                                                  |
| Arrive On Green              | 0.00                                                                              | 0.49                                                                              | 0.49                                                                              | 0.38                                                                              | 1.00                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.06                                                                                | 0.06                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 1674                                                                              | 1758                                                                              | 1490                                                                              | 1674                                                                              | 1758                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1603                                                                                | 75                                                                                  | 2622                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 897                                                                               | 207                                                                               | 162                                                                               | 385                                                                               | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 67                                                                                  | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1674                                                                              | 1758                                                                              | 1490                                                                              | 1674                                                                              | 1758                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1678                                                                                | 0                                                                                   | 1311                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 49.4                                                                              | 8.2                                                                               | 6.9                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 3.9                                                                                 | 0.0                                                                                 | 4.7                                                                                 |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 49.4                                                                              | 8.2                                                                               | 6.9                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 3.9                                                                                 | 0.0                                                                                 | 4.7                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.96                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 2                                                                                 | 868                                                                               | 736                                                                               | 472                                                                               | 1466                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 96                                                                                  | 0                                                                                   | 26                                                                                  |
| V/C Ratio(X)                 | 0.00                                                                              | 1.03                                                                              | 0.28                                                                              | 0.34                                                                              | 0.26                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.70                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 167                                                                               | 868                                                                               | 736                                                                               | 472                                                                               | 1466                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 168                                                                                 | 0                                                                                   | 139                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.33                                                                              | 1.33                                                                              | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.53                                                                              | 0.53                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 25.3                                                                              | 14.9                                                                              | 24.6                                                                              | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 46.3                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 39.3                                                                              | 1.0                                                                               | 0.1                                                                               | 0.2                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 3.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 27.1                                                                              | 2.7                                                                               | 2.5                                                                               | 0.1                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 1.7                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 64.6                                                                              | 15.8                                                                              | 24.7                                                                              | 0.2                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 49.8                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | A                                                                                 | F                                                                                 | B                                                                                 | C                                                                                 | A                                                                                 | A                                                                                 |                                                                                    |                                                                                     |                                                                                     | D                                                                                   | A                                                                                   | A                                                                                   |
| Approach Vol, veh/h          | 1104                                                                              |                                                                                   |                                                                                   | 547                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 67                                                                                  |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 55.5                                                                              |                                                                                   |                                                                                   | 7.5                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 49.8                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | E                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 34.0                                                                              | 55.2                                                                              |                                                                                   | 10.8                                                                              | 0.0                                                                               | 89.2                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.8                                                                               | * 5.8                                                                             |                                                                                   | 5.1                                                                               | * 4.7                                                                             | 5.8                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 25.0                                                                              | * 49                                                                              |                                                                                   | 10.0                                                                              | * 10                                                                              | 64.4                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 8.9                                                                               | 51.4                                                                              |                                                                                   | 6.7                                                                               | 0.0                                                                               | 2.0                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.2                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 1.3                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

### Intersection Summary

|                    |      |
|--------------------|------|
| HCM 6th Ctrl Delay | 40.0 |
| HCM 6th LOS        | D    |

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM 6th Signalized Intersection Summary 2: I-15 NB Ramps & Deer Springs Rd

Existing Conditions  
PM Peak Hour



| Movement                     | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL   | NBT  | NBR  | SBL | SBT | SBR |
|------------------------------|------|------|------|------|------|------|-------|------|------|-----|-----|-----|
| Lane Configurations          |      |      |      |      |      |      |       |      |      |     |     |     |
| Traffic Volume (veh/h)       | 634  | 294  | 0    | 0    | 285  | 116  | 229   | 3    | 349  | 0   | 0   | 0   |
| Future Volume (veh/h)        | 634  | 294  | 0    | 0    | 285  | 116  | 229   | 3    | 349  | 0   | 0   | 0   |
| Initial Q (Qb), veh          | 0    | 0    | 0    | 0    | 0    | 0    | 0     | 0    | 0    |     |     |     |
| Ped-Bike Adj(A_pbT)          | 1.00 |      | 1.00 | 1.00 |      | 1.00 | 1.00  |      | 1.00 |     |     |     |
| Parking Bus, Adj             | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 |     |     |     |
| Work Zone On Approach        | No   |      |      |      | No   |      |       | No   |      |     |     |     |
| Adj Sat Flow, veh/h/ln       | 1758 | 1758 | 0    | 0    | 1758 | 1758 | 1758  | 1758 | 1758 |     |     |     |
| Adj Flow Rate, veh/h         | 689  | 320  | 0    | 0    | 306  | 77   | 244   | 3    | 42   |     |     |     |
| Peak Hour Factor             | 0.92 | 0.92 | 0.92 | 0.93 | 0.93 | 0.93 | 0.94  | 0.94 | 0.94 |     |     |     |
| Percent Heavy Veh, %         | 3    | 3    | 0    | 0    | 3    | 3    | 3     | 3    | 3    |     |     |     |
| Cap, veh/h                   | 793  | 1276 | 0    | 0    | 341  | 289  | 283   | 3    | 255  |     |     |     |
| Arrive On Green              | 0.47 | 0.73 | 0.00 | 0.00 | 0.19 | 0.19 | 0.17  | 0.17 | 0.17 |     |     |     |
| Sat Flow, veh/h              | 1674 | 1758 | 0    | 0    | 1758 | 1490 | 1655  | 20   | 1490 |     |     |     |
| Grp Volume(v), veh/h         | 689  | 320  | 0    | 0    | 306  | 77   | 247   | 0    | 42   |     |     |     |
| Grp Sat Flow(s),veh/h/ln     | 1674 | 1758 | 0    | 0    | 1758 | 1490 | 1675  | 0    | 1490 |     |     |     |
| Q Serve(g_s), s              | 36.8 | 6.1  | 0.0  | 0.0  | 17.0 | 4.4  | 14.3  | 0.0  | 2.4  |     |     |     |
| Cycle Q Clear(g_c), s        | 36.8 | 6.1  | 0.0  | 0.0  | 17.0 | 4.4  | 14.3  | 0.0  | 2.4  |     |     |     |
| Prop In Lane                 | 1.00 |      | 0.00 | 0.00 |      | 1.00 | 0.99  |      | 1.00 |     |     |     |
| Lane Grp Cap(c), veh/h       | 793  | 1276 | 0    | 0    | 341  | 289  | 287   | 0    | 255  |     |     |     |
| V/C Ratio(X)                 | 0.87 | 0.25 | 0.00 | 0.00 | 0.90 | 0.27 | 0.86  | 0.00 | 0.16 |     |     |     |
| Avail Cap(c_a), veh/h        | 793  | 1276 | 0    | 0    | 394  | 334  | 379   | 0    | 337  |     |     |     |
| HCM Platoon Ratio            | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 |     |     |     |
| Upstream Filter(I)           | 0.41 | 0.41 | 0.00 | 0.00 | 0.95 | 0.95 | 1.00  | 0.00 | 1.00 |     |     |     |
| Uniform Delay (d), s/veh     | 23.5 | 4.6  | 0.0  | 0.0  | 39.3 | 34.3 | 40.3  | 0.0  | 35.3 |     |     |     |
| Incr Delay (d2), s/veh       | 4.7  | 0.2  | 0.0  | 0.0  | 27.6 | 2.1  | 14.4  | 0.0  | 0.3  |     |     |     |
| Initial Q Delay(d3),s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  |     |     |     |
| %ile BackOfQ(50%),veh/ft     | 3.7  | 1.6  | 0.0  | 0.0  | 9.5  | 1.7  | 7.0   | 0.0  | 0.9  |     |     |     |
| Unsig. Movement Delay, s/veh |      |      |      |      |      |      |       |      |      |     |     |     |
| LnGrp Delay(d),s/veh         | 28.2 | 4.8  | 0.0  | 0.0  | 67.0 | 36.4 | 54.7  | 0.0  | 35.6 |     |     |     |
| LnGrp LOS                    | C    | A    | A    | A    | E    | D    | D     | A    | D    |     |     |     |
| Approach Vol, veh/h          | 1009 |      |      |      | 383  |      |       | 289  |      |     |     |     |
| Approach Delay, s/veh        | 20.8 |      |      |      | 60.8 |      |       | 51.9 |      |     |     |     |
| Approach LOS                 | C    |      |      |      | E    |      |       | D    |      |     |     |     |
| Timer - Assigned Phs         | 2    |      |      |      | 5    |      | 6     | 8    |      |     |     |     |
| Phs Duration (G+Y+Rc), s     | 78.4 |      |      |      | 53.2 |      | 25.2  | 21.6 |      |     |     |     |
| Change Period (Y+Rc), s      | 5.8  |      |      |      | 5.8  |      | * 5.8 | 4.5  |      |     |     |     |
| Max Green Setting (Gmax), s  | 67.1 |      |      |      | 40.0 |      | * 22  | 22.6 |      |     |     |     |
| Max Q Clear Time (g_c+I1), s | 8.1  |      |      |      | 38.8 |      | 19.0  | 16.3 |      |     |     |     |
| Green Ext Time (p_c), s      | 1.0  |      |      |      | 0.5  |      | 0.4   | 0.8  |      |     |     |     |

## Intersection Summary

|                    |      |
|--------------------|------|
| HCM 6th Ctrl Delay | 35.2 |
| HCM 6th LOS        | D    |

## Notes

User approved pedestrian interval to be less than phase max green.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM 6th Signalized Intersection Summary

Existing Conditions

3: N Centre City Pkwy/Champagne Blvd & Deer Springs Rd/Mountain Meadow Rd PM Peak Hour



| Movement                     | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL   | NBT  | NBR  | SBL  | SBT  | SBR  |
|------------------------------|------|------|------|------|------|------|-------|------|------|------|------|------|
| Lane Configurations          |      |      |      |      |      |      |       |      |      |      |      |      |
| Traffic Volume (veh/h)       | 242  | 224  | 177  | 74   | 148  | 16   | 154   | 181  | 135  | 19   | 118  | 99   |
| Future Volume (veh/h)        | 242  | 224  | 177  | 74   | 148  | 16   | 154   | 181  | 135  | 19   | 118  | 99   |
| Initial Q (Qb), veh          | 0    | 0    | 0    | 0    | 0    | 0    | 0     | 0    | 0    | 0    | 0    | 0    |
| Ped-Bike Adj(A_pbT)          | 1.00 |      | 1.00 | 1.00 |      | 1.00 | 1.00  |      | 0.99 | 1.00 |      | 1.00 |
| Parking Bus, Adj             | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach        | No   |      |      | No   |      |      | No    |      |      | No   |      |      |
| Adj Sat Flow, veh/h/ln       | 1758 | 1758 | 1758 | 1758 | 1758 | 1758 | 1758  | 1758 | 1758 | 1758 | 1758 | 1758 |
| Adj Flow Rate, veh/h         | 275  | 255  | 76   | 80   | 159  | 11   | 179   | 210  | 145  | 20   | 122  | 21   |
| Peak Hour Factor             | 0.88 | 0.88 | 0.88 | 0.93 | 0.93 | 0.93 | 0.86  | 0.86 | 0.86 | 0.97 | 0.97 | 0.97 |
| Percent Heavy Veh, %         | 3    | 3    | 3    | 3    | 3    | 3    | 3     | 3    | 3    | 3    | 3    | 3    |
| Cap, veh/h                   | 299  | 486  | 142  | 217  | 450  | 31   | 147   | 173  | 119  | 56   | 343  | 341  |
| Arrive On Green              | 0.18 | 0.19 | 0.19 | 0.13 | 0.14 | 0.14 | 0.27  | 0.27 | 0.27 | 0.23 | 0.23 | 0.23 |
| Sat Flow, veh/h              | 1674 | 2550 | 744  | 1674 | 3171 | 218  | 551   | 646  | 446  | 246  | 1500 | 1490 |
| Grp Volume(v), veh/h         | 275  | 165  | 166  | 80   | 83   | 87   | 534   | 0    | 0    | 142  | 0    | 21   |
| Grp Sat Flow(s),veh/h/ln     | 1674 | 1670 | 1624 | 1674 | 1670 | 1719 | 1643  | 0    | 0    | 1746 | 0    | 1490 |
| Q Serve(g_s), s              | 21.2 | 11.6 | 12.1 | 5.7  | 5.9  | 6.0  | 35.0  | 0.0  | 0.0  | 9.0  | 0.0  | 1.4  |
| Cycle Q Clear(g_c), s        | 21.2 | 11.6 | 12.1 | 5.7  | 5.9  | 6.0  | 35.0  | 0.0  | 0.0  | 9.0  | 0.0  | 1.4  |
| Prop In Lane                 | 1.00 |      | 0.46 | 1.00 |      | 0.13 | 0.34  |      | 0.27 | 0.14 |      | 1.00 |
| Lane Grp Cap(c), veh/h       | 299  | 318  | 310  | 217  | 237  | 244  | 439   | 0    | 0    | 399  | 0    | 341  |
| V/C Ratio(X)                 | 0.92 | 0.52 | 0.54 | 0.37 | 0.35 | 0.36 | 1.22  | 0.00 | 0.00 | 0.36 | 0.00 | 0.06 |
| Avail Cap(c_a), veh/h        | 383  | 484  | 471  | 217  | 318  | 328  | 439   | 0    | 0    | 399  | 0    | 341  |
| HCM Platoon Ratio            | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I)           | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh     | 52.9 | 47.6 | 47.8 | 52.1 | 50.8 | 50.8 | 48.1  | 0.0  | 0.0  | 42.4 | 0.0  | 39.5 |
| Incr Delay (d2), s/veh       | 21.1 | 0.5  | 0.5  | 0.4  | 0.3  | 0.3  | 117.0 | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  |
| Initial Q Delay(d3),s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile BackOfQ(50%),veh/ln     | 0.4  | 4.7  | 4.8  | 2.4  | 2.4  | 2.5  | 27.8  | 0.0  | 0.0  | 3.7  | 0.0  | 0.5  |
| Unsig. Movement Delay, s/veh |      |      |      |      |      |      |       |      |      |      |      |      |
| LnGrp Delay(d),s/veh         | 74.1 | 48.1 | 48.4 | 52.5 | 51.1 | 51.2 | 165.0 | 0.0  | 0.0  | 42.6 | 0.0  | 39.6 |
| LnGrp LOS                    | E    | D    | D    | D    | D    | D    | F     | A    | A    | D    | A    | D    |
| Approach Vol, veh/h          | 606  |      |      | 250  |      |      | 534   |      |      | 163  |      |      |
| Approach Delay, s/veh        | 60.0 |      |      | 51.6 |      |      | 165.0 |      |      | 42.2 |      |      |
| Approach LOS                 | E    |      |      | D    |      |      | F     |      |      | D    |      |      |
| Timer - Assigned Phs         | 1    | 2    |      | 4    | 5    | 6    |       | 8    |      |      |      |      |
| Phs Duration (G+Y+Rc), s     | 31.9 | 31.2 |      | 36.5 | 28.3 | 24.8 |       | 41.5 |      |      |      |      |
| Change Period (Y+Rc), s      | 4.9  | 6.2  |      | 6.5  | 4.9  | 6.2  |       | 6.5  |      |      |      |      |
| Max Green Setting (Gmax), s  | 38.0 | 38.0 |      | 30.0 | 30.0 | 25.0 |       | 35.0 |      |      |      |      |
| Max Q Clear Time (g_c+I1), s | 14.1 | 14.1 |      | 11.0 | 23.2 | 8.0  |       | 37.0 |      |      |      |      |
| Green Ext Time (p_c), s      | 0.0  | 1.0  |      | 0.4  | 0.2  | 0.4  |       | 0.0  |      |      |      |      |

## Intersection Summary

HCM 6th Ctrl Delay 92.9

HCM 6th LOS F

## Notes

User approved pedestrian interval to be less than phase max green.

HCM 6th TWSC  
4: Tierra Libertia Rd & N Centre City Pkwy

Existing Conditions  
PM Peak Hour

Intersection

Int Delay, s/veh 0.4

| Movement                 | WBL                                                                               | WBR  | NBT                                                                               | NBR  | SBL  | SBT                                                                               |
|--------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|
| Lane Configurations      |  |      |  |      |      |  |
| Traffic Vol, veh/h       | 4                                                                                 | 8    | 331                                                                               | 7    | 9    | 250                                                                               |
| Future Vol, veh/h        | 4                                                                                 | 8    | 331                                                                               | 7    | 9    | 250                                                                               |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0                                                                                 | 1    | 0    | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop | Free                                                                              | Free | Free | Free                                                                              |
| RT Channelized           | -                                                                                 | None | -                                                                                 | None | -    | None                                                                              |
| Storage Length           | 0                                                                                 | -    | -                                                                                 | -    | -    | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -    | 0                                                                                 | -    | -    | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -    | 0                                                                                 | -    | -    | 0                                                                                 |
| Peak Hour Factor         | 75                                                                                | 75   | 85                                                                                | 85   | 84   | 84                                                                                |
| Heavy Vehicles, %        | 3                                                                                 | 3    | 3                                                                                 | 3    | 3    | 3                                                                                 |
| Mvmt Flow                | 5                                                                                 | 11   | 389                                                                               | 8    | 11   | 298                                                                               |

| Major/Minor          | Minor1 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 714    | 394    | 0      |
| Stage 1              | 394    | -      | -      |
| Stage 2              | 320    | -      | -      |
| Critical Hdwy        | 6.43   | 6.23   | -      |
| Critical Hdwy Stg 1  | 5.43   | -      | -      |
| Critical Hdwy Stg 2  | 5.43   | -      | -      |
| Follow-up Hdwy       | 3.527  | 3.327  | -      |
| Pot Cap-1 Maneuver   | 396    | 653    | -      |
| Stage 1              | 679    | -      | -      |
| Stage 2              | 734    | -      | -      |
| Platoon blocked, %   |        | -      | -      |
| Mov Cap-1 Maneuver   | 391    | 652    | -      |
| Mov Cap-2 Maneuver   | 391    | -      | -      |
| Stage 1              | 678    | -      | -      |
| Stage 2              | 726    | -      | -      |

| Approach             | WB | NB | SB  |
|----------------------|----|----|-----|
| HCM Control Delay, s | 12 | 0  | 0.3 |
| HCM LOS              | B  |    |     |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL  | SBT   |
|-----------------------|-----|----------|------|-------|
| Capacity (veh/h)      | -   | -        | 533  | 1154  |
| HCM Lane V/C Ratio    | -   | -        | 0.03 | 0.009 |
| HCM Control Delay (s) | -   | -        | 12   | 8.1   |
| HCM Lane LOS          | -   | -        | B    | A     |
| HCM 95th %tile Q(veh) | -   | -        | 0.1  | 0     |

HCM 6th TWSC  
5: N Centre City Pkwy & Jesmond Dene Rd

Existing Conditions  
PM Peak Hour

| Intersection             |                                                                                   |          |                                                                                   |       |                                                                                   |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 1.9                                                                               |          |                                                                                   |       |                                                                                   |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR   | SBL                                                                               | SBT                                                                               |
| Lane Configurations      |  |          |  |       |  |  |
| Traffic Vol, veh/h       | 8                                                                                 | 53       | 285                                                                               | 11    | 64                                                                                | 190                                                                               |
| Future Vol, veh/h        | 8                                                                                 | 53       | 285                                                                               | 11    | 64                                                                                | 190                                                                               |
| Conflicting Peds, #/hr   | 0                                                                                 | 0        | 0                                                                                 | 0     | 0                                                                                 | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free  | Free                                                                              | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None  | -                                                                                 | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -     | 95                                                                                | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -     | -                                                                                 | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -     | -                                                                                 | 0                                                                                 |
| Peak Hour Factor         | 92                                                                                | 92       | 92                                                                                | 92    | 92                                                                                | 92                                                                                |
| Heavy Vehicles, %        | 3                                                                                 | 3        | 3                                                                                 | 3     | 3                                                                                 | 3                                                                                 |
| Mvmt Flow                | 9                                                                                 | 58       | 310                                                                               | 12    | 70                                                                                | 207                                                                               |
| Major/Minor              | Minor1                                                                            | Major1   | Major2                                                                            |       |                                                                                   |                                                                                   |
| Conflicting Flow All     | 663                                                                               | 316      | 0                                                                                 | 0     | 322                                                                               | 0                                                                                 |
| Stage 1                  | 316                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Stage 2                  | 347                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Critical Hdwy            | 6.43                                                                              | 6.23     | -                                                                                 | -     | 4.13                                                                              | -                                                                                 |
| Critical Hdwy Stg 1      | 5.43                                                                              | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Critical Hdwy Stg 2      | 5.43                                                                              | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Follow-up Hdwy           | 3.527                                                                             | 3.327    | -                                                                                 | -     | 2.227                                                                             | -                                                                                 |
| Pot Cap-1 Maneuver       | 425                                                                               | 722      | -                                                                                 | -     | 1232                                                                              | -                                                                                 |
| Stage 1                  | 737                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Stage 2                  | 713                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -     |                                                                                   | -                                                                                 |
| Mov Cap-1 Maneuver       | 401                                                                               | 722      | -                                                                                 | -     | 1232                                                                              | -                                                                                 |
| Mov Cap-2 Maneuver       | 401                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Stage 1                  | 737                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Stage 2                  | 672                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Approach                 | WB                                                                                | NB       | SB                                                                                |       |                                                                                   |                                                                                   |
| HCM Control Delay, s     | 11.1                                                                              | 0        | 2                                                                                 |       |                                                                                   |                                                                                   |
| HCM LOS                  | B                                                                                 |          |                                                                                   |       |                                                                                   |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 | SBL                                                                               | SBT   |                                                                                   |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | -        | 653                                                                               | 1232  | -                                                                                 |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | -        | 0.102                                                                             | 0.056 | -                                                                                 |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | -        | 11.1                                                                              | 8.1   | -                                                                                 |                                                                                   |
| HCM Lane LOS             | -                                                                                 | -        | B                                                                                 | A     | -                                                                                 |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | -        | 0.3                                                                               | 0.2   | -                                                                                 |                                                                                   |

## **Appendix E - Ambient Growth Calculations**

| Roadway            | From               | To                         | 2016   | 2025   | Growth  | Annual Growth |
|--------------------|--------------------|----------------------------|--------|--------|---------|---------------|
| N Centre Pkwy      | Mountain Meadow Rd | Jesmond Dene Rd            | 5,200  | 5,600  | 7.7%    | 0.9%          |
| Jesmond Dene Rd    | N Centre City Pkwy | East of N Centre City Pkwy | 800    | 800    | 0.0%    | 0.0%          |
| Mountain Meadow Rd | I-15 SB Ramps      | I-15 NB Ramps              | 13,800 | 14,200 | 2.9%    | 0.3%          |
|                    |                    |                            |        |        | Average | 0.4%          |

## **Appendix F - LOS Calculation Worksheets – Opening Year 2025 without Project Conditions**

# HCM 6th Signalized Intersection Summary

## 1: I-15 SB Ramps & Deer Springs Rd

Opening Year 2025 Conditions

AM Peak Hour

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |  |  |
| Traffic Volume (veh/h)       | 0                                                                                 | 306                                                                               | 125                                                                               | 168                                                                               | 425                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 104                                                                                 | 2                                                                                   | 667                                                                                 |
| Future Volume (veh/h)        | 0                                                                                 | 306                                                                               | 125                                                                               | 168                                                                               | 425                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 104                                                                                 | 2                                                                                   | 667                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1758                                                                              | 1758                                                                              | 1758                                                                              | 1758                                                                              | 1758                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1758                                                                                | 1758                                                                                | 1758                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 340                                                                               | 75                                                                                | 185                                                                               | 467                                                                               | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 112                                                                                 | 2                                                                                   | 51                                                                                  |
| Peak Hour Factor             | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 2                                                                                 | 384                                                                               | 326                                                                               | 884                                                                               | 1414                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 142                                                                                 | 3                                                                                   | 103                                                                                 |
| Arrive On Green              | 0.00                                                                              | 0.22                                                                              | 0.22                                                                              | 0.53                                                                              | 0.80                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.09                                                                                | 0.09                                                                                | 0.09                                                                                |
| Sat Flow, veh/h              | 1674                                                                              | 1758                                                                              | 1490                                                                              | 1674                                                                              | 1758                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1646                                                                                | 29                                                                                  | 2622                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 340                                                                               | 75                                                                                | 185                                                                               | 467                                                                               | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 114                                                                                 | 0                                                                                   | 51                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1674                                                                              | 1758                                                                              | 1490                                                                              | 1674                                                                              | 1758                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1676                                                                                | 0                                                                                   | 1311                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 18.7                                                                              | 4.1                                                                               | 5.9                                                                               | 7.1                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 6.7                                                                                 | 0.0                                                                                 | 6.6                                                                                 |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 18.7                                                                              | 4.1                                                                               | 5.9                                                                               | 7.1                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 6.7                                                                                 | 0.0                                                                                 | 6.6                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.98                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 2                                                                                 | 384                                                                               | 326                                                                               | 884                                                                               | 1414                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 145                                                                                 | 0                                                                                   | 103                                                                                 |
| V/C Ratio(X)                 | 0.00                                                                              | 0.88                                                                              | 0.23                                                                              | 0.21                                                                              | 0.33                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.79                                                                                | 0.00                                                                                | 0.49                                                                                |
| Avail Cap(c_a), veh/h        | 335                                                                               | 780                                                                               | 661                                                                               | 884                                                                               | 1414                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 168                                                                                 | 0                                                                                   | 139                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.40                                                                              | 0.40                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 37.8                                                                              | 32.1                                                                              | 12.5                                                                              | 2.6                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 44.8                                                                                | 0.0                                                                                 | 284.7                                                                               |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 24.4                                                                              | 1.6                                                                               | 0.0                                                                               | 0.3                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 16.2                                                                                | 0.0                                                                                 | 1.4                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 10.1                                                                              | 1.6                                                                               | 1.9                                                                               | 1.1                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 3.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 62.2                                                                              | 33.8                                                                              | 12.5                                                                              | 2.9                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 61.0                                                                                | 0.0                                                                                 | 286.1                                                                               |
| LnGrp LOS                    | A                                                                                 | E                                                                                 | C                                                                                 | B                                                                                 | A                                                                                 | A                                                                                 |                                                                                    |                                                                                     |                                                                                     | E                                                                                   | A                                                                                   | F                                                                                   |
| Approach Vol, veh/h          | 415                                                                               |                                                                                   |                                                                                   | 652                                                                               |                                                                                   |                                                                                   | 165                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 57.1                                                                              |                                                                                   |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                   | 130.6                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 | E                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | F                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 58.6                                                                              | 27.7                                                                              |                                                                                   | 13.7                                                                              | 0.0                                                                               | 86.3                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.8                                                                               | * 5.8                                                                             |                                                                                   | 5.1                                                                               | * 4.7                                                                             | 5.8                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 30.0                                                                              | * 44                                                                              |                                                                                   | 10.0                                                                              | * 20                                                                              | 54.4                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 7.9                                                                               | 20.7                                                                              |                                                                                   | 8.7                                                                               | 0.0                                                                               | 9.1                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.2                                                                               | 1.1                                                                               |                                                                                   | 0.1                                                                               | 0.0                                                                               | 1.6                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   | 39.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 2: I-15 NB Ramps & Deer Springs Rd

Opening Year 2025 Conditions

AM Peak Hour



| Movement                     | EBL  | EBT  | EBR  | WBL   | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT | SBR |
|------------------------------|------|------|------|-------|------|------|------|------|------|------|-----|-----|
| Lane Configurations          |      |      |      |       |      |      |      |      |      |      |     |     |
| Traffic Volume (veh/h)       | 202  | 208  | 0    | 0     | 456  | 83   | 137  | 0    | 121  | 0    | 0   | 0   |
| Future Volume (veh/h)        | 202  | 208  | 0    | 0     | 456  | 83   | 137  | 0    | 121  | 0    | 0   | 0   |
| Initial Q (Qb), veh          | 0    | 0    | 0    | 0     | 0    | 0    | 0    | 0    | 0    |      |     |     |
| Ped-Bike Adj(A_pbT)          | 1.00 |      | 1.00 | 1.00  |      | 1.00 | 1.00 |      | 1.00 |      |     |     |
| Parking Bus, Adj             | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |      |     |     |
| Work Zone On Approach        | No   |      |      | No    |      |      | No   |      |      |      |     |     |
| Adj Sat Flow, veh/h/ln       | 1758 | 1758 | 0    | 0     | 1758 | 1758 | 1758 | 1758 | 1758 |      |     |     |
| Adj Flow Rate, veh/h         | 246  | 254  | 0    | 0     | 507  | 30   | 154  | 0    | 2    |      |     |     |
| Peak Hour Factor             | 0.82 | 0.82 | 0.82 | 0.90  | 0.90 | 0.90 | 0.89 | 0.89 | 0.89 |      |     |     |
| Percent Heavy Veh, %         | 3    | 3    | 0    | 0     | 3    | 3    | 3    | 3    | 3    |      |     |     |
| Cap, veh/h                   | 331  | 1138 | 0    | 0     | 609  | 516  | 212  | 0    | 188  |      |     |     |
| Arrive On Green              | 0.20 | 0.65 | 0.00 | 0.00  | 0.35 | 0.35 | 0.13 | 0.00 | 0.13 |      |     |     |
| Sat Flow, veh/h              | 1674 | 1758 | 0    | 0     | 1758 | 1490 | 1674 | 0    | 1490 |      |     |     |
| Grp Volume(v), veh/h         | 246  | 254  | 0    | 0     | 507  | 30   | 154  | 0    | 2    |      |     |     |
| Grp Sat Flow(s),veh/h/ln     | 1674 | 1758 | 0    | 0     | 1758 | 1490 | 1674 | 0    | 1490 |      |     |     |
| Q Serve(g_s), s              | 6.3  | 2.7  | 0.0  | 0.0   | 12.1 | 0.6  | 4.0  | 0.0  | 0.1  |      |     |     |
| Cycle Q Clear(g_c), s        | 6.3  | 2.7  | 0.0  | 0.0   | 12.1 | 0.6  | 4.0  | 0.0  | 0.1  |      |     |     |
| Prop In Lane                 | 1.00 |      | 0.00 | 0.00  |      | 1.00 | 1.00 |      | 1.00 |      |     |     |
| Lane Grp Cap(c), veh/h       | 331  | 1138 | 0    | 0     | 609  | 516  | 212  | 0    | 188  |      |     |     |
| V/C Ratio(X)                 | 0.74 | 0.22 | 0.00 | 0.00  | 0.83 | 0.06 | 0.73 | 0.00 | 0.01 |      |     |     |
| Avail Cap(c_a), veh/h        | 1297 | 3055 | 0    | 0     | 1512 | 1282 | 753  | 0    | 670  |      |     |     |
| HCM Platoon Ratio            | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |      |     |     |
| Upstream Filter(I)           | 1.00 | 1.00 | 0.00 | 0.00  | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |      |     |     |
| Uniform Delay (d), s/veh     | 17.2 | 3.3  | 0.0  | 0.0   | 13.7 | 9.9  | 19.1 | 0.0  | 17.4 |      |     |     |
| Incr Delay (d2), s/veh       | 4.7  | 0.0  | 0.0  | 0.0   | 1.2  | 0.0  | 4.7  | 0.0  | 0.0  |      |     |     |
| Initial Q Delay(d3),s/veh    | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |      |     |     |
| %ile BackOfQ(50%),veh/ln     | 2.3  | 0.2  | 0.0  | 0.0   | 3.4  | 0.1  | 1.7  | 0.0  | 0.0  |      |     |     |
| Unsig. Movement Delay, s/veh |      |      |      |       |      |      |      |      |      |      |     |     |
| LnGrp Delay(d),s/veh         | 21.8 | 3.3  | 0.0  | 0.0   | 14.8 | 9.9  | 23.9 | 0.0  | 17.4 |      |     |     |
| LnGrp LOS                    | C    | A    | A    | A     | B    | A    | C    | A    | B    |      |     |     |
| Approach Vol, veh/h          | 500  |      |      | 537   |      |      | 156  |      |      |      |     |     |
| Approach Delay, s/veh        | 12.4 |      |      | 14.6  |      |      | 23.8 |      |      |      |     |     |
| Approach LOS                 | B    |      |      | B     |      |      | C    |      |      |      |     |     |
| Timer - Assigned Phs         | 2    |      |      | 5     |      |      | 6    |      |      | 8    |     |     |
| Phs Duration (G+Y+Rc), s     | 35.3 |      |      | 13.7  |      |      | 21.6 |      |      | 10.3 |     |     |
| Change Period (Y+Rc), s      | 5.8  |      |      | * 4.7 |      |      | 5.8  |      |      | 4.5  |     |     |
| Max Green Setting (Gmax), s  | 79.2 |      |      | * 35  |      |      | 39.2 |      |      | 20.5 |     |     |
| Max Q Clear Time (g_c+I1), s | 4.7  |      |      | 8.3   |      |      | 14.1 |      |      | 6.0  |     |     |
| Green Ext Time (p_c), s      | 0.8  |      |      | 1.1   |      |      | 1.7  |      |      | 0.7  |     |     |

### Intersection Summary

HCM 6th Ctrl Delay 14.9

HCM 6th LOS B

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM 6th Signalized Intersection Summary

Opening Year 2025 Conditions

3: N Centre City Pkwy/Champagne Blvd & Deer Springs Rd/Mountain Meadow Rd AM Peak Hour



| Movement                      | EBL  | EBT  | EBR  | WBL   | WBT  | WBR   | NBL  | NBT  | NBR  | SBL   | SBT  | SBR  |
|-------------------------------|------|------|------|-------|------|-------|------|------|------|-------|------|------|
| Lane Configurations           |      |      |      |       |      |       |      |      |      |       |      |      |
| Traffic Volume (veh/h)        | 68   | 76   | 185  | 269   | 230  | 8     | 91   | 45   | 42   | 16    | 465  | 218  |
| Future Volume (veh/h)         | 68   | 76   | 185  | 269   | 230  | 8     | 91   | 45   | 42   | 16    | 465  | 218  |
| Initial Q (Qb), veh           | 0    | 0    | 0    | 0     | 0    | 0     | 0    | 0    | 0    | 0     | 0    | 0    |
| Ped-Bike Adj(A_pbT)           | 1.00 |      | 1.00 | 1.00  |      | 1.00  | 1.00 |      | 0.99 | 1.00  |      | 1.00 |
| Parking Bus, Adj              | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 |
| Work Zone On Approach         | No   |      |      | No    |      |       | No   |      |      | No    |      |      |
| Adj Sat Flow, veh/h/ln        | 1758 | 1758 | 1758 | 1758  | 1758 | 1758  | 1758 | 1758 | 1758 | 1758  | 1758 | 1758 |
| Adj Flow Rate, veh/h          | 83   | 93   | 10   | 328   | 280  | 8     | 107  | 53   | 40   | 17    | 500  | 234  |
| Peak Hour Factor              | 0.82 | 0.82 | 0.82 | 0.82  | 0.82 | 0.82  | 0.85 | 0.85 | 0.85 | 0.93  | 0.93 | 0.93 |
| Percent Heavy Veh, %          | 3    | 3    | 3    | 3     | 3    | 3     | 3    | 3    | 3    | 3     | 3    | 3    |
| Cap, veh/h                    | 366  | 604  | 64   | 226   | 345  | 10    | 210  | 104  | 78   | 14    | 404  | 354  |
| Arrive On Green               | 0.22 | 0.20 | 0.20 | 0.13  | 0.10 | 0.10  | 0.24 | 0.24 | 0.24 | 0.24  | 0.24 | 0.24 |
| Sat Flow, veh/h               | 1674 | 3047 | 323  | 1674  | 3316 | 95    | 882  | 437  | 330  | 58    | 1697 | 1490 |
| Grp Volume(v), veh/h          | 83   | 50   | 53   | 328   | 141  | 147   | 200  | 0    | 0    | 517   | 0    | 234  |
| Grp Sat Flow(s), veh/h/ln     | 1674 | 1670 | 1700 | 1674  | 1670 | 1741  | 1649 | 0    | 0    | 1755  | 0    | 1490 |
| Q Serve(g_s), s               | 5.1  | 3.1  | 3.2  | 17.0  | 10.4 | 10.4  | 13.3 | 0.0  | 0.0  | 30.0  | 0.0  | 17.9 |
| Cycle Q Clear(g_c), s         | 5.1  | 3.1  | 3.2  | 17.0  | 10.4 | 10.4  | 13.3 | 0.0  | 0.0  | 30.0  | 0.0  | 17.9 |
| Prop In Lane                  | 1.00 |      | 0.19 | 1.00  |      | 0.05  | 0.53 |      | 0.20 | 0.03  |      | 1.00 |
| Lane Grp Cap(c), veh/h        | 366  | 331  | 337  | 226   | 174  | 181   | 392  | 0    | 0    | 418   | 0    | 354  |
| V/C Ratio(X)                  | 0.23 | 0.15 | 0.16 | 1.45  | 0.81 | 0.81  | 0.51 | 0.00 | 0.00 | 1.24  | 0.00 | 0.66 |
| Avail Cap(c_a), veh/h         | 398  | 503  | 512  | 226   | 331  | 345   | 458  | 0    | 0    | 418   | 0    | 354  |
| HCM Platoon Ratio             | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 |
| Upstream Filter(I)            | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00  | 1.00 | 0.00 | 0.00 | 1.00  | 0.00 | 1.00 |
| Uniform Delay (d), s/veh      | 40.5 | 41.8 | 41.8 | 54.5  | 55.3 | 55.3  | 41.7 | 0.0  | 0.0  | 48.1  | 0.0  | 43.4 |
| Incr Delay (d2), s/veh        | 0.1  | 0.1  | 0.1  | 226.9 | 3.4  | 3.4   | 0.4  | 0.0  | 0.0  | 126.2 | 0.0  | 3.6  |
| Initial Q Delay(d3),s/veh     | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  |
| %ile BackOfQ(50%),veh/ln      | 2.1  | 1.3  | 1.3  | 21.1  | 4.4  | 4.6   | 5.2  | 0.0  | 0.0  | 27.1  | 0.0  | 6.7  |
| Unsig. Movement Delay, s/veh  |      |      |      |       |      |       |      |      |      |       |      |      |
| LnGrp Delay(d),s/veh          | 40.6 | 41.9 | 41.9 | 281.5 | 58.7 | 58.6  | 42.1 | 0.0  | 0.0  | 174.3 | 0.0  | 47.1 |
| LnGrp LOS                     | D    | D    | D    | F     | E    | E     | D    | A    | A    | F     | A    | D    |
| Approach Vol, veh/h           | 186  |      |      | 616   |      |       | 200  |      |      | 751   |      |      |
| Approach Delay, s/veh         | 41.3 |      |      | 177.3 |      |       | 42.1 |      |      | 134.6 |      |      |
| Approach LOS                  | D    |      |      | F     |      |       | D    |      |      | F     |      |      |
| Timer - Assigned Phs          | 1    | 2    |      | 4     | 5    | 6     |      | 8    |      |       |      |      |
| Phs Duration (G+Y+Rc), s      | 31.9 | 31.2 |      | 36.5  | 33.8 | 19.3  |      | 36.5 |      |       |      |      |
| Change Period (Y+Rc), s       | 4.9  | 6.2  |      | 6.5   | 6.2  | * 6.2 |      | 6.5  |      |       |      |      |
| Max Green Setting (Gmax), s   | 38.0 | 38.0 |      | 30.0  | 30.0 | * 25  |      | 35.0 |      |       |      |      |
| Max Q Clear Time (g_c+1/9), s | 5.2  | 5.2  |      | 32.0  | 7.1  | 12.4  |      | 15.3 |      |       |      |      |
| Green Ext Time (p_c), s       | 0.0  | 0.3  |      | 0.0   | 0.1  | 0.7   |      | 0.5  |      |       |      |      |

## Intersection Summary

HCM 6th Ctrl Delay 129.2

HCM 6th LOS F

## Notes

User approved pedestrian interval to be less than phase max green.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC  
4: Tierra Libertia Rd & N Centre City Pkwy

Opening Year 2025 Conditions  
AM Peak Hour

| Intersection             |                                                                                   |          |                                                                                   |        |       |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|--------|-------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 0.4                                                                               |          |                                                                                   |        |       |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR    | SBL   | SBT                                                                               |
| Lane Configurations      |  |          |  |        |       |  |
| Traffic Vol, veh/h       | 13                                                                                | 5        | 158                                                                               | 2      | 2     | 881                                                                               |
| Future Vol, veh/h        | 13                                                                                | 5        | 158                                                                               | 2      | 2     | 881                                                                               |
| Conflicting Peds, #/hr   | 0                                                                                 | 0        | 0                                                                                 | 1      | 0     | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free   | Free  | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None   | -     | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -      | -     | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -      | -     | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -      | -     | 0                                                                                 |
| Peak Hour Factor         | 75                                                                                | 75       | 63                                                                                | 63     | 93    | 93                                                                                |
| Heavy Vehicles, %        | 3                                                                                 | 3        | 3                                                                                 | 3      | 3     | 3                                                                                 |
| Mvmt Flow                | 17                                                                                | 7        | 251                                                                               | 3      | 2     | 947                                                                               |
|                          |                                                                                   |          |                                                                                   |        |       |                                                                                   |
| Major/Minor              | Minor1                                                                            | Major1   |                                                                                   | Major2 |       |                                                                                   |
| Conflicting Flow All     | 1205                                                                              | 254      | 0                                                                                 | 0      | 255   | 0                                                                                 |
| Stage 1                  | 254                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Stage 2                  | 951                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Critical Hdwy            | 6.43                                                                              | 6.23     | -                                                                                 | -      | 4.13  | -                                                                                 |
| Critical Hdwy Stg 1      | 5.43                                                                              | -        | -                                                                                 | -      | -     | -                                                                                 |
| Critical Hdwy Stg 2      | 5.43                                                                              | -        | -                                                                                 | -      | -     | -                                                                                 |
| Follow-up Hdwy           | 3.527                                                                             | 3.327    | -                                                                                 | -      | 2.227 | -                                                                                 |
| Pot Cap-1 Maneuver       | 202                                                                               | 782      | -                                                                                 | -      | 1304  | -                                                                                 |
| Stage 1                  | 786                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Stage 2                  | 374                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -      |       | -                                                                                 |
| Mov Cap-1 Maneuver       | 201                                                                               | 781      | -                                                                                 | -      | 1303  | -                                                                                 |
| Mov Cap-2 Maneuver       | 201                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Stage 1                  | 785                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Stage 2                  | 373                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
|                          |                                                                                   |          |                                                                                   |        |       |                                                                                   |
|                          |                                                                                   |          |                                                                                   |        |       |                                                                                   |
| Approach                 | WB                                                                                | NB       |                                                                                   | SB     |       |                                                                                   |
| HCM Control Delay, s     | 20.7                                                                              | 0        |                                                                                   | 0      |       |                                                                                   |
| HCM LOS                  | C                                                                                 |          |                                                                                   |        |       |                                                                                   |
|                          |                                                                                   |          |                                                                                   |        |       |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 |                                                                                   | SBL    | SBT   |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | -        | 253                                                                               | 1303   | -     |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | -        | 0.095                                                                             | 0.002  | -     |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | -        | 20.7                                                                              | 7.8    | 0     |                                                                                   |
| HCM Lane LOS             | -                                                                                 | -        | C                                                                                 | A      | A     |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | -        | 0.3                                                                               | 0      | -     |                                                                                   |

HCM 6th TWSC  
5: N Centre City Pkwy & Jesmond Dene Rd

Opening Year 2025 Conditions  
AM Peak Hour

| Intersection             |                                                                                   |          |                                                                                   |       |                                                                                   |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 1.5                                                                               |          |                                                                                   |       |                                                                                   |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR   | SBL                                                                               | SBT                                                                               |
| Lane Configurations      |  |          |  |       |  |  |
| Traffic Vol, veh/h       | 13                                                                                | 70       | 90                                                                                | 6     | 81                                                                                | 813                                                                               |
| Future Vol, veh/h        | 13                                                                                | 70       | 90                                                                                | 6     | 81                                                                                | 813                                                                               |
| Conflicting Peds, #/hr   | 0                                                                                 | 0        | 0                                                                                 | 0     | 0                                                                                 | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free  | Free                                                                              | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None  | -                                                                                 | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -     | 95                                                                                | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -     | -                                                                                 | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -     | -                                                                                 | 0                                                                                 |
| Peak Hour Factor         | 92                                                                                | 92       | 92                                                                                | 92    | 92                                                                                | 92                                                                                |
| Heavy Vehicles, %        | 3                                                                                 | 3        | 3                                                                                 | 3     | 3                                                                                 | 3                                                                                 |
| Mvmt Flow                | 14                                                                                | 76       | 98                                                                                | 7     | 88                                                                                | 884                                                                               |
| Major/Minor              | Minor1                                                                            | Major1   | Major2                                                                            |       |                                                                                   |                                                                                   |
| Conflicting Flow All     | 1162                                                                              | 102      | 0                                                                                 | 0     | 105                                                                               | 0                                                                                 |
| Stage 1                  | 102                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Stage 2                  | 1060                                                                              | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Critical Hdwy            | 6.43                                                                              | 6.23     | -                                                                                 | -     | 4.13                                                                              | -                                                                                 |
| Critical Hdwy Stg 1      | 5.43                                                                              | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Critical Hdwy Stg 2      | 5.43                                                                              | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Follow-up Hdwy           | 3.527                                                                             | 3.327    | -                                                                                 | -     | 2.227                                                                             | -                                                                                 |
| Pot Cap-1 Maneuver       | 215                                                                               | 950      | -                                                                                 | -     | 1480                                                                              | -                                                                                 |
| Stage 1                  | 920                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Stage 2                  | 332                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -     |                                                                                   | -                                                                                 |
| Mov Cap-1 Maneuver       | 202                                                                               | 950      | -                                                                                 | -     | 1480                                                                              | -                                                                                 |
| Mov Cap-2 Maneuver       | 202                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Stage 1                  | 920                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Stage 2                  | 312                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Approach                 | WB                                                                                | NB       | SB                                                                                |       |                                                                                   |                                                                                   |
| HCM Control Delay, s     | 12                                                                                | 0        | 0.7                                                                               |       |                                                                                   |                                                                                   |
| HCM LOS                  | B                                                                                 |          |                                                                                   |       |                                                                                   |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 | SBL                                                                               | SBT   |                                                                                   |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | -        | 601                                                                               | 1480  | -                                                                                 |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | -        | 0.15                                                                              | 0.059 | -                                                                                 |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | -        | 12                                                                                | 7.6   | -                                                                                 |                                                                                   |
| HCM Lane LOS             | -                                                                                 | -        | B                                                                                 | A     | -                                                                                 |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | -        | 0.5                                                                               | 0.2   | -                                                                                 |                                                                                   |

# HCM 6th Signalized Intersection Summary

## 1: I-15 SB Ramps & Deer Springs Rd

Opening Year 2025 Conditions

PM Peak Hour

|                                                                                                    |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                                                           | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations                                                                                |  |  |  |  |  |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |
| Traffic Volume (veh/h)                                                                             | 0                                                                                 | 888                                                                               | 227                                                                               | 155                                                                               | 370                                                                               | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 59                                                                                  | 3                                                                                   | 365                                                                                 |
| Future Volume (veh/h)                                                                              | 0                                                                                 | 888                                                                               | 227                                                                               | 155                                                                               | 370                                                                               | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 59                                                                                  | 3                                                                                   | 365                                                                                 |
| Initial Q (Qb), veh                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                                                | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach                                                                              |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln                                                                             | 1758                                                                              | 1758                                                                              | 1758                                                                              | 1758                                                                              | 1758                                                                              | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 1758                                                                                | 1758                                                                                | 1758                                                                                |
| Adj Flow Rate, veh/h                                                                               | 0                                                                                 | 915                                                                               | 211                                                                               | 165                                                                               | 394                                                                               | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 65                                                                                  | 3                                                                                   | 8                                                                                   |
| Peak Hour Factor                                                                                   | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              |                                                                                     |                                                                                     |                                                                                     | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                |
| Percent Heavy Veh, %                                                                               | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                                                                                         | 2                                                                                 | 868                                                                               | 736                                                                               | 464                                                                               | 1457                                                                              | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 99                                                                                  | 5                                                                                   | 39                                                                                  |
| Arrive On Green                                                                                    | 0.00                                                                              | 0.49                                                                              | 0.49                                                                              | 0.37                                                                              | 1.00                                                                              | 0.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 0.06                                                                                | 0.06                                                                                | 0.06                                                                                |
| Sat Flow, veh/h                                                                                    | 1674                                                                              | 1758                                                                              | 1490                                                                              | 1674                                                                              | 1758                                                                              | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 1604                                                                                | 74                                                                                  | 2622                                                                                |
| Grp Volume(v), veh/h                                                                               | 0                                                                                 | 915                                                                               | 211                                                                               | 165                                                                               | 394                                                                               | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 68                                                                                  | 0                                                                                   | 8                                                                                   |
| Grp Sat Flow(s),veh/h/ln                                                                           | 1674                                                                              | 1758                                                                              | 1490                                                                              | 1674                                                                              | 1758                                                                              | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 1678                                                                                | 0                                                                                   | 1311                                                                                |
| Q Serve(g_s), s                                                                                    | 0.0                                                                               | 49.4                                                                              | 8.3                                                                               | 7.2                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 4.0                                                                                 | 0.0                                                                                 | 5.0                                                                                 |
| Cycle Q Clear(g_c), s                                                                              | 0.0                                                                               | 49.4                                                                              | 8.3                                                                               | 7.2                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 4.0                                                                                 | 0.0                                                                                 | 5.0                                                                                 |
| Prop In Lane                                                                                       | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 0.96                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                                                             | 2                                                                                 | 868                                                                               | 736                                                                               | 464                                                                               | 1457                                                                              | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 104                                                                                 | 0                                                                                   | 39                                                                                  |
| V/C Ratio(X)                                                                                       | 0.00                                                                              | 1.05                                                                              | 0.29                                                                              | 0.36                                                                              | 0.27                                                                              | 0.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 0.65                                                                                | 0.00                                                                                | 0.20                                                                                |
| Avail Cap(c_a), veh/h                                                                              | 167                                                                               | 868                                                                               | 736                                                                               | 464                                                                               | 1457                                                                              | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 168                                                                                 | 0                                                                                   | 139                                                                                 |
| HCM Platoon Ratio                                                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.33                                                                              | 1.33                                                                              | 1.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                                                 | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.50                                                                              | 0.50                                                                              | 0.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                                                                           | 0.0                                                                               | 25.3                                                                              | 14.9                                                                              | 25.1                                                                              | 0.0                                                                               | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 45.9                                                                                | 0.0                                                                                 | 1602.2                                                                              |
| Incr Delay (d2), s/veh                                                                             | 0.0                                                                               | 45.7                                                                              | 1.0                                                                               | 0.1                                                                               | 0.2                                                                               | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 2.6                                                                                 | 0.0                                                                                 | 0.9                                                                                 |
| Initial Q Delay(d3),s/veh                                                                          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                                                           | 0.0                                                                               | 28.6                                                                              | 2.7                                                                               | 2.6                                                                               | 0.1                                                                               | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 1.7                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh                                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh                                                                               | 0.0                                                                               | 71.0                                                                              | 15.9                                                                              | 25.2                                                                              | 0.2                                                                               | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 48.5                                                                                | 0.0                                                                                 | 1603.1                                                                              |
| LnGrp LOS                                                                                          | A                                                                                 | F                                                                                 | B                                                                                 | C                                                                                 | A                                                                                 | A                                                                                 |                                                                                     |                                                                                     |                                                                                     | D                                                                                   | A                                                                                   | F                                                                                   |
| Approach Vol, veh/h                                                                                |                                                                                   | 1126                                                                              |                                                                                   |                                                                                   | 559                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 76                                                                                  |                                                                                     |
| Approach Delay, s/veh                                                                              |                                                                                   | 60.7                                                                              |                                                                                   |                                                                                   | 7.6                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 212.1                                                                               |                                                                                     |
| Approach LOS                                                                                       |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |
| Timer - Assigned Phs                                                                               | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                                                           | 33.5                                                                              | 55.2                                                                              |                                                                                   | 11.3                                                                              | 0.0                                                                               | 88.7                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                                                            | 5.8                                                                               | * 5.8                                                                             |                                                                                   | 5.1                                                                               | * 4.7                                                                             | 5.8                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                                                        | 25.0                                                                              | * 49                                                                              |                                                                                   | 10.0                                                                              | * 10                                                                              | 64.4                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s                                                                       | 9.2                                                                               | 51.4                                                                              |                                                                                   | 7.0                                                                               | 0.0                                                                               | 2.0                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                                                            | 0.2                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 1.3                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay                                                                                 |                                                                                   |                                                                                   | 50.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                                                                                        |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                                                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 2: I-15 NB Ramps & Deer Springs Rd

Opening Year 2025 Conditions

PM Peak Hour



| Movement                     | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL   | NBT  | NBR  | SBL  | SBT | SBR |
|------------------------------|------|------|------|------|------|------|-------|------|------|------|-----|-----|
| Lane Configurations          |      |      |      |      |      |      |       |      |      |      |     |     |
| Traffic Volume (veh/h)       | 647  | 300  | 0    | 0    | 291  | 118  | 234   | 3    | 356  | 0    | 0   | 0   |
| Future Volume (veh/h)        | 647  | 300  | 0    | 0    | 291  | 118  | 234   | 3    | 356  | 0    | 0   | 0   |
| Initial Q (Qb), veh          | 0    | 0    | 0    | 0    | 0    | 0    | 0     | 0    | 0    |      |     |     |
| Ped-Bike Adj(A_pbT)          | 1.00 |      | 1.00 | 1.00 |      | 1.00 | 1.00  |      | 1.00 |      |     |     |
| Parking Bus, Adj             | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 |      |     |     |
| Work Zone On Approach        | No   |      |      | No   |      |      | No    |      |      |      |     |     |
| Adj Sat Flow, veh/h/ln       | 1758 | 1758 | 0    | 0    | 1758 | 1758 | 1758  | 1758 | 1758 |      |     |     |
| Adj Flow Rate, veh/h         | 703  | 326  | 0    | 0    | 313  | 79   | 249   | 3    | 50   |      |     |     |
| Peak Hour Factor             | 0.92 | 0.92 | 0.92 | 0.93 | 0.93 | 0.93 | 0.94  | 0.94 | 0.94 |      |     |     |
| Percent Heavy Veh, %         | 3    | 3    | 0    | 0    | 3    | 3    | 3     | 3    | 3    |      |     |     |
| Cap, veh/h                   | 782  | 1271 | 0    | 0    | 347  | 294  | 288   | 3    | 260  |      |     |     |
| Arrive On Green              | 0.47 | 0.72 | 0.00 | 0.00 | 0.20 | 0.20 | 0.17  | 0.17 | 0.17 |      |     |     |
| Sat Flow, veh/h              | 1674 | 1758 | 0    | 0    | 1758 | 1490 | 1655  | 20   | 1490 |      |     |     |
| Grp Volume(v), veh/h         | 703  | 326  | 0    | 0    | 313  | 79   | 252   | 0    | 50   |      |     |     |
| Grp Sat Flow(s),veh/h/ln     | 1674 | 1758 | 0    | 0    | 1758 | 1490 | 1675  | 0    | 1490 |      |     |     |
| Q Serve(g_s), s              | 38.6 | 6.3  | 0.0  | 0.0  | 17.4 | 4.5  | 14.6  | 0.0  | 2.9  |      |     |     |
| Cycle Q Clear(g_c), s        | 38.6 | 6.3  | 0.0  | 0.0  | 17.4 | 4.5  | 14.6  | 0.0  | 2.9  |      |     |     |
| Prop In Lane                 | 1.00 |      | 0.00 | 0.00 |      | 1.00 | 0.99  |      | 1.00 |      |     |     |
| Lane Grp Cap(c), veh/h       | 782  | 1271 | 0    | 0    | 347  | 294  | 292   | 0    | 260  |      |     |     |
| V/C Ratio(X)                 | 0.90 | 0.26 | 0.00 | 0.00 | 0.90 | 0.27 | 0.86  | 0.00 | 0.19 |      |     |     |
| Avail Cap(c_a), veh/h        | 782  | 1271 | 0    | 0    | 394  | 334  | 379   | 0    | 337  |      |     |     |
| HCM Platoon Ratio            | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 |      |     |     |
| Upstream Filter(I)           | 0.37 | 0.37 | 0.00 | 0.00 | 0.95 | 0.95 | 1.00  | 0.00 | 1.00 |      |     |     |
| Uniform Delay (d), s/veh     | 24.5 | 4.7  | 0.0  | 0.0  | 39.2 | 34.0 | 40.1  | 0.0  | 35.3 |      |     |     |
| Incr Delay (d2), s/veh       | 5.8  | 0.2  | 0.0  | 0.0  | 27.7 | 2.1  | 14.9  | 0.0  | 0.4  |      |     |     |
| Initial Q Delay(d3),s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  |      |     |     |
| %ile BackOfQ(50%),veh/ln     | 4.6  | 1.6  | 0.0  | 0.0  | 9.7  | 1.7  | 7.2   | 0.0  | 1.1  |      |     |     |
| Unsig. Movement Delay, s/veh |      |      |      |      |      |      |       |      |      |      |     |     |
| LnGrp Delay(d),s/veh         | 30.2 | 4.9  | 0.0  | 0.0  | 66.9 | 36.1 | 55.1  | 0.0  | 35.6 |      |     |     |
| LnGrp LOS                    | C    | A    | A    | A    | E    | D    | E     | A    | D    |      |     |     |
| Approach Vol, veh/h          | 1029 |      |      | 392  |      |      | 302   |      |      |      |     |     |
| Approach Delay, s/veh        | 22.2 |      |      | 60.7 |      |      | 51.8  |      |      |      |     |     |
| Approach LOS                 | C    |      |      | E    |      |      | D     |      |      |      |     |     |
| Timer - Assigned Phs         | 2    |      |      | 5    |      |      | 6     |      |      | 8    |     |     |
| Phs Duration (G+Y+Rc), s     | 78.1 |      |      | 52.5 |      |      | 25.5  |      |      | 21.9 |     |     |
| Change Period (Y+Rc), s      | 5.8  |      |      | 5.8  |      |      | * 5.8 |      |      | 4.5  |     |     |
| Max Green Setting (Gmax), s  | 67.1 |      |      | 40.0 |      |      | * 22  |      |      | 22.6 |     |     |
| Max Q Clear Time (g_c+I1), s | 8.3  |      |      | 40.6 |      |      | 19.4  |      |      | 16.6 |     |     |
| Green Ext Time (p_c), s      | 1.0  |      |      | 0.0  |      |      | 0.4   |      |      | 0.8  |     |     |

### Intersection Summary

HCM 6th Ctrl Delay 36.2

HCM 6th LOS D

### Notes

User approved pedestrian interval to be less than phase max green.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM 6th Signalized Intersection Summary

Opening Year 2025 Conditions

3: N Centre City Pkwy/Champagne Blvd & Deer Springs Rd/Mountain Meadow Rd PM Peak Hour



| Movement                     | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL   | NBT  | NBR  | SBL  | SBT  | SBR  |
|------------------------------|------|------|------|------|------|------|-------|------|------|------|------|------|
| Lane Configurations          |      |      |      |      |      |      |       |      |      |      |      |      |
| Traffic Volume (veh/h)       | 247  | 228  | 181  | 75   | 151  | 16   | 157   | 185  | 138  | 19   | 120  | 101  |
| Future Volume (veh/h)        | 247  | 228  | 181  | 75   | 151  | 16   | 157   | 185  | 138  | 19   | 120  | 101  |
| Initial Q (Qb), veh          | 0    | 0    | 0    | 0    | 0    | 0    | 0     | 0    | 0    | 0    | 0    | 0    |
| Ped-Bike Adj(A_pbT)          | 1.00 |      | 1.00 | 1.00 |      | 1.00 | 1.00  |      | 0.99 | 1.00 |      | 1.00 |
| Parking Bus, Adj             | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach        | No   |      |      | No   |      |      | No    |      |      | No   |      |      |
| Adj Sat Flow, veh/h/ln       | 1758 | 1758 | 1758 | 1758 | 1758 | 1758 | 1758  | 1758 | 1758 | 1758 | 1758 | 1758 |
| Adj Flow Rate, veh/h         | 281  | 259  | 81   | 81   | 162  | 11   | 183   | 215  | 148  | 20   | 124  | 22   |
| Peak Hour Factor             | 0.88 | 0.88 | 0.88 | 0.93 | 0.93 | 0.93 | 0.86  | 0.86 | 0.86 | 0.97 | 0.97 | 0.97 |
| Percent Heavy Veh, %         | 3    | 3    | 3    | 3    | 3    | 3    | 3     | 3    | 3    | 3    | 3    | 3    |
| Cap, veh/h                   | 305  | 480  | 147  | 217  | 440  | 30   | 147   | 173  | 119  | 55   | 344  | 341  |
| Arrive On Green              | 0.18 | 0.19 | 0.19 | 0.13 | 0.14 | 0.14 | 0.27  | 0.27 | 0.27 | 0.23 | 0.23 | 0.23 |
| Sat Flow, veh/h              | 1674 | 2519 | 770  | 1674 | 3175 | 214  | 551   | 647  | 445  | 242  | 1503 | 1490 |
| Grp Volume(v), veh/h         | 281  | 170  | 170  | 81   | 85   | 88   | 546   | 0    | 0    | 144  | 0    | 22   |
| Grp Sat Flow(s),veh/h/ln     | 1674 | 1670 | 1619 | 1674 | 1670 | 1719 | 1643  | 0    | 0    | 1746 | 0    | 1490 |
| Q Serve(g_s), s              | 21.6 | 12.0 | 12.5 | 5.8  | 6.0  | 6.1  | 35.0  | 0.0  | 0.0  | 9.1  | 0.0  | 1.5  |
| Cycle Q Clear(g_c), s        | 21.6 | 12.0 | 12.5 | 5.8  | 6.0  | 6.1  | 35.0  | 0.0  | 0.0  | 9.1  | 0.0  | 1.5  |
| Prop In Lane                 | 1.00 |      | 0.48 | 1.00 |      | 0.12 | 0.34  |      | 0.27 | 0.14 |      | 1.00 |
| Lane Grp Cap(c), veh/h       | 305  | 318  | 309  | 217  | 231  | 238  | 439   | 0    | 0    | 399  | 0    | 341  |
| V/C Ratio(X)                 | 0.92 | 0.53 | 0.55 | 0.37 | 0.37 | 0.37 | 1.24  | 0.00 | 0.00 | 0.36 | 0.00 | 0.06 |
| Avail Cap(c_a), veh/h        | 383  | 484  | 469  | 217  | 318  | 328  | 439   | 0    | 0    | 399  | 0    | 341  |
| HCM Platoon Ratio            | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I)           | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh     | 52.7 | 47.8 | 48.0 | 52.2 | 51.3 | 51.3 | 48.1  | 0.0  | 0.0  | 42.5 | 0.0  | 39.6 |
| Incr Delay (d2), s/veh       | 22.0 | 0.5  | 0.6  | 0.4  | 0.4  | 0.4  | 128.0 | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  |
| Initial Q Delay(d3),s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile BackOfQ(50%),veh/ft     | 0.6  | 4.9  | 4.9  | 2.4  | 2.5  | 2.6  | 29.2  | 0.0  | 0.0  | 3.8  | 0.0  | 0.5  |
| Unsig. Movement Delay, s/veh |      |      |      |      |      |      |       |      |      |      |      |      |
| LnGrp Delay(d),s/veh         | 74.7 | 48.3 | 48.6 | 52.6 | 51.6 | 51.7 | 176.0 | 0.0  | 0.0  | 42.7 | 0.0  | 39.6 |
| LnGrp LOS                    | E    | D    | D    | D    | D    | D    | F     | A    | A    | D    | A    | D    |
| Approach Vol, veh/h          | 621  |      |      | 254  |      |      | 546   |      |      | 166  |      |      |
| Approach Delay, s/veh        | 60.3 |      |      | 51.9 |      |      | 176.0 |      |      | 42.3 |      |      |
| Approach LOS                 | E    |      |      | D    |      |      | F     |      |      | D    |      |      |
| Timer - Assigned Phs         | 1    | 2    |      | 4    | 5    | 6    |       | 8    |      |      |      |      |
| Phs Duration (G+Y+Rc), s     | 31.9 | 31.2 |      | 36.5 | 28.7 | 24.4 |       | 41.5 |      |      |      |      |
| Change Period (Y+Rc), s      | 4.9  | 6.2  |      | 6.5  | 4.9  | 6.2  |       | 6.5  |      |      |      |      |
| Max Green Setting (Gmax), s  | 38.0 | 38.0 |      | 30.0 | 30.0 | 25.0 |       | 35.0 |      |      |      |      |
| Max Q Clear Time (g_c+I1), s | 14.5 | 14.5 |      | 11.1 | 23.6 | 8.1  |       | 37.0 |      |      |      |      |
| Green Ext Time (p_c), s      | 0.0  | 1.0  |      | 0.4  | 0.2  | 0.4  |       | 0.0  |      |      |      |      |

## Intersection Summary

HCM 6th Ctrl Delay 96.9

HCM 6th LOS F

## Notes

User approved pedestrian interval to be less than phase max green.

HCM 6th TWSC  
4: Tierra Libertia Rd & N Centre City Pkwy

Opening Year 2025 Conditions  
PM Peak Hour

| Intersection             |                                                                                   |          |                                                                                   |        |       |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|--------|-------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 0.4                                                                               |          |                                                                                   |        |       |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR    | SBL   | SBT                                                                               |
| Lane Configurations      |  |          |  |        |       |  |
| Traffic Vol, veh/h       | 4                                                                                 | 8        | 338                                                                               | 7      | 9     | 255                                                                               |
| Future Vol, veh/h        | 4                                                                                 | 8        | 338                                                                               | 7      | 9     | 255                                                                               |
| Conflicting Peds, #/hr   | 0                                                                                 | 0        | 0                                                                                 | 1      | 0     | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free   | Free  | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None   | -     | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -      | -     | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -      | -     | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -      | -     | 0                                                                                 |
| Peak Hour Factor         | 75                                                                                | 75       | 85                                                                                | 85     | 84    | 84                                                                                |
| Heavy Vehicles, %        | 3                                                                                 | 3        | 3                                                                                 | 3      | 3     | 3                                                                                 |
| Mvmt Flow                | 5                                                                                 | 11       | 398                                                                               | 8      | 11    | 304                                                                               |
|                          |                                                                                   |          |                                                                                   |        |       |                                                                                   |
| Major/Minor              | Minor1                                                                            | Major1   |                                                                                   | Major2 |       |                                                                                   |
| Conflicting Flow All     | 729                                                                               | 403      | 0                                                                                 | 0      | 407   | 0                                                                                 |
| Stage 1                  | 403                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Stage 2                  | 326                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Critical Hdwy            | 6.43                                                                              | 6.23     | -                                                                                 | -      | 4.13  | -                                                                                 |
| Critical Hdwy Stg 1      | 5.43                                                                              | -        | -                                                                                 | -      | -     | -                                                                                 |
| Critical Hdwy Stg 2      | 5.43                                                                              | -        | -                                                                                 | -      | -     | -                                                                                 |
| Follow-up Hdwy           | 3.527                                                                             | 3.327    | -                                                                                 | -      | 2.227 | -                                                                                 |
| Pot Cap-1 Maneuver       | 388                                                                               | 645      | -                                                                                 | -      | 1146  | -                                                                                 |
| Stage 1                  | 673                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Stage 2                  | 729                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -      |       | -                                                                                 |
| Mov Cap-1 Maneuver       | 383                                                                               | 644      | -                                                                                 | -      | 1145  | -                                                                                 |
| Mov Cap-2 Maneuver       | 383                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Stage 1                  | 672                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Stage 2                  | 720                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
|                          |                                                                                   |          |                                                                                   |        |       |                                                                                   |
|                          |                                                                                   |          |                                                                                   |        |       |                                                                                   |
| Approach                 | WB                                                                                | NB       |                                                                                   | SB     |       |                                                                                   |
| HCM Control Delay, s     | 12.1                                                                              | 0        |                                                                                   | 0.3    |       |                                                                                   |
| HCM LOS                  | B                                                                                 |          |                                                                                   |        |       |                                                                                   |
|                          |                                                                                   |          |                                                                                   |        |       |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 |                                                                                   | SBL    | SBT   |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | -        | 525                                                                               | 1145   | -     |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | -        | 0.03                                                                              | 0.009  | -     |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | -        | 12.1                                                                              | 8.2    | 0     |                                                                                   |
| HCM Lane LOS             | -                                                                                 | -        | B                                                                                 | A      | A     |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | -        | 0.1                                                                               | 0      | -     |                                                                                   |

HCM 6th TWSC  
5: N Centre City Pkwy & Jesmond Dene Rd

Opening Year 2025 Conditions  
PM Peak Hour

| Intersection             |                                                                                   |          |                                                                                   |        |                                                                                   |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 1.9                                                                               |          |                                                                                   |        |                                                                                   |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR    | SBL                                                                               | SBT                                                                               |
| Lane Configurations      |  |          |  |        |  |  |
| Traffic Vol, veh/h       | 8                                                                                 | 54       | 291                                                                               | 11     | 65                                                                                | 194                                                                               |
| Future Vol, veh/h        | 8                                                                                 | 54       | 291                                                                               | 11     | 65                                                                                | 194                                                                               |
| Conflicting Peds, #/hr   | 0                                                                                 | 0        | 0                                                                                 | 0      | 0                                                                                 | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free   | Free                                                                              | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None   | -                                                                                 | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -      | 95                                                                                | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -      | -                                                                                 | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -      | -                                                                                 | 0                                                                                 |
| Peak Hour Factor         | 92                                                                                | 92       | 92                                                                                | 92     | 92                                                                                | 92                                                                                |
| Heavy Vehicles, %        | 3                                                                                 | 3        | 3                                                                                 | 3      | 3                                                                                 | 3                                                                                 |
| Mvmt Flow                | 9                                                                                 | 59       | 316                                                                               | 12     | 71                                                                                | 211                                                                               |
| Major/Minor              | Minor1                                                                            | Major1   |                                                                                   | Major2 |                                                                                   |                                                                                   |
| Conflicting Flow All     | 675                                                                               | 322      | 0                                                                                 | 0      | 328                                                                               | 0                                                                                 |
| Stage 1                  | 322                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Stage 2                  | 353                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Critical Hdwy            | 6.43                                                                              | 6.23     | -                                                                                 | -      | 4.13                                                                              | -                                                                                 |
| Critical Hdwy Stg 1      | 5.43                                                                              | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Critical Hdwy Stg 2      | 5.43                                                                              | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Follow-up Hdwy           | 3.527                                                                             | 3.327    | -                                                                                 | -      | 2.227                                                                             | -                                                                                 |
| Pot Cap-1 Maneuver       | 418                                                                               | 717      | -                                                                                 | -      | 1226                                                                              | -                                                                                 |
| Stage 1                  | 732                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Stage 2                  | 709                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -      |                                                                                   | -                                                                                 |
| Mov Cap-1 Maneuver       | 394                                                                               | 717      | -                                                                                 | -      | 1226                                                                              | -                                                                                 |
| Mov Cap-2 Maneuver       | 394                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Stage 1                  | 732                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Stage 2                  | 668                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Approach                 | WB                                                                                | NB       |                                                                                   | SB     |                                                                                   |                                                                                   |
| HCM Control Delay, s     | 11.2                                                                              | 0        |                                                                                   | 2      |                                                                                   |                                                                                   |
| HCM LOS                  | B                                                                                 |          |                                                                                   |        |                                                                                   |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 |                                                                                   | SBL    | SBT                                                                               |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | - 648    |                                                                                   | 1226   | -                                                                                 |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | - 0.104  |                                                                                   | 0.058  | -                                                                                 |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | - 11.2   |                                                                                   | 8.1    | -                                                                                 |                                                                                   |
| HCM Lane LOS             | -                                                                                 | - B      |                                                                                   | A      | -                                                                                 |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | - 0.3    |                                                                                   | 0.2    | -                                                                                 |                                                                                   |

## **Appendix G** - LOS Calculation Worksheets – Opening Year 2025 with Project Conditions

# HCM 6th Signalized Intersection Summary

## 1: I-15 SB Ramps & Deer Springs Rd

Opening Year 2025 with Project Conditions

AM Peak Hour

|                                                                                                    |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                                                           | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations                                                                                |  |  |  |  |  |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |  |  |
| Traffic Volume (veh/h)                                                                             | 0                                                                                 | 310                                                                               | 125                                                                               | 169                                                                               | 425                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 106                                                                                 | 2                                                                                   | 667                                                                                 |
| Future Volume (veh/h)                                                                              | 0                                                                                 | 310                                                                               | 125                                                                               | 169                                                                               | 425                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 106                                                                                 | 2                                                                                   | 667                                                                                 |
| Initial Q (Qb), veh                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                                                | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach                                                                              |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln                                                                             | 1758                                                                              | 1758                                                                              | 1758                                                                              | 1758                                                                              | 1758                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1758                                                                                | 1758                                                                                | 1758                                                                                |
| Adj Flow Rate, veh/h                                                                               | 0                                                                                 | 344                                                                               | 75                                                                                | 186                                                                               | 467                                                                               | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 114                                                                                 | 2                                                                                   | 51                                                                                  |
| Peak Hour Factor                                                                                   | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Percent Heavy Veh, %                                                                               | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                                                                                         | 2                                                                                 | 389                                                                               | 329                                                                               | 878                                                                               | 1412                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 144                                                                                 | 3                                                                                   | 106                                                                                 |
| Arrive On Green                                                                                    | 0.00                                                                              | 0.22                                                                              | 0.22                                                                              | 0.52                                                                              | 0.80                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.09                                                                                | 0.09                                                                                | 0.09                                                                                |
| Sat Flow, veh/h                                                                                    | 1674                                                                              | 1758                                                                              | 1490                                                                              | 1674                                                                              | 1758                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1647                                                                                | 29                                                                                  | 2622                                                                                |
| Grp Volume(v), veh/h                                                                               | 0                                                                                 | 344                                                                               | 75                                                                                | 186                                                                               | 467                                                                               | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 116                                                                                 | 0                                                                                   | 51                                                                                  |
| Grp Sat Flow(s),veh/h/ln                                                                           | 1674                                                                              | 1758                                                                              | 1490                                                                              | 1674                                                                              | 1758                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1676                                                                                | 0                                                                                   | 1311                                                                                |
| Q Serve(g_s), s                                                                                    | 0.0                                                                               | 19.0                                                                              | 4.1                                                                               | 5.9                                                                               | 7.1                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 6.8                                                                                 | 0.0                                                                                 | 6.6                                                                                 |
| Cycle Q Clear(g_c), s                                                                              | 0.0                                                                               | 19.0                                                                              | 4.1                                                                               | 5.9                                                                               | 7.1                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 6.8                                                                                 | 0.0                                                                                 | 6.6                                                                                 |
| Prop In Lane                                                                                       | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.98                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                                                             | 2                                                                                 | 389                                                                               | 329                                                                               | 878                                                                               | 1412                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 147                                                                                 | 0                                                                                   | 106                                                                                 |
| V/C Ratio(X)                                                                                       | 0.00                                                                              | 0.89                                                                              | 0.23                                                                              | 0.21                                                                              | 0.33                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.79                                                                                | 0.00                                                                                | 0.48                                                                                |
| Avail Cap(c_a), veh/h                                                                              | 335                                                                               | 780                                                                               | 661                                                                               | 878                                                                               | 1412                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 168                                                                                 | 0                                                                                   | 139                                                                                 |
| HCM Platoon Ratio                                                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                                                 | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.40                                                                              | 0.40                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                                                                           | 0.0                                                                               | 37.7                                                                              | 31.9                                                                              | 12.7                                                                              | 2.6                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 44.7                                                                                | 0.0                                                                                 | 284.3                                                                               |
| Incr Delay (d2), s/veh                                                                             | 0.0                                                                               | 24.3                                                                              | 1.6                                                                               | 0.0                                                                               | 0.3                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 17.0                                                                                | 0.0                                                                                 | 1.2                                                                                 |
| Initial Q Delay(d3),s/veh                                                                          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                                                           | 0.0                                                                               | 10.2                                                                              | 1.6                                                                               | 2.0                                                                               | 1.2                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 3.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh                                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh                                                                               | 0.0                                                                               | 62.0                                                                              | 33.6                                                                              | 12.7                                                                              | 2.9                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 61.7                                                                                | 0.0                                                                                 | 285.6                                                                               |
| LnGrp LOS                                                                                          | A                                                                                 | E                                                                                 | C                                                                                 | B                                                                                 | A                                                                                 | A                                                                                 |                                                                                    |                                                                                     |                                                                                     | E                                                                                   | A                                                                                   | F                                                                                   |
| Approach Vol, veh/h                                                                                |                                                                                   | 419                                                                               |                                                                                   |                                                                                   | 653                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 167                                                                                 |                                                                                     |
| Approach Delay, s/veh                                                                              |                                                                                   | 56.9                                                                              |                                                                                   |                                                                                   | 5.7                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 130.1                                                                               |                                                                                     |
| Approach LOS                                                                                       |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |
| Timer - Assigned Phs                                                                               | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                                                           | 58.2                                                                              | 27.9                                                                              |                                                                                   | 13.9                                                                              | 0.0                                                                               | 86.1                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                                                            | 5.8                                                                               | * 5.8                                                                             |                                                                                   | 5.1                                                                               | * 4.7                                                                             | 5.8                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                                                        | 30.0                                                                              | * 44                                                                              |                                                                                   | 10.0                                                                              | * 20                                                                              | 54.4                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s                                                                       | 7.9                                                                               | 21.0                                                                              |                                                                                   | 8.8                                                                               | 0.0                                                                               | 9.1                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                                                            | 0.2                                                                               | 1.2                                                                               |                                                                                   | 0.1                                                                               | 0.0                                                                               | 1.6                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay                                                                                 |                                                                                   |                                                                                   | 39.8                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                                                                                        |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                                                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 2: I-15 NB Ramps & Deer Springs Rd

Opening Year 2025 with Project Conditions

AM Peak Hour



| Movement                     | EBL  | EBT  | EBR  | WBL   | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT | SBR |
|------------------------------|------|------|------|-------|------|------|------|------|------|------|-----|-----|
| Lane Configurations          |      |      |      |       |      |      |      |      |      |      |     |     |
| Traffic Volume (veh/h)       | 202  | 214  | 0    | 0     | 457  | 83   | 137  | 0    | 131  | 0    | 0   | 0   |
| Future Volume (veh/h)        | 202  | 214  | 0    | 0     | 457  | 83   | 137  | 0    | 131  | 0    | 0   | 0   |
| Initial Q (Qb), veh          | 0    | 0    | 0    | 0     | 0    | 0    | 0    | 0    | 0    |      |     |     |
| Ped-Bike Adj(A_pbT)          | 1.00 |      | 1.00 | 1.00  |      | 1.00 | 1.00 |      | 1.00 |      |     |     |
| Parking Bus, Adj             | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |      |     |     |
| Work Zone On Approach        | No   |      |      | No    |      |      | No   |      |      |      |     |     |
| Adj Sat Flow, veh/h/ln       | 1758 | 1758 | 0    | 0     | 1758 | 1758 | 1758 | 1758 | 1758 |      |     |     |
| Adj Flow Rate, veh/h         | 246  | 261  | 0    | 0     | 508  | 30   | 154  | 0    | 13   |      |     |     |
| Peak Hour Factor             | 0.82 | 0.82 | 0.82 | 0.90  | 0.90 | 0.90 | 0.89 | 0.89 | 0.89 |      |     |     |
| Percent Heavy Veh, %         | 3    | 3    | 0    | 0     | 3    | 3    | 3    | 3    | 3    |      |     |     |
| Cap, veh/h                   | 331  | 1136 | 0    | 0     | 609  | 516  | 217  | 0    | 193  |      |     |     |
| Arrive On Green              | 0.20 | 0.65 | 0.00 | 0.00  | 0.35 | 0.35 | 0.13 | 0.00 | 0.13 |      |     |     |
| Sat Flow, veh/h              | 1674 | 1758 | 0    | 0     | 1758 | 1490 | 1674 | 0    | 1490 |      |     |     |
| Grp Volume(v), veh/h         | 246  | 261  | 0    | 0     | 508  | 30   | 154  | 0    | 13   |      |     |     |
| Grp Sat Flow(s),veh/h/ln     | 1674 | 1758 | 0    | 0     | 1758 | 1490 | 1674 | 0    | 1490 |      |     |     |
| Q Serve(g_s), s              | 6.4  | 2.8  | 0.0  | 0.0   | 12.2 | 0.6  | 4.1  | 0.0  | 0.4  |      |     |     |
| Cycle Q Clear(g_c), s        | 6.4  | 2.8  | 0.0  | 0.0   | 12.2 | 0.6  | 4.1  | 0.0  | 0.4  |      |     |     |
| Prop In Lane                 | 1.00 |      | 0.00 | 0.00  |      | 1.00 | 1.00 |      | 1.00 |      |     |     |
| Lane Grp Cap(c), veh/h       | 331  | 1136 | 0    | 0     | 609  | 516  | 217  | 0    | 193  |      |     |     |
| V/C Ratio(X)                 | 0.74 | 0.23 | 0.00 | 0.00  | 0.83 | 0.06 | 0.71 | 0.00 | 0.07 |      |     |     |
| Avail Cap(c_a), veh/h        | 1286 | 3030 | 0    | 0     | 1500 | 1271 | 747  | 0    | 665  |      |     |     |
| HCM Platoon Ratio            | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |      |     |     |
| Upstream Filter(I)           | 1.00 | 1.00 | 0.00 | 0.00  | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |      |     |     |
| Uniform Delay (d), s/veh     | 17.3 | 3.4  | 0.0  | 0.0   | 13.8 | 10.0 | 19.2 | 0.0  | 17.6 |      |     |     |
| Incr Delay (d2), s/veh       | 4.7  | 0.0  | 0.0  | 0.0   | 1.2  | 0.0  | 4.3  | 0.0  | 0.1  |      |     |     |
| Initial Q Delay(d3),s/veh    | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |      |     |     |
| %ile BackOfQ(50%),veh/ln     | 2.3  | 0.2  | 0.0  | 0.0   | 3.5  | 0.1  | 1.7  | 0.0  | 0.1  |      |     |     |
| Unsig. Movement Delay, s/veh |      |      |      |       |      |      |      |      |      |      |     |     |
| LnGrp Delay(d),s/veh         | 22.0 | 3.4  | 0.0  | 0.0   | 15.0 | 10.0 | 23.5 | 0.0  | 17.7 |      |     |     |
| LnGrp LOS                    | C    | A    | A    | A     | B    | B    | C    | A    | B    |      |     |     |
| Approach Vol, veh/h          | 507  |      |      | 538   |      |      | 167  |      |      |      |     |     |
| Approach Delay, s/veh        | 12.4 |      |      | 14.7  |      |      | 23.0 |      |      |      |     |     |
| Approach LOS                 | B    |      |      | B     |      |      | C    |      |      |      |     |     |
| Timer - Assigned Phs         | 2    |      |      | 5     |      |      | 6    |      |      | 8    |     |     |
| Phs Duration (G+Y+Rc), s     | 35.5 |      |      | 13.8  |      |      | 21.7 |      |      | 10.4 |     |     |
| Change Period (Y+Rc), s      | 5.8  |      |      | * 4.7 |      |      | 5.8  |      |      | 4.5  |     |     |
| Max Green Setting (Gmax), s  | 79.2 |      |      | * 35  |      |      | 39.2 |      |      | 20.5 |     |     |
| Max Q Clear Time (g_c+I1), s | 4.8  |      |      | 8.4   |      |      | 14.2 |      |      | 6.1  |     |     |
| Green Ext Time (p_c), s      | 0.8  |      |      | 1.1   |      |      | 1.7  |      |      | 0.7  |     |     |

### Intersection Summary

HCM 6th Ctrl Delay 14.9

HCM 6th LOS B

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM 6th Signalized Intersection Summary

Opening Year 2025 with Project Conditions

3: N Centre City Pkwy/Champagne Blvd & Deer Springs Rd/Mountain Meadow Rd AM Peak Hour



| Movement                      | EBL                                                                               | EBT                                                                               | EBR  | WBL                                                                               | WBT                                                                               | WBR   | NBL  | NBT                                                                               | NBR   | SBL   | SBT                                                                               | SBR                                                                               |
|-------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|------|-----------------------------------------------------------------------------------|-------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Configurations           |  |  |      |  |  |       |      |  |       |       |  |  |
| Traffic Volume (veh/h)        | 68                                                                                | 76                                                                                | 201  | 271                                                                               | 230                                                                               | 8     | 92   | 45                                                                                | 42    | 16    | 467                                                                               | 218                                                                               |
| Future Volume (veh/h)         | 68                                                                                | 76                                                                                | 201  | 271                                                                               | 230                                                                               | 8     | 92   | 45                                                                                | 42    | 16    | 467                                                                               | 218                                                                               |
| Initial Q (Qb), veh           | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 0     | 0    | 0                                                                                 | 0     | 0     | 0                                                                                 | 0                                                                                 |
| Ped-Bike Adj(A_pbT)           | 1.00                                                                              |                                                                                   | 1.00 | 1.00                                                                              |                                                                                   | 1.00  | 1.00 |                                                                                   | 0.99  | 1.00  |                                                                                   | 1.00                                                                              |
| Parking Bus, Adj              | 1.00                                                                              | 1.00                                                                              | 1.00 | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00 | 1.00                                                                              | 1.00  | 1.00  | 1.00                                                                              | 1.00                                                                              |
| Work Zone On Approach         | No                                                                                |                                                                                   |      |                                                                                   | No                                                                                |       | No   |                                                                                   |       |       | No                                                                                |                                                                                   |
| Adj Sat Flow, veh/h/ln        | 1758                                                                              | 1758                                                                              | 1758 | 1758                                                                              | 1758                                                                              | 1758  | 1758 | 1758                                                                              | 1758  | 1758  | 1758                                                                              | 1758                                                                              |
| Adj Flow Rate, veh/h          | 83                                                                                | 93                                                                                | 29   | 330                                                                               | 280                                                                               | 8     | 108  | 53                                                                                | 40    | 17    | 502                                                                               | 234                                                                               |
| Peak Hour Factor              | 0.82                                                                              | 0.82                                                                              | 0.82 | 0.82                                                                              | 0.82                                                                              | 0.82  | 0.85 | 0.85                                                                              | 0.85  | 0.93  | 0.93                                                                              | 0.93                                                                              |
| Percent Heavy Veh, %          | 3                                                                                 | 3                                                                                 | 3    | 3                                                                                 | 3                                                                                 | 3     | 3    | 3                                                                                 | 3     | 3     | 3                                                                                 | 3                                                                                 |
| Cap, veh/h                    | 366                                                                               | 502                                                                               | 150  | 226                                                                               | 345                                                                               | 10    | 211  | 103                                                                               | 78    | 14    | 404                                                                               | 354                                                                               |
| Arrive On Green               | 0.22                                                                              | 0.20                                                                              | 0.20 | 0.13                                                                              | 0.10                                                                              | 0.10  | 0.24 | 0.24                                                                              | 0.24  | 0.24  | 0.24                                                                              | 0.24                                                                              |
| Sat Flow, veh/h               | 1674                                                                              | 2533                                                                              | 759  | 1674                                                                              | 3316                                                                              | 95    | 886  | 435                                                                               | 328   | 57    | 1698                                                                              | 1490                                                                              |
| Grp Volume(v), veh/h          | 83                                                                                | 60                                                                                | 62   | 330                                                                               | 141                                                                               | 147   | 201  | 0                                                                                 | 0     | 519   | 0                                                                                 | 234                                                                               |
| Grp Sat Flow(s),veh/h/ln      | 1674                                                                              | 1670                                                                              | 1621 | 1674                                                                              | 1670                                                                              | 1741  | 1649 | 0                                                                                 | 0     | 1755  | 0                                                                                 | 1490                                                                              |
| Q Serve(g_s), s               | 5.1                                                                               | 3.8                                                                               | 4.0  | 17.0                                                                              | 10.4                                                                              | 10.4  | 13.3 | 0.0                                                                               | 0.0   | 30.0  | 0.0                                                                               | 17.9                                                                              |
| Cycle Q Clear(g_c), s         | 5.1                                                                               | 3.8                                                                               | 4.0  | 17.0                                                                              | 10.4                                                                              | 10.4  | 13.3 | 0.0                                                                               | 0.0   | 30.0  | 0.0                                                                               | 17.9                                                                              |
| Prop In Lane                  | 1.00                                                                              |                                                                                   | 0.47 | 1.00                                                                              |                                                                                   | 0.05  | 0.54 |                                                                                   | 0.20  | 0.03  |                                                                                   | 1.00                                                                              |
| Lane Grp Cap(c), veh/h        | 366                                                                               | 331                                                                               | 321  | 226                                                                               | 174                                                                               | 181   | 392  | 0                                                                                 | 0     | 418   | 0                                                                                 | 354                                                                               |
| V/C Ratio(X)                  | 0.23                                                                              | 0.18                                                                              | 0.19 | 1.46                                                                              | 0.81                                                                              | 0.81  | 0.51 | 0.00                                                                              | 0.00  | 1.24  | 0.00                                                                              | 0.66                                                                              |
| Avail Cap(c_a), veh/h         | 398                                                                               | 503                                                                               | 489  | 226                                                                               | 331                                                                               | 345   | 458  | 0                                                                                 | 0     | 418   | 0                                                                                 | 354                                                                               |
| HCM Platoon Ratio             | 1.00                                                                              | 1.00                                                                              | 1.00 | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00 | 1.00                                                                              | 1.00  | 1.00  | 1.00                                                                              | 1.00                                                                              |
| Upstream Filter(I)            | 1.00                                                                              | 1.00                                                                              | 1.00 | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00 | 0.00                                                                              | 0.00  | 1.00  | 0.00                                                                              | 1.00                                                                              |
| Uniform Delay (d), s/veh      | 40.5                                                                              | 42.0                                                                              | 42.1 | 54.5                                                                              | 55.3                                                                              | 55.3  | 41.7 | 0.0                                                                               | 0.0   | 48.1  | 0.0                                                                               | 43.4                                                                              |
| Incr Delay (d2), s/veh        | 0.1                                                                               | 0.1                                                                               | 0.1  | 230.7                                                                             | 3.4                                                                               | 3.4   | 0.4  | 0.0                                                                               | 0.0   | 128.2 | 0.0                                                                               | 3.6                                                                               |
| Initial Q Delay(d3),s/veh     | 0.0                                                                               | 0.0                                                                               | 0.0  | 0.0                                                                               | 0.0                                                                               | 0.0   | 0.0  | 0.0                                                                               | 0.0   | 0.0   | 0.0                                                                               | 0.0                                                                               |
| %ile BackOfQ(50%),veh/ln      | 2.1                                                                               | 1.5                                                                               | 1.6  | 21.4                                                                              | 4.4                                                                               | 4.6   | 5.2  | 0.0                                                                               | 0.0   | 27.3  | 0.0                                                                               | 6.7                                                                               |
| Unsig. Movement Delay, s/veh  |                                                                                   |                                                                                   |      |                                                                                   |                                                                                   |       |      |                                                                                   |       |       |                                                                                   |                                                                                   |
| LnGrp Delay(d),s/veh          | 40.6                                                                              | 42.1                                                                              | 42.2 | 285.2                                                                             | 58.7                                                                              | 58.6  | 42.1 | 0.0                                                                               | 0.0   | 176.2 | 0.0                                                                               | 47.1                                                                              |
| LnGrp LOS                     | D                                                                                 | D                                                                                 | D    | F                                                                                 | E                                                                                 | E     | D    | A                                                                                 | A     | F     | A                                                                                 | D                                                                                 |
| Approach Vol, veh/h           | 205                                                                               |                                                                                   |      |                                                                                   | 618                                                                               |       | 201  |                                                                                   | 753   |       |                                                                                   |                                                                                   |
| Approach Delay, s/veh         | 41.5                                                                              |                                                                                   |      |                                                                                   | 179.7                                                                             |       | 42.1 |                                                                                   | 136.1 |       |                                                                                   |                                                                                   |
| Approach LOS                  | D                                                                                 |                                                                                   |      |                                                                                   | F                                                                                 |       | D    |                                                                                   | F     |       |                                                                                   |                                                                                   |
| Timer - Assigned Phs          | 1                                                                                 | 2                                                                                 | 4    |                                                                                   | 5                                                                                 | 6     | 8    |                                                                                   |       |       |                                                                                   |                                                                                   |
| Phs Duration (G+Y+Rc), s      | 31.9                                                                              | 31.2                                                                              | 36.5 |                                                                                   | 33.8                                                                              | 19.3  | 36.5 |                                                                                   |       |       |                                                                                   |                                                                                   |
| Change Period (Y+Rc), s       | 4.9                                                                               | 6.2                                                                               | 6.5  |                                                                                   | 6.2                                                                               | * 6.2 | 6.5  |                                                                                   |       |       |                                                                                   |                                                                                   |
| Max Green Setting (Gmax), s   | 38.0                                                                              | 38.0                                                                              | 30.0 |                                                                                   | 30.0                                                                              | * 25  | 35.0 |                                                                                   |       |       |                                                                                   |                                                                                   |
| Max Q Clear Time (g_c+119, s) | 6.0                                                                               | 6.0                                                                               | 32.0 |                                                                                   | 7.1                                                                               | 12.4  | 15.3 |                                                                                   |       |       |                                                                                   |                                                                                   |
| Green Ext Time (p_c), s       | 0.0                                                                               | 0.3                                                                               | 0.0  |                                                                                   | 0.1                                                                               | 0.7   | 0.5  |                                                                                   |       |       |                                                                                   |                                                                                   |

## Intersection Summary

HCM 6th Ctrl Delay 129.7

HCM 6th LOS F

## Notes

User approved pedestrian interval to be less than phase max green.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC  
4: N Centre City Pkwy & Tierra Libertia Rd

Opening Year 2025 with Project Conditions  
AM Peak Hour

| Intersection             |                                                                                   |          |                                                                                   |        |       |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|--------|-------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 0.6                                                                               |          |                                                                                   |        |       |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR    | SBL   | SBT                                                                               |
| Lane Configurations      |  |          |  |        |       |  |
| Traffic Vol, veh/h       | 13                                                                                | 6        | 158                                                                               | 8      | 24    | 881                                                                               |
| Future Vol, veh/h        | 13                                                                                | 6        | 158                                                                               | 8      | 24    | 881                                                                               |
| Conflicting Peds, #/hr   | 0                                                                                 | 0        | 0                                                                                 | 1      | 0     | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free   | Free  | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None   | -     | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -      | -     | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -      | -     | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -      | -     | 0                                                                                 |
| Peak Hour Factor         | 75                                                                                | 75       | 63                                                                                | 63     | 93    | 93                                                                                |
| Heavy Vehicles, %        | 3                                                                                 | 3        | 3                                                                                 | 3      | 3     | 3                                                                                 |
| Mvmt Flow                | 17                                                                                | 8        | 251                                                                               | 13     | 26    | 947                                                                               |
|                          |                                                                                   |          |                                                                                   |        |       |                                                                                   |
| Major/Minor              | Minor1                                                                            | Major1   |                                                                                   | Major2 |       |                                                                                   |
| Conflicting Flow All     | 1258                                                                              | 259      | 0                                                                                 | 0      | 265   | 0                                                                                 |
| Stage 1                  | 259                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Stage 2                  | 999                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Critical Hdwy            | 6.43                                                                              | 6.23     | -                                                                                 | -      | 4.13  | -                                                                                 |
| Critical Hdwy Stg 1      | 5.43                                                                              | -        | -                                                                                 | -      | -     | -                                                                                 |
| Critical Hdwy Stg 2      | 5.43                                                                              | -        | -                                                                                 | -      | -     | -                                                                                 |
| Follow-up Hdwy           | 3.527                                                                             | 3.327    | -                                                                                 | -      | 2.227 | -                                                                                 |
| Pot Cap-1 Maneuver       | 188                                                                               | 777      | -                                                                                 | -      | 1293  | -                                                                                 |
| Stage 1                  | 782                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Stage 2                  | 355                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -      |       | -                                                                                 |
| Mov Cap-1 Maneuver       | 180                                                                               | 776      | -                                                                                 | -      | 1292  | -                                                                                 |
| Mov Cap-2 Maneuver       | 180                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Stage 1                  | 781                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Stage 2                  | 340                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
|                          |                                                                                   |          |                                                                                   |        |       |                                                                                   |
|                          |                                                                                   |          |                                                                                   |        |       |                                                                                   |
| Approach                 | WB                                                                                | NB       |                                                                                   | SB     |       |                                                                                   |
| HCM Control Delay, s     | 21.9                                                                              | 0        |                                                                                   | 0.2    |       |                                                                                   |
| HCM LOS                  | C                                                                                 |          |                                                                                   |        |       |                                                                                   |
|                          |                                                                                   |          |                                                                                   |        |       |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 |                                                                                   | SBL    | SBT   |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | -        | 238                                                                               | 1292   | -     |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | -        | 0.106                                                                             | 0.02   | -     |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | -        | 21.9                                                                              | 7.8    | 0     |                                                                                   |
| HCM Lane LOS             | -                                                                                 | -        | C                                                                                 | A      | A     |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | -        | 0.4                                                                               | 0.1    | -     |                                                                                   |

HCM 6th TWSC  
5: N Centre City Pkwy & Jesmond Dene Rd

Opening Year 2025 with Project Conditions  
AM Peak Hour

| Intersection             |                                                                                   |          |                                                                                   |        |                                                                                   |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 1.5                                                                               |          |                                                                                   |        |                                                                                   |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR    | SBL                                                                               | SBT                                                                               |
| Lane Configurations      |  |          |  |        |  |  |
| Traffic Vol, veh/h       | 13                                                                                | 70       | 96                                                                                | 6      | 81                                                                                | 813                                                                               |
| Future Vol, veh/h        | 13                                                                                | 70       | 96                                                                                | 6      | 81                                                                                | 813                                                                               |
| Conflicting Peds, #/hr   | 0                                                                                 | 0        | 0                                                                                 | 0      | 0                                                                                 | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free   | Free                                                                              | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None   | -                                                                                 | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -      | 95                                                                                | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -      | -                                                                                 | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -      | -                                                                                 | 0                                                                                 |
| Peak Hour Factor         | 92                                                                                | 92       | 92                                                                                | 92     | 92                                                                                | 92                                                                                |
| Heavy Vehicles, %        | 3                                                                                 | 3        | 3                                                                                 | 3      | 3                                                                                 | 3                                                                                 |
| Mvmt Flow                | 14                                                                                | 76       | 104                                                                               | 7      | 88                                                                                | 884                                                                               |
|                          |                                                                                   |          |                                                                                   |        |                                                                                   |                                                                                   |
| Major/Minor              | Minor1                                                                            | Major1   |                                                                                   | Major2 |                                                                                   |                                                                                   |
| Conflicting Flow All     | 1168                                                                              | 108      | 0                                                                                 | 0      | 111                                                                               | 0                                                                                 |
| Stage 1                  | 108                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Stage 2                  | 1060                                                                              | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Critical Hdwy            | 6.43                                                                              | 6.23     | -                                                                                 | -      | 4.13                                                                              | -                                                                                 |
| Critical Hdwy Stg 1      | 5.43                                                                              | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Critical Hdwy Stg 2      | 5.43                                                                              | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Follow-up Hdwy           | 3.527                                                                             | 3.327    | -                                                                                 | -      | 2.227                                                                             | -                                                                                 |
| Pot Cap-1 Maneuver       | 213                                                                               | 943      | -                                                                                 | -      | 1473                                                                              | -                                                                                 |
| Stage 1                  | 914                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Stage 2                  | 332                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -      |                                                                                   | -                                                                                 |
| Mov Cap-1 Maneuver       | 200                                                                               | 943      | -                                                                                 | -      | 1473                                                                              | -                                                                                 |
| Mov Cap-2 Maneuver       | 200                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Stage 1                  | 914                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Stage 2                  | 312                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
|                          |                                                                                   |          |                                                                                   |        |                                                                                   |                                                                                   |
|                          |                                                                                   |          |                                                                                   |        |                                                                                   |                                                                                   |
| Approach                 | WB                                                                                | NB       |                                                                                   | SB     |                                                                                   |                                                                                   |
| HCM Control Delay, s     | 12.1                                                                              | 0        |                                                                                   | 0.7    |                                                                                   |                                                                                   |
| HCM LOS                  | B                                                                                 |          |                                                                                   |        |                                                                                   |                                                                                   |
|                          |                                                                                   |          |                                                                                   |        |                                                                                   |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 |                                                                                   | SBL    | SBT                                                                               |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | -        | 596                                                                               | 1473   | -                                                                                 |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | -        | 0.151                                                                             | 0.06   | -                                                                                 |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | -        | 12.1                                                                              | 7.6    | -                                                                                 |                                                                                   |
| HCM Lane LOS             | -                                                                                 | -        | B                                                                                 | A      | -                                                                                 |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | -        | 0.5                                                                               | 0.2    | -                                                                                 |                                                                                   |

HCM 6th TWSC  
6: Project Dwy #1 & Tierra Libertia Rd

Opening Year 2025 with Project Conditions  
AM Peak Hour

| Intersection             |                                                                                   |      |        |                                                                                   |                                                                                   |       |
|--------------------------|-----------------------------------------------------------------------------------|------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|
| Int Delay, s/veh         | 0                                                                                 |      |        |                                                                                   |                                                                                   |       |
| Movement                 | EBT                                                                               | EBR  | WBL    | WBT                                                                               | NBL                                                                               | NBR   |
| Lane Configurations      |  |      |        |  |  |       |
| Traffic Vol, veh/h       | 18                                                                                | 14   | 0      | 19                                                                                | 0                                                                                 | 0     |
| Future Vol, veh/h        | 18                                                                                | 14   | 0      | 19                                                                                | 0                                                                                 | 0     |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0      | 0                                                                                 | 0                                                                                 | 0     |
| Sign Control             | Free                                                                              | Free | Free   | Free                                                                              | Stop                                                                              | Stop  |
| RT Channelized           | -                                                                                 | None | -      | None                                                                              | -                                                                                 | None  |
| Storage Length           | -                                                                                 | -    | -      | -                                                                                 | 0                                                                                 | -     |
| Veh in Median Storage, # | 0                                                                                 | -    | -      | 0                                                                                 | 0                                                                                 | -     |
| Grade, %                 | 0                                                                                 | -    | -      | 0                                                                                 | 0                                                                                 | -     |
| Peak Hour Factor         | 92                                                                                | 92   | 92     | 92                                                                                | 92                                                                                | 92    |
| Heavy Vehicles, %        | 2                                                                                 | 2    | 2      | 2                                                                                 | 2                                                                                 | 2     |
| Mvmt Flow                | 20                                                                                | 15   | 0      | 21                                                                                | 0                                                                                 | 0     |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |       |
| Major/Minor              | Major1                                                                            |      | Major2 |                                                                                   | Minor1                                                                            |       |
| Conflicting Flow All     | 0                                                                                 | 0    | 35     | 0                                                                                 | 49                                                                                | 28    |
| Stage 1                  | -                                                                                 | -    | -      | -                                                                                 | 28                                                                                | -     |
| Stage 2                  | -                                                                                 | -    | -      | -                                                                                 | 21                                                                                | -     |
| Critical Hdwy            | -                                                                                 | -    | 4.12   | -                                                                                 | 6.42                                                                              | 6.22  |
| Critical Hdwy Stg 1      | -                                                                                 | -    | -      | -                                                                                 | 5.42                                                                              | -     |
| Critical Hdwy Stg 2      | -                                                                                 | -    | -      | -                                                                                 | 5.42                                                                              | -     |
| Follow-up Hdwy           | -                                                                                 | -    | 2.218  | -                                                                                 | 3.518                                                                             | 3.318 |
| Pot Cap-1 Maneuver       | -                                                                                 | -    | 1576   | -                                                                                 | 960                                                                               | 1047  |
| Stage 1                  | -                                                                                 | -    | -      | -                                                                                 | 995                                                                               | -     |
| Stage 2                  | -                                                                                 | -    | -      | -                                                                                 | 1002                                                                              | -     |
| Platoon blocked, %       | -                                                                                 | -    |        | -                                                                                 |                                                                                   |       |
| Mov Cap-1 Maneuver       | -                                                                                 | -    | 1576   | -                                                                                 | 960                                                                               | 1047  |
| Mov Cap-2 Maneuver       | -                                                                                 | -    | -      | -                                                                                 | 960                                                                               | -     |
| Stage 1                  | -                                                                                 | -    | -      | -                                                                                 | 995                                                                               | -     |
| Stage 2                  | -                                                                                 | -    | -      | -                                                                                 | 1002                                                                              | -     |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |       |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |       |
| Approach                 | EB                                                                                |      | WB     |                                                                                   | NB                                                                                |       |
| HCM Control Delay, s     | 0                                                                                 |      | 0      |                                                                                   | 0                                                                                 |       |
| HCM LOS                  |                                                                                   |      |        |                                                                                   | A                                                                                 |       |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |       |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |       |
| Minor Lane/Major Mvmt    | NBLn1                                                                             | EBT  | EBR    | WBL                                                                               | WBT                                                                               |       |
| Capacity (veh/h)         | -                                                                                 | -    | -      | 1576                                                                              | -                                                                                 |       |
| HCM Lane V/C Ratio       | -                                                                                 | -    | -      | -                                                                                 | -                                                                                 |       |
| HCM Control Delay (s)    | 0                                                                                 | -    | -      | 0                                                                                 | -                                                                                 |       |
| HCM Lane LOS             | A                                                                                 | -    | -      | A                                                                                 | -                                                                                 |       |
| HCM 95th %tile Q(veh)    | -                                                                                 | -    | -      | 0                                                                                 | -                                                                                 |       |

HCM 6th TWSC  
7: Project Dwy #2 & Tierra Libertia Rd

Opening Year 2025 with Project Conditions  
AM Peak Hour

| Intersection             |                                                                                   |      |        |                                                                                   |                                                                                   |       |
|--------------------------|-----------------------------------------------------------------------------------|------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|
| Int Delay, s/veh         | 0                                                                                 |      |        |                                                                                   |                                                                                   |       |
| Movement                 | EBT                                                                               | EBR  | WBL    | WBT                                                                               | NBL                                                                               | NBR   |
| Lane Configurations      |  |      |        |  |  |       |
| Traffic Vol, veh/h       | 11                                                                                | 7    | 0      | 19                                                                                | 0                                                                                 | 0     |
| Future Vol, veh/h        | 11                                                                                | 7    | 0      | 19                                                                                | 0                                                                                 | 0     |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0      | 0                                                                                 | 0                                                                                 | 0     |
| Sign Control             | Free                                                                              | Free | Free   | Free                                                                              | Stop                                                                              | Stop  |
| RT Channelized           | -                                                                                 | None | -      | None                                                                              | -                                                                                 | None  |
| Storage Length           | -                                                                                 | -    | -      | -                                                                                 | 0                                                                                 | -     |
| Veh in Median Storage, # | 0                                                                                 | -    | -      | 0                                                                                 | 0                                                                                 | -     |
| Grade, %                 | 0                                                                                 | -    | -      | 0                                                                                 | 0                                                                                 | -     |
| Peak Hour Factor         | 92                                                                                | 92   | 92     | 92                                                                                | 92                                                                                | 92    |
| Heavy Vehicles, %        | 2                                                                                 | 2    | 2      | 2                                                                                 | 2                                                                                 | 2     |
| Mvmt Flow                | 12                                                                                | 8    | 0      | 21                                                                                | 0                                                                                 | 0     |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |       |
| Major/Minor              | Major1                                                                            |      | Major2 |                                                                                   | Minor1                                                                            |       |
| Conflicting Flow All     | 0                                                                                 | 0    | 20     | 0                                                                                 | 37                                                                                | 16    |
| Stage 1                  | -                                                                                 | -    | -      | -                                                                                 | 16                                                                                | -     |
| Stage 2                  | -                                                                                 | -    | -      | -                                                                                 | 21                                                                                | -     |
| Critical Hdwy            | -                                                                                 | -    | 4.12   | -                                                                                 | 6.42                                                                              | 6.22  |
| Critical Hdwy Stg 1      | -                                                                                 | -    | -      | -                                                                                 | 5.42                                                                              | -     |
| Critical Hdwy Stg 2      | -                                                                                 | -    | -      | -                                                                                 | 5.42                                                                              | -     |
| Follow-up Hdwy           | -                                                                                 | -    | 2.218  | -                                                                                 | 3.518                                                                             | 3.318 |
| Pot Cap-1 Maneuver       | -                                                                                 | -    | 1596   | -                                                                                 | 975                                                                               | 1063  |
| Stage 1                  | -                                                                                 | -    | -      | -                                                                                 | 1007                                                                              | -     |
| Stage 2                  | -                                                                                 | -    | -      | -                                                                                 | 1002                                                                              | -     |
| Platoon blocked, %       | -                                                                                 | -    |        | -                                                                                 |                                                                                   |       |
| Mov Cap-1 Maneuver       | -                                                                                 | -    | 1596   | -                                                                                 | 975                                                                               | 1063  |
| Mov Cap-2 Maneuver       | -                                                                                 | -    | -      | -                                                                                 | 975                                                                               | -     |
| Stage 1                  | -                                                                                 | -    | -      | -                                                                                 | 1007                                                                              | -     |
| Stage 2                  | -                                                                                 | -    | -      | -                                                                                 | 1002                                                                              | -     |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |       |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |       |
| Approach                 | EB                                                                                |      | WB     |                                                                                   | NB                                                                                |       |
| HCM Control Delay, s     | 0                                                                                 |      | 0      |                                                                                   | 0                                                                                 |       |
| HCM LOS                  |                                                                                   |      |        |                                                                                   | A                                                                                 |       |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |       |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |       |
| Minor Lane/Major Mvmt    | NBLn1                                                                             | EBT  | EBR    | WBL                                                                               | WBT                                                                               |       |
| Capacity (veh/h)         | -                                                                                 | -    | -      | 1596                                                                              | -                                                                                 |       |
| HCM Lane V/C Ratio       | -                                                                                 | -    | -      | -                                                                                 | -                                                                                 |       |
| HCM Control Delay (s)    | 0                                                                                 | -    | -      | 0                                                                                 | -                                                                                 |       |
| HCM Lane LOS             | A                                                                                 | -    | -      | A                                                                                 | -                                                                                 |       |
| HCM 95th %tile Q(veh)    | -                                                                                 | -    | -      | 0                                                                                 | -                                                                                 |       |

HCM 6th TWSC  
8: Project Dwy #3 & Tierra Libertia Rd

Opening Year 2025 with Project Conditions  
AM Peak Hour

| Intersection             |                                                                                   |      |        |                                                                                   |                                                                                   |       |
|--------------------------|-----------------------------------------------------------------------------------|------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|
| Int Delay, s/veh         | 0.3                                                                               |      |        |                                                                                   |                                                                                   |       |
| Movement                 | EBT                                                                               | EBR  | WBL    | WBT                                                                               | NBL                                                                               | NBR   |
| Lane Configurations      |  |      |        |  |  |       |
| Traffic Vol, veh/h       | 4                                                                                 | 7    | 0      | 18                                                                                | 1                                                                                 | 0     |
| Future Vol, veh/h        | 4                                                                                 | 7    | 0      | 18                                                                                | 1                                                                                 | 0     |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0      | 0                                                                                 | 0                                                                                 | 0     |
| Sign Control             | Free                                                                              | Free | Free   | Free                                                                              | Stop                                                                              | Stop  |
| RT Channelized           | -                                                                                 | None | -      | None                                                                              | -                                                                                 | None  |
| Storage Length           | -                                                                                 | -    | -      | -                                                                                 | 0                                                                                 | -     |
| Veh in Median Storage, # | 0                                                                                 | -    | -      | 0                                                                                 | 0                                                                                 | -     |
| Grade, %                 | 0                                                                                 | -    | -      | 0                                                                                 | 0                                                                                 | -     |
| Peak Hour Factor         | 92                                                                                | 92   | 92     | 92                                                                                | 92                                                                                | 92    |
| Heavy Vehicles, %        | 2                                                                                 | 2    | 2      | 2                                                                                 | 2                                                                                 | 2     |
| Mvmt Flow                | 4                                                                                 | 8    | 0      | 20                                                                                | 1                                                                                 | 0     |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |       |
| Major/Minor              | Major1                                                                            |      | Major2 |                                                                                   | Minor1                                                                            |       |
| Conflicting Flow All     | 0                                                                                 | 0    | 12     | 0                                                                                 | 28                                                                                | 8     |
| Stage 1                  | -                                                                                 | -    | -      | -                                                                                 | 8                                                                                 | -     |
| Stage 2                  | -                                                                                 | -    | -      | -                                                                                 | 20                                                                                | -     |
| Critical Hdwy            | -                                                                                 | -    | 4.12   | -                                                                                 | 6.42                                                                              | 6.22  |
| Critical Hdwy Stg 1      | -                                                                                 | -    | -      | -                                                                                 | 5.42                                                                              | -     |
| Critical Hdwy Stg 2      | -                                                                                 | -    | -      | -                                                                                 | 5.42                                                                              | -     |
| Follow-up Hdwy           | -                                                                                 | -    | 2.218  | -                                                                                 | 3.518                                                                             | 3.318 |
| Pot Cap-1 Maneuver       | -                                                                                 | -    | 1607   | -                                                                                 | 987                                                                               | 1074  |
| Stage 1                  | -                                                                                 | -    | -      | -                                                                                 | 1015                                                                              | -     |
| Stage 2                  | -                                                                                 | -    | -      | -                                                                                 | 1003                                                                              | -     |
| Platoon blocked, %       | -                                                                                 | -    |        | -                                                                                 |                                                                                   |       |
| Mov Cap-1 Maneuver       | -                                                                                 | -    | 1607   | -                                                                                 | 987                                                                               | 1074  |
| Mov Cap-2 Maneuver       | -                                                                                 | -    | -      | -                                                                                 | 987                                                                               | -     |
| Stage 1                  | -                                                                                 | -    | -      | -                                                                                 | 1015                                                                              | -     |
| Stage 2                  | -                                                                                 | -    | -      | -                                                                                 | 1003                                                                              | -     |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |       |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |       |
| Approach                 | EB                                                                                |      | WB     |                                                                                   | NB                                                                                |       |
| HCM Control Delay, s     | 0                                                                                 |      | 0      |                                                                                   | 8.7                                                                               |       |
| HCM LOS                  |                                                                                   |      |        |                                                                                   | A                                                                                 |       |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |       |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |       |
| Minor Lane/Major Mvmt    | NBLn1                                                                             | EBT  | EBR    | WBL                                                                               | WBT                                                                               |       |
| Capacity (veh/h)         | 987                                                                               | -    | -      | 1607                                                                              | -                                                                                 |       |
| HCM Lane V/C Ratio       | 0.001                                                                             | -    | -      | -                                                                                 | -                                                                                 |       |
| HCM Control Delay (s)    | 8.7                                                                               | -    | -      | 0                                                                                 | -                                                                                 |       |
| HCM Lane LOS             | A                                                                                 | -    | -      | A                                                                                 | -                                                                                 |       |
| HCM 95th %tile Q(veh)    | 0                                                                                 | -    | -      | 0                                                                                 | -                                                                                 |       |

HCM 6th TWSC  
9: Jesmond Dene Rd & Project Dwy #4

Opening Year 2025 with Project Conditions  
AM Peak Hour

| Intersection             |                                                                                   |       |                                                                                   |      |        |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|------|--------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 0                                                                                 |       |                                                                                   |      |        |                                                                                   |
| Movement                 | WBL                                                                               | WBR   | NBT                                                                               | NBR  | SBL    | SBT                                                                               |
| Lane Configurations      |  |       |  |      |        |  |
| Traffic Vol, veh/h       | 0                                                                                 | 0     | 83                                                                                | 0    | 0      | 87                                                                                |
| Future Vol, veh/h        | 0                                                                                 | 0     | 83                                                                                | 0    | 0      | 87                                                                                |
| Conflicting Peds, #/hr   | 0                                                                                 | 0     | 0                                                                                 | 0    | 0      | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop  | Free                                                                              | Free | Free   | Free                                                                              |
| RT Channelized           | -                                                                                 | None  | -                                                                                 | None | -      | None                                                                              |
| Storage Length           | 0                                                                                 | -     | -                                                                                 | -    | -      | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -     | 0                                                                                 | -    | -      | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -     | 0                                                                                 | -    | -      | 0                                                                                 |
| Peak Hour Factor         | 92                                                                                | 92    | 92                                                                                | 92   | 92     | 92                                                                                |
| Heavy Vehicles, %        | 2                                                                                 | 2     | 2                                                                                 | 2    | 2      | 2                                                                                 |
| Mvmt Flow                | 0                                                                                 | 0     | 90                                                                                | 0    | 0      | 95                                                                                |
|                          |                                                                                   |       |                                                                                   |      |        |                                                                                   |
| Major/Minor              | Minor1                                                                            |       | Major1                                                                            |      | Major2 |                                                                                   |
| Conflicting Flow All     | 185                                                                               | 90    | 0                                                                                 | 0    | 90     | 0                                                                                 |
| Stage 1                  | 90                                                                                | -     | -                                                                                 | -    | -      | -                                                                                 |
| Stage 2                  | 95                                                                                | -     | -                                                                                 | -    | -      | -                                                                                 |
| Critical Hdwy            | 6.42                                                                              | 6.22  | -                                                                                 | -    | 4.12   | -                                                                                 |
| Critical Hdwy Stg 1      | 5.42                                                                              | -     | -                                                                                 | -    | -      | -                                                                                 |
| Critical Hdwy Stg 2      | 5.42                                                                              | -     | -                                                                                 | -    | -      | -                                                                                 |
| Follow-up Hdwy           | 3.518                                                                             | 3.318 | -                                                                                 | -    | 2.218  | -                                                                                 |
| Pot Cap-1 Maneuver       | 804                                                                               | 968   | -                                                                                 | -    | 1505   | -                                                                                 |
| Stage 1                  | 934                                                                               | -     | -                                                                                 | -    | -      | -                                                                                 |
| Stage 2                  | 929                                                                               | -     | -                                                                                 | -    | -      | -                                                                                 |
| Platoon blocked, %       |                                                                                   |       | -                                                                                 | -    |        | -                                                                                 |
| Mov Cap-1 Maneuver       | 804                                                                               | 968   | -                                                                                 | -    | 1505   | -                                                                                 |
| Mov Cap-2 Maneuver       | 804                                                                               | -     | -                                                                                 | -    | -      | -                                                                                 |
| Stage 1                  | 934                                                                               | -     | -                                                                                 | -    | -      | -                                                                                 |
| Stage 2                  | 929                                                                               | -     | -                                                                                 | -    | -      | -                                                                                 |
|                          |                                                                                   |       |                                                                                   |      |        |                                                                                   |
|                          |                                                                                   |       |                                                                                   |      |        |                                                                                   |
| Approach                 | WB                                                                                |       | NB                                                                                |      | SB     |                                                                                   |
| HCM Control Delay, s     | 0                                                                                 |       | 0                                                                                 |      | 0      |                                                                                   |
| HCM LOS                  | A                                                                                 |       |                                                                                   |      |        |                                                                                   |
|                          |                                                                                   |       |                                                                                   |      |        |                                                                                   |
| Minor Lane/Major Mvmt    |                                                                                   | NBT   | NBRWBLn1                                                                          | SBL  | SBT    |                                                                                   |
| Capacity (veh/h)         |                                                                                   | -     | -                                                                                 | -    | 1505   | -                                                                                 |
| HCM Lane V/C Ratio       |                                                                                   | -     | -                                                                                 | -    | -      | -                                                                                 |
| HCM Control Delay (s)    |                                                                                   | -     | -                                                                                 | 0    | 0      | -                                                                                 |
| HCM Lane LOS             |                                                                                   | -     | -                                                                                 | A    | A      | -                                                                                 |
| HCM 95th %tile Q(veh)    |                                                                                   | -     | -                                                                                 | -    | 0      | -                                                                                 |

# HCM 6th Signalized Intersection Summary

## 1: I-15 SB Ramps & Deer Springs Rd

Opening Year 2025 with Project Conditions

PM Peak Hour

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |  |  |
| Traffic Volume (veh/h)       | 0                                                                                 | 890                                                                               | 227                                                                               | 173                                                                               | 376                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 60                                                                                  | 3                                                                                   | 365                                                                                 |
| Future Volume (veh/h)        | 0                                                                                 | 890                                                                               | 227                                                                               | 173                                                                               | 376                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 60                                                                                  | 3                                                                                   | 365                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1758                                                                              | 1758                                                                              | 1758                                                                              | 1758                                                                              | 1758                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1758                                                                                | 1758                                                                                | 1758                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 918                                                                               | 211                                                                               | 184                                                                               | 400                                                                               | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 66                                                                                  | 3                                                                                   | 8                                                                                   |
| Peak Hour Factor             | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 2                                                                                 | 868                                                                               | 736                                                                               | 463                                                                               | 1457                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 100                                                                                 | 5                                                                                   | 40                                                                                  |
| Arrive On Green              | 0.00                                                                              | 0.49                                                                              | 0.49                                                                              | 0.37                                                                              | 1.00                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.06                                                                                | 0.06                                                                                | 0.06                                                                                |
| Sat Flow, veh/h              | 1674                                                                              | 1758                                                                              | 1490                                                                              | 1674                                                                              | 1758                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1605                                                                                | 73                                                                                  | 2622                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 918                                                                               | 211                                                                               | 184                                                                               | 400                                                                               | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 69                                                                                  | 0                                                                                   | 8                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1674                                                                              | 1758                                                                              | 1490                                                                              | 1674                                                                              | 1758                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1678                                                                                | 0                                                                                   | 1311                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 49.4                                                                              | 8.3                                                                               | 8.1                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 4.0                                                                                 | 0.0                                                                                 | 5.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 49.4                                                                              | 8.3                                                                               | 8.1                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 4.0                                                                                 | 0.0                                                                                 | 5.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.96                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 2                                                                                 | 868                                                                               | 736                                                                               | 463                                                                               | 1457                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 104                                                                                 | 0                                                                                   | 40                                                                                  |
| V/C Ratio(X)                 | 0.00                                                                              | 1.06                                                                              | 0.29                                                                              | 0.40                                                                              | 0.27                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.66                                                                                | 0.00                                                                                | 0.20                                                                                |
| Avail Cap(c_a), veh/h        | 167                                                                               | 868                                                                               | 736                                                                               | 463                                                                               | 1457                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 168                                                                                 | 0                                                                                   | 139                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.33                                                                              | 1.33                                                                              | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.38                                                                              | 0.38                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 25.3                                                                              | 14.9                                                                              | 25.4                                                                              | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 45.9                                                                                | 0.0                                                                                 | 1601.8                                                                              |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 46.8                                                                              | 1.0                                                                               | 0.1                                                                               | 0.2                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 2.7                                                                                 | 0.0                                                                                 | 0.9                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 28.9                                                                              | 2.7                                                                               | 2.9                                                                               | 0.1                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 1.7                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 72.1                                                                              | 15.9                                                                              | 25.5                                                                              | 0.2                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 48.5                                                                                | 0.0                                                                                 | 1602.7                                                                              |
| LnGrp LOS                    | A                                                                                 | F                                                                                 | B                                                                                 | C                                                                                 | A                                                                                 | A                                                                                 |                                                                                    |                                                                                     |                                                                                     | D                                                                                   | A                                                                                   | F                                                                                   |
| Approach Vol, veh/h          | 1129                                                                              |                                                                                   |                                                                                   | 584                                                                               |                                                                                   |                                                                                   | 77                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 61.6                                                                              |                                                                                   |                                                                                   | 8.2                                                                               |                                                                                   |                                                                                   | 210.0                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 | E                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | F                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 33.5                                                                              | 55.2                                                                              |                                                                                   | 11.3                                                                              | 0.0                                                                               | 88.7                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.8                                                                               | * 5.8                                                                             |                                                                                   | 5.1                                                                               | * 4.7                                                                             | 5.8                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 25.0                                                                              | * 49                                                                              |                                                                                   | 10.0                                                                              | * 10                                                                              | 64.4                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 10.1                                                                              | 51.4                                                                              |                                                                                   | 7.0                                                                               | 0.0                                                                               | 2.0                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.2                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 1.3                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   | 50.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 2: I-15 NB Ramps & Deer Springs Rd

Opening Year 2025 with Project Conditions

PM Peak Hour



| Movement                     | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL   | NBT  | NBR  | SBL  | SBT | SBR |
|------------------------------|------|------|------|------|------|------|-------|------|------|------|-----|-----|
| Lane Configurations          |      |      |      |      |      |      |       |      |      |      |     |     |
| Traffic Volume (veh/h)       | 647  | 303  | 0    | 0    | 315  | 122  | 234   | 3    | 361  | 0    | 0   | 0   |
| Future Volume (veh/h)        | 647  | 303  | 0    | 0    | 315  | 122  | 234   | 3    | 361  | 0    | 0   | 0   |
| Initial Q (Qb), veh          | 0    | 0    | 0    | 0    | 0    | 0    | 0     | 0    | 0    |      |     |     |
| Ped-Bike Adj(A_pbT)          | 1.00 |      | 1.00 | 1.00 |      | 1.00 | 1.00  |      | 1.00 |      |     |     |
| Parking Bus, Adj             | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 |      |     |     |
| Work Zone On Approach        | No   |      |      | No   |      |      | No    |      |      |      |     |     |
| Adj Sat Flow, veh/h/ln       | 1758 | 1758 | 0    | 0    | 1758 | 1758 | 1758  | 1758 | 1758 |      |     |     |
| Adj Flow Rate, veh/h         | 703  | 329  | 0    | 0    | 339  | 83   | 249   | 3    | 55   |      |     |     |
| Peak Hour Factor             | 0.92 | 0.92 | 0.92 | 0.93 | 0.93 | 0.93 | 0.94  | 0.94 | 0.94 |      |     |     |
| Percent Heavy Veh, %         | 3    | 3    | 0    | 0    | 3    | 3    | 3     | 3    | 3    |      |     |     |
| Cap, veh/h                   | 760  | 1270 | 0    | 0    | 371  | 314  | 289   | 3    | 260  |      |     |     |
| Arrive On Green              | 0.45 | 0.72 | 0.00 | 0.00 | 0.21 | 0.21 | 0.17  | 0.17 | 0.17 |      |     |     |
| Sat Flow, veh/h              | 1674 | 1758 | 0    | 0    | 1758 | 1490 | 1655  | 20   | 1490 |      |     |     |
| Grp Volume(v), veh/h         | 703  | 329  | 0    | 0    | 339  | 83   | 252   | 0    | 55   |      |     |     |
| Grp Sat Flow(s),veh/h/ln     | 1674 | 1758 | 0    | 0    | 1758 | 1490 | 1675  | 0    | 1490 |      |     |     |
| Q Serve(g_s), s              | 39.5 | 6.4  | 0.0  | 0.0  | 18.9 | 4.7  | 14.6  | 0.0  | 3.2  |      |     |     |
| Cycle Q Clear(g_c), s        | 39.5 | 6.4  | 0.0  | 0.0  | 18.9 | 4.7  | 14.6  | 0.0  | 3.2  |      |     |     |
| Prop In Lane                 | 1.00 |      | 0.00 | 0.00 |      | 1.00 | 0.99  |      | 1.00 |      |     |     |
| Lane Grp Cap(c), veh/h       | 760  | 1270 | 0    | 0    | 371  | 314  | 292   | 0    | 260  |      |     |     |
| V/C Ratio(X)                 | 0.93 | 0.26 | 0.00 | 0.00 | 0.91 | 0.26 | 0.86  | 0.00 | 0.21 |      |     |     |
| Avail Cap(c_a), veh/h        | 760  | 1270 | 0    | 0    | 394  | 334  | 379   | 0    | 337  |      |     |     |
| HCM Platoon Ratio            | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 |      |     |     |
| Upstream Filter(I)           | 0.33 | 0.33 | 0.00 | 0.00 | 0.94 | 0.94 | 1.00  | 0.00 | 1.00 |      |     |     |
| Uniform Delay (d), s/veh     | 25.7 | 4.7  | 0.0  | 0.0  | 38.6 | 33.0 | 40.1  | 0.0  | 35.4 |      |     |     |
| Incr Delay (d2), s/veh       | 7.2  | 0.2  | 0.0  | 0.0  | 28.2 | 1.9  | 14.9  | 0.0  | 0.4  |      |     |     |
| Initial Q Delay(d3),s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  |      |     |     |
| %ile BackOfQ(50%),veh/ln     | 5.3  | 1.6  | 0.0  | 0.0  | 10.5 | 1.8  | 7.1   | 0.0  | 1.2  |      |     |     |
| Unsig. Movement Delay, s/veh |      |      |      |      |      |      |       |      |      |      |     |     |
| LnGrp Delay(d),s/veh         | 32.9 | 4.9  | 0.0  | 0.0  | 66.8 | 34.9 | 55.0  | 0.0  | 35.8 |      |     |     |
| LnGrp LOS                    | C    | A    | A    | A    | E    | C    | E     | A    | D    |      |     |     |
| Approach Vol, veh/h          | 1032 |      |      | 422  |      |      | 307   |      |      |      |     |     |
| Approach Delay, s/veh        | 23.9 |      |      | 60.5 |      |      | 51.6  |      |      |      |     |     |
| Approach LOS                 | C    |      |      | E    |      |      | D     |      |      |      |     |     |
| Timer - Assigned Phs         | 2    |      |      | 5    |      |      | 6     |      |      | 8    |     |     |
| Phs Duration (G+Y+Rc), s     | 78.1 |      |      | 51.2 |      |      | 26.9  |      |      | 21.9 |     |     |
| Change Period (Y+Rc), s      | 5.8  |      |      | 5.8  |      |      | * 5.8 |      |      | 4.5  |     |     |
| Max Green Setting (Gmax), s  | 67.1 |      |      | 40.0 |      |      | * 22  |      |      | 22.6 |     |     |
| Max Q Clear Time (g_c+I1), s | 8.4  |      |      | 41.5 |      |      | 20.9  |      |      | 16.6 |     |     |
| Green Ext Time (p_c), s      | 1.0  |      |      | 0.0  |      |      | 0.2   |      |      | 0.8  |     |     |

### Intersection Summary

HCM 6th Ctrl Delay 37.5

HCM 6th LOS D

### Notes

User approved pedestrian interval to be less than phase max green.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM 6th Signalized Intersection Summary

Opening Year 2025 with Project Conditions

3: N Centre City Pkwy/Champagne Blvd & Deer Springs Rd/Mountain Meadow Rd PM Peak Hour



| Movement                     | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL   | NBT  | NBR  | SBL  | SBT  | SBR  |
|------------------------------|------|------|------|------|------|------|-------|------|------|------|------|------|
| Lane Configurations          |      |      |      |      |      |      |       |      |      |      |      |      |
| Traffic Volume (veh/h)       | 247  | 228  | 189  | 76   | 151  | 16   | 185   | 187  | 142  | 19   | 121  | 101  |
| Future Volume (veh/h)        | 247  | 228  | 189  | 76   | 151  | 16   | 185   | 187  | 142  | 19   | 121  | 101  |
| Initial Q (Qb), veh          | 0    | 0    | 0    | 0    | 0    | 0    | 0     | 0    | 0    | 0    | 0    | 0    |
| Ped-Bike Adj(A_pbT)          | 1.00 |      | 1.00 | 1.00 |      | 1.00 | 1.00  |      | 0.99 | 1.00 |      | 1.00 |
| Parking Bus, Adj             | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach        | No   |      |      |      | No   |      |       |      | No   |      | No   |      |
| Adj Sat Flow, veh/h/ln       | 1758 | 1758 | 1758 | 1758 | 1758 | 1758 | 1758  | 1758 | 1758 | 1758 | 1758 | 1758 |
| Adj Flow Rate, veh/h         | 281  | 259  | 90   | 82   | 162  | 11   | 215   | 217  | 153  | 20   | 125  | 22   |
| Peak Hour Factor             | 0.88 | 0.88 | 0.88 | 0.93 | 0.93 | 0.93 | 0.86  | 0.86 | 0.86 | 0.97 | 0.97 | 0.97 |
| Percent Heavy Veh, %         | 3    | 3    | 3    | 3    | 3    | 3    | 3     | 3    | 3    | 3    | 3    | 3    |
| Cap, veh/h                   | 304  | 454  | 154  | 211  | 413  | 28   | 173   | 175  | 123  | 54   | 335  | 332  |
| Arrive On Green              | 0.18 | 0.19 | 0.19 | 0.13 | 0.13 | 0.13 | 0.29  | 0.29 | 0.29 | 0.22 | 0.22 | 0.22 |
| Sat Flow, veh/h              | 1674 | 2448 | 830  | 1674 | 3175 | 214  | 604   | 610  | 430  | 241  | 1505 | 1490 |
| Grp Volume(v), veh/h         | 281  | 175  | 174  | 82   | 85   | 88   | 585   | 0    | 0    | 145  | 0    | 22   |
| Grp Sat Flow(s),veh/h/ln     | 1674 | 1670 | 1608 | 1674 | 1670 | 1719 | 1644  | 0    | 0    | 1746 | 0    | 1490 |
| Q Serve(g_s), s              | 22.3 | 12.8 | 13.3 | 6.1  | 6.3  | 6.4  | 38.7  | 0.0  | 0.0  | 9.5  | 0.0  | 1.6  |
| Cycle Q Clear(g_c), s        | 22.3 | 12.8 | 13.3 | 6.1  | 6.3  | 6.4  | 38.7  | 0.0  | 0.0  | 9.5  | 0.0  | 1.6  |
| Prop In Lane                 | 1.00 |      | 0.52 | 1.00 |      | 0.12 | 0.37  |      | 0.26 | 0.14 |      | 1.00 |
| Lane Grp Cap(c), veh/h       | 304  | 310  | 298  | 211  | 217  | 224  | 472   | 0    | 0    | 389  | 0    | 332  |
| V/C Ratio(X)                 | 0.93 | 0.56 | 0.58 | 0.39 | 0.39 | 0.40 | 1.24  | 0.00 | 0.00 | 0.37 | 0.00 | 0.07 |
| Avail Cap(c_a), veh/h        | 373  | 419  | 403  | 211  | 258  | 265  | 472   | 0    | 0    | 395  | 0    | 337  |
| HCM Platoon Ratio            | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I)           | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh     | 54.3 | 49.9 | 50.2 | 54.1 | 53.7 | 53.8 | 48.1  | 0.0  | 0.0  | 44.4 | 0.0  | 41.3 |
| Incr Delay (d2), s/veh       | 23.6 | 0.6  | 0.7  | 0.4  | 0.4  | 0.4  | 124.9 | 0.0  | 0.0  | 0.2  | 0.0  | 0.0  |
| Initial Q Delay(d3),s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile BackOfQ(50%),veh/ln     | 1.1  | 5.3  | 5.3  | 2.5  | 2.6  | 2.7  | 31.4  | 0.0  | 0.0  | 4.0  | 0.0  | 0.6  |
| Unsig. Movement Delay, s/veh |      |      |      |      |      |      |       |      |      |      |      |      |
| LnGrp Delay(d),s/veh         | 77.8 | 50.5 | 50.8 | 54.6 | 54.1 | 54.2 | 172.9 | 0.0  | 0.0  | 44.6 | 0.0  | 41.4 |
| LnGrp LOS                    | E    | D    | D    | D    | D    | D    | F     | A    | A    | D    | A    | D    |
| Approach Vol, veh/h          | 630  |      |      |      | 255  |      | 585   |      | 167  |      |      |      |
| Approach Delay, s/veh        | 62.8 |      |      |      | 54.3 |      | 172.9 |      | 44.2 |      |      |      |
| Approach LOS                 | E    |      |      |      | D    |      | F     |      | D    |      |      |      |
| Timer - Assigned Phs         | 1    | 2    | 4    |      | 5    | 6    | 8     |      |      |      |      |      |
| Phs Duration (G+Y+Rc), s     | 31.9 | 31.2 | 36.5 |      | 29.4 | 23.7 | 45.2  |      |      |      |      |      |
| Change Period (Y+Rc), s      | 4.9  | 6.2  | 6.5  |      | 4.9  | 6.2  | 6.5   |      |      |      |      |      |
| Max Green Setting (Gmax), s  | 33.8 | 33.8 | 30.5 |      | 30.0 | 20.8 | 38.7  |      |      |      |      |      |
| Max Q Clear Time (g_c+I1), s | 15.3 | 15.3 | 11.5 |      | 24.3 | 8.4  | 40.7  |      |      |      |      |      |
| Green Ext Time (p_c), s      | 0.0  | 1.0  | 0.4  |      | 0.2  | 0.4  | 0.0   |      |      |      |      |      |

## Intersection Summary

HCM 6th Ctrl Delay 98.9

HCM 6th LOS F

## Notes

User approved pedestrian interval to be less than phase max green.

HCM 6th TWSC  
4: N Centre City Pkwy & Tierra Libertia Rd

Opening Year 2025 with Project Conditions  
PM Peak Hour

| Intersection             |                                                                                   |          |                                                                                   |      |       |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|------|-------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 0.9                                                                               |          |                                                                                   |      |       |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR  | SBL   | SBT                                                                               |
| Lane Configurations      |  |          |  |      |       |  |
| Traffic Vol, veh/h       | 8                                                                                 | 25       | 355                                                                               | 10   | 19    | 255                                                                               |
| Future Vol, veh/h        | 8                                                                                 | 25       | 355                                                                               | 10   | 19    | 255                                                                               |
| Conflicting Peds, #/hr   | 0                                                                                 | 0        | 0                                                                                 | 1    | 0     | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free | Free  | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None | -     | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -    | -     | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -    | -     | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -    | -     | 0                                                                                 |
| Peak Hour Factor         | 75                                                                                | 75       | 85                                                                                | 85   | 84    | 84                                                                                |
| Heavy Vehicles, %        | 3                                                                                 | 3        | 3                                                                                 | 3    | 3     | 3                                                                                 |
| Mvmt Flow                | 11                                                                                | 33       | 418                                                                               | 12   | 23    | 304                                                                               |
| Major/Minor              | Minor1                                                                            | Major1   | Major2                                                                            |      |       |                                                                                   |
| Conflicting Flow All     | 775                                                                               | 425      | 0                                                                                 | 0    | 431   | 0                                                                                 |
| Stage 1                  | 425                                                                               | -        | -                                                                                 | -    | -     | -                                                                                 |
| Stage 2                  | 350                                                                               | -        | -                                                                                 | -    | -     | -                                                                                 |
| Critical Hdwy            | 6.43                                                                              | 6.23     | -                                                                                 | -    | 4.13  | -                                                                                 |
| Critical Hdwy Stg 1      | 5.43                                                                              | -        | -                                                                                 | -    | -     | -                                                                                 |
| Critical Hdwy Stg 2      | 5.43                                                                              | -        | -                                                                                 | -    | -     | -                                                                                 |
| Follow-up Hdwy           | 3.527                                                                             | 3.327    | -                                                                                 | -    | 2.227 | -                                                                                 |
| Pot Cap-1 Maneuver       | 365                                                                               | 627      | -                                                                                 | -    | 1123  | -                                                                                 |
| Stage 1                  | 657                                                                               | -        | -                                                                                 | -    | -     | -                                                                                 |
| Stage 2                  | 711                                                                               | -        | -                                                                                 | -    | -     | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -    |       | -                                                                                 |
| Mov Cap-1 Maneuver       | 356                                                                               | 626      | -                                                                                 | -    | 1122  | -                                                                                 |
| Mov Cap-2 Maneuver       | 356                                                                               | -        | -                                                                                 | -    | -     | -                                                                                 |
| Stage 1                  | 656                                                                               | -        | -                                                                                 | -    | -     | -                                                                                 |
| Stage 2                  | 693                                                                               | -        | -                                                                                 | -    | -     | -                                                                                 |
| Approach                 | WB                                                                                | NB       | SB                                                                                |      |       |                                                                                   |
| HCM Control Delay, s     | 12.4                                                                              | 0        | 0.6                                                                               |      |       |                                                                                   |
| HCM LOS                  | B                                                                                 |          |                                                                                   |      |       |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 | SBL                                                                               | SBT  |       |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | -        | 529                                                                               | 1122 | -     |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | -        | 0.083                                                                             | 0.02 | -     |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | -        | 12.4                                                                              | 8.3  | 0     |                                                                                   |
| HCM Lane LOS             | -                                                                                 | -        | B                                                                                 | A    | A     |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | -        | 0.3                                                                               | 0.1  | -     |                                                                                   |

HCM 6th TWSC  
5: N Centre City Pkwy & Jesmond Dene Rd

Opening Year 2025 with Project Conditions

PM Peak Hour

| Intersection             |                                                                                   |          |                                                                                   |       |                                                                                   |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 2.3                                                                               |          |                                                                                   |       |                                                                                   |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR   | SBL                                                                               | SBT                                                                               |
| Lane Configurations      |  |          |  |       |  |  |
| Traffic Vol, veh/h       | 12                                                                                | 71       | 294                                                                               | 11    | 65                                                                                | 198                                                                               |
| Future Vol, veh/h        | 12                                                                                | 71       | 294                                                                               | 11    | 65                                                                                | 198                                                                               |
| Conflicting Peds, #/hr   | 0                                                                                 | 0        | 0                                                                                 | 0     | 0                                                                                 | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free  | Free                                                                              | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None  | -                                                                                 | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -     | 95                                                                                | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -     | -                                                                                 | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -     | -                                                                                 | 0                                                                                 |
| Peak Hour Factor         | 92                                                                                | 92       | 92                                                                                | 92    | 92                                                                                | 92                                                                                |
| Heavy Vehicles, %        | 3                                                                                 | 3        | 3                                                                                 | 3     | 3                                                                                 | 3                                                                                 |
| Mvmt Flow                | 13                                                                                | 77       | 320                                                                               | 12    | 71                                                                                | 215                                                                               |
| Major/Minor              | Minor1                                                                            | Major1   | Major2                                                                            |       |                                                                                   |                                                                                   |
| Conflicting Flow All     | 683                                                                               | 326      | 0                                                                                 | 0     | 332                                                                               | 0                                                                                 |
| Stage 1                  | 326                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Stage 2                  | 357                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Critical Hdwy            | 6.43                                                                              | 6.23     | -                                                                                 | -     | 4.13                                                                              | -                                                                                 |
| Critical Hdwy Stg 1      | 5.43                                                                              | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Critical Hdwy Stg 2      | 5.43                                                                              | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Follow-up Hdwy           | 3.527                                                                             | 3.327    | -                                                                                 | -     | 2.227                                                                             | -                                                                                 |
| Pot Cap-1 Maneuver       | 413                                                                               | 713      | -                                                                                 | -     | 1222                                                                              | -                                                                                 |
| Stage 1                  | 729                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Stage 2                  | 706                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -     |                                                                                   | -                                                                                 |
| Mov Cap-1 Maneuver       | 389                                                                               | 713      | -                                                                                 | -     | 1222                                                                              | -                                                                                 |
| Mov Cap-2 Maneuver       | 389                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Stage 1                  | 729                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Stage 2                  | 665                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Approach                 | WB                                                                                | NB       | SB                                                                                |       |                                                                                   |                                                                                   |
| HCM Control Delay, s     | 11.6                                                                              | 0        | 2                                                                                 |       |                                                                                   |                                                                                   |
| HCM LOS                  | B                                                                                 |          |                                                                                   |       |                                                                                   |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 | SBL                                                                               | SBT   |                                                                                   |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | -        | 636                                                                               | 1222  | -                                                                                 |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | -        | 0.142                                                                             | 0.058 | -                                                                                 |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | -        | 11.6                                                                              | 8.1   | -                                                                                 |                                                                                   |
| HCM Lane LOS             | -                                                                                 | -        | B                                                                                 | A     | -                                                                                 |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | -        | 0.5                                                                               | 0.2   | -                                                                                 |                                                                                   |

HCM 6th TWSC  
6: Project Dwy #1 & Tierra Libertia Rd

Opening Year 2025 with Project Conditions  
PM Peak Hour

| Intersection             |                                                                                   |      |        |                                                                                   |                                                                                   |       |
|--------------------------|-----------------------------------------------------------------------------------|------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|
| Int Delay, s/veh         | 0                                                                                 |      |        |                                                                                   |                                                                                   |       |
| Movement                 | EBT                                                                               | EBR  | WBL    | WBT                                                                               | NBL                                                                               | NBR   |
| Lane Configurations      |  |      |        |  |  |       |
| Traffic Vol, veh/h       | 22                                                                                | 7    | 0      | 33                                                                                | 0                                                                                 | 0     |
| Future Vol, veh/h        | 22                                                                                | 7    | 0      | 33                                                                                | 0                                                                                 | 0     |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0      | 0                                                                                 | 0                                                                                 | 0     |
| Sign Control             | Free                                                                              | Free | Free   | Free                                                                              | Stop                                                                              | Stop  |
| RT Channelized           | -                                                                                 | None | -      | None                                                                              | -                                                                                 | None  |
| Storage Length           | -                                                                                 | -    | -      | -                                                                                 | 0                                                                                 | -     |
| Veh in Median Storage, # | 0                                                                                 | -    | -      | 0                                                                                 | 0                                                                                 | -     |
| Grade, %                 | 0                                                                                 | -    | -      | 0                                                                                 | 0                                                                                 | -     |
| Peak Hour Factor         | 92                                                                                | 92   | 92     | 92                                                                                | 92                                                                                | 92    |
| Heavy Vehicles, %        | 2                                                                                 | 2    | 2      | 2                                                                                 | 2                                                                                 | 2     |
| Mvmt Flow                | 24                                                                                | 8    | 0      | 36                                                                                | 0                                                                                 | 0     |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |       |
| Major/Minor              | Major1                                                                            |      | Major2 |                                                                                   | Minor1                                                                            |       |
| Conflicting Flow All     | 0                                                                                 | 0    | 32     | 0                                                                                 | 64                                                                                | 28    |
| Stage 1                  | -                                                                                 | -    | -      | -                                                                                 | 28                                                                                | -     |
| Stage 2                  | -                                                                                 | -    | -      | -                                                                                 | 36                                                                                | -     |
| Critical Hdwy            | -                                                                                 | -    | 4.12   | -                                                                                 | 6.42                                                                              | 6.22  |
| Critical Hdwy Stg 1      | -                                                                                 | -    | -      | -                                                                                 | 5.42                                                                              | -     |
| Critical Hdwy Stg 2      | -                                                                                 | -    | -      | -                                                                                 | 5.42                                                                              | -     |
| Follow-up Hdwy           | -                                                                                 | -    | 2.218  | -                                                                                 | 3.518                                                                             | 3.318 |
| Pot Cap-1 Maneuver       | -                                                                                 | -    | 1580   | -                                                                                 | 942                                                                               | 1047  |
| Stage 1                  | -                                                                                 | -    | -      | -                                                                                 | 995                                                                               | -     |
| Stage 2                  | -                                                                                 | -    | -      | -                                                                                 | 986                                                                               | -     |
| Platoon blocked, %       | -                                                                                 | -    |        | -                                                                                 |                                                                                   |       |
| Mov Cap-1 Maneuver       | -                                                                                 | -    | 1580   | -                                                                                 | 942                                                                               | 1047  |
| Mov Cap-2 Maneuver       | -                                                                                 | -    | -      | -                                                                                 | 942                                                                               | -     |
| Stage 1                  | -                                                                                 | -    | -      | -                                                                                 | 995                                                                               | -     |
| Stage 2                  | -                                                                                 | -    | -      | -                                                                                 | 986                                                                               | -     |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |       |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |       |
| Approach                 | EB                                                                                |      | WB     |                                                                                   | NB                                                                                |       |
| HCM Control Delay, s     | 0                                                                                 |      | 0      |                                                                                   | 0                                                                                 |       |
| HCM LOS                  |                                                                                   |      |        |                                                                                   | A                                                                                 |       |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |       |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |       |
| Minor Lane/Major Mvmt    | NBLn1                                                                             | EBT  | EBR    | WBL                                                                               | WBT                                                                               |       |
| Capacity (veh/h)         | -                                                                                 | -    | -      | 1580                                                                              | -                                                                                 |       |
| HCM Lane V/C Ratio       | -                                                                                 | -    | -      | -                                                                                 | -                                                                                 |       |
| HCM Control Delay (s)    | 0                                                                                 | -    | -      | 0                                                                                 | -                                                                                 |       |
| HCM Lane LOS             | A                                                                                 | -    | -      | A                                                                                 | -                                                                                 |       |
| HCM 95th %tile Q(veh)    | -                                                                                 | -    | -      | 0                                                                                 | -                                                                                 |       |

HCM 6th TWSC  
7: Project Dwy #2 & Tierra Libertia Rd

Opening Year 2025 with Project Conditions  
PM Peak Hour

| Intersection             |                                                                                   |      |        |                                                                                   |                                                                                   |       |
|--------------------------|-----------------------------------------------------------------------------------|------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|
| Int Delay, s/veh         | 1.8                                                                               |      |        |                                                                                   |                                                                                   |       |
| Movement                 | EBT                                                                               | EBR  | WBL    | WBT                                                                               | NBL                                                                               | NBR   |
| Lane Configurations      |  |      |        |  |  |       |
| Traffic Vol, veh/h       | 19                                                                                | 3    | 0      | 22                                                                                | 11                                                                                | 0     |
| Future Vol, veh/h        | 19                                                                                | 3    | 0      | 22                                                                                | 11                                                                                | 0     |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0      | 0                                                                                 | 0                                                                                 | 0     |
| Sign Control             | Free                                                                              | Free | Free   | Free                                                                              | Stop                                                                              | Stop  |
| RT Channelized           | -                                                                                 | None | -      | None                                                                              | -                                                                                 | None  |
| Storage Length           | -                                                                                 | -    | -      | -                                                                                 | 0                                                                                 | -     |
| Veh in Median Storage, # | 0                                                                                 | -    | -      | 0                                                                                 | 0                                                                                 | -     |
| Grade, %                 | 0                                                                                 | -    | -      | 0                                                                                 | 0                                                                                 | -     |
| Peak Hour Factor         | 92                                                                                | 92   | 92     | 92                                                                                | 92                                                                                | 92    |
| Heavy Vehicles, %        | 2                                                                                 | 2    | 2      | 2                                                                                 | 2                                                                                 | 2     |
| Mvmt Flow                | 21                                                                                | 3    | 0      | 24                                                                                | 12                                                                                | 0     |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |       |
| Major/Minor              | Major1                                                                            |      | Major2 |                                                                                   | Minor1                                                                            |       |
| Conflicting Flow All     | 0                                                                                 | 0    | 24     | 0                                                                                 | 47                                                                                | 23    |
| Stage 1                  | -                                                                                 | -    | -      | -                                                                                 | 23                                                                                | -     |
| Stage 2                  | -                                                                                 | -    | -      | -                                                                                 | 24                                                                                | -     |
| Critical Hdwy            | -                                                                                 | -    | 4.12   | -                                                                                 | 6.42                                                                              | 6.22  |
| Critical Hdwy Stg 1      | -                                                                                 | -    | -      | -                                                                                 | 5.42                                                                              | -     |
| Critical Hdwy Stg 2      | -                                                                                 | -    | -      | -                                                                                 | 5.42                                                                              | -     |
| Follow-up Hdwy           | -                                                                                 | -    | 2.218  | -                                                                                 | 3.518                                                                             | 3.318 |
| Pot Cap-1 Maneuver       | -                                                                                 | -    | 1591   | -                                                                                 | 963                                                                               | 1054  |
| Stage 1                  | -                                                                                 | -    | -      | -                                                                                 | 1000                                                                              | -     |
| Stage 2                  | -                                                                                 | -    | -      | -                                                                                 | 999                                                                               | -     |
| Platoon blocked, %       | -                                                                                 | -    |        | -                                                                                 |                                                                                   |       |
| Mov Cap-1 Maneuver       | -                                                                                 | -    | 1591   | -                                                                                 | 963                                                                               | 1054  |
| Mov Cap-2 Maneuver       | -                                                                                 | -    | -      | -                                                                                 | 963                                                                               | -     |
| Stage 1                  | -                                                                                 | -    | -      | -                                                                                 | 1000                                                                              | -     |
| Stage 2                  | -                                                                                 | -    | -      | -                                                                                 | 999                                                                               | -     |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |       |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |       |
| Approach                 | EB                                                                                |      | WB     |                                                                                   | NB                                                                                |       |
| HCM Control Delay, s     | 0                                                                                 |      | 0      |                                                                                   | 8.8                                                                               |       |
| HCM LOS                  |                                                                                   |      |        |                                                                                   | A                                                                                 |       |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |       |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |       |
| Minor Lane/Major Mvmt    | NBLn1                                                                             | EBT  | EBR    | WBL                                                                               | WBT                                                                               |       |
| Capacity (veh/h)         | 963                                                                               | -    | -      | 1591                                                                              | -                                                                                 |       |
| HCM Lane V/C Ratio       | 0.012                                                                             | -    | -      | -                                                                                 | -                                                                                 |       |
| HCM Control Delay (s)    | 8.8                                                                               | -    | -      | 0                                                                                 | -                                                                                 |       |
| HCM Lane LOS             | A                                                                                 | -    | -      | A                                                                                 | -                                                                                 |       |
| HCM 95th %tile Q(veh)    | 0                                                                                 | -    | -      | 0                                                                                 | -                                                                                 |       |

HCM 6th TWSC  
8: Project Dwy #3 & Tierra Libertia Rd

Opening Year 2025 with Project Conditions  
PM Peak Hour

| Intersection             |                                                                                   |      |        |                                                                                   |                                                                                   |       |
|--------------------------|-----------------------------------------------------------------------------------|------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|
| Int Delay, s/veh         | 2.1                                                                               |      |        |                                                                                   |                                                                                   |       |
| Movement                 | EBT                                                                               | EBR  | WBL    | WBT                                                                               | NBL                                                                               | NBR   |
| Lane Configurations      |  |      |        |  |  |       |
| Traffic Vol, veh/h       | 16                                                                                | 3    | 0      | 12                                                                                | 10                                                                                | 0     |
| Future Vol, veh/h        | 16                                                                                | 3    | 0      | 12                                                                                | 10                                                                                | 0     |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0      | 0                                                                                 | 0                                                                                 | 0     |
| Sign Control             | Free                                                                              | Free | Free   | Free                                                                              | Stop                                                                              | Stop  |
| RT Channelized           | -                                                                                 | None | -      | None                                                                              | -                                                                                 | None  |
| Storage Length           | -                                                                                 | -    | -      | -                                                                                 | 0                                                                                 | -     |
| Veh in Median Storage, # | 0                                                                                 | -    | -      | 0                                                                                 | 0                                                                                 | -     |
| Grade, %                 | 0                                                                                 | -    | -      | 0                                                                                 | 0                                                                                 | -     |
| Peak Hour Factor         | 92                                                                                | 92   | 92     | 92                                                                                | 92                                                                                | 92    |
| Heavy Vehicles, %        | 2                                                                                 | 2    | 2      | 2                                                                                 | 2                                                                                 | 2     |
| Mvmt Flow                | 17                                                                                | 3    | 0      | 13                                                                                | 11                                                                                | 0     |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |       |
| Major/Minor              | Major1                                                                            |      | Major2 |                                                                                   | Minor1                                                                            |       |
| Conflicting Flow All     | 0                                                                                 | 0    | 20     | 0                                                                                 | 32                                                                                | 19    |
| Stage 1                  | -                                                                                 | -    | -      | -                                                                                 | 19                                                                                | -     |
| Stage 2                  | -                                                                                 | -    | -      | -                                                                                 | 13                                                                                | -     |
| Critical Hdwy            | -                                                                                 | -    | 4.12   | -                                                                                 | 6.42                                                                              | 6.22  |
| Critical Hdwy Stg 1      | -                                                                                 | -    | -      | -                                                                                 | 5.42                                                                              | -     |
| Critical Hdwy Stg 2      | -                                                                                 | -    | -      | -                                                                                 | 5.42                                                                              | -     |
| Follow-up Hdwy           | -                                                                                 | -    | 2.218  | -                                                                                 | 3.518                                                                             | 3.318 |
| Pot Cap-1 Maneuver       | -                                                                                 | -    | 1596   | -                                                                                 | 982                                                                               | 1059  |
| Stage 1                  | -                                                                                 | -    | -      | -                                                                                 | 1004                                                                              | -     |
| Stage 2                  | -                                                                                 | -    | -      | -                                                                                 | 1010                                                                              | -     |
| Platoon blocked, %       | -                                                                                 | -    |        | -                                                                                 |                                                                                   |       |
| Mov Cap-1 Maneuver       | -                                                                                 | -    | 1596   | -                                                                                 | 982                                                                               | 1059  |
| Mov Cap-2 Maneuver       | -                                                                                 | -    | -      | -                                                                                 | 982                                                                               | -     |
| Stage 1                  | -                                                                                 | -    | -      | -                                                                                 | 1004                                                                              | -     |
| Stage 2                  | -                                                                                 | -    | -      | -                                                                                 | 1010                                                                              | -     |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |       |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |       |
| Approach                 | EB                                                                                |      | WB     |                                                                                   | NB                                                                                |       |
| HCM Control Delay, s     | 0                                                                                 |      | 0      |                                                                                   | 8.7                                                                               |       |
| HCM LOS                  |                                                                                   |      |        |                                                                                   | A                                                                                 |       |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |       |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |       |
| Minor Lane/Major Mvmt    | NBLn1                                                                             | EBT  | EBR    | WBL                                                                               | WBT                                                                               |       |
| Capacity (veh/h)         | 982                                                                               | -    | -      | 1596                                                                              | -                                                                                 |       |
| HCM Lane V/C Ratio       | 0.011                                                                             | -    | -      | -                                                                                 | -                                                                                 |       |
| HCM Control Delay (s)    | 8.7                                                                               | -    | -      | 0                                                                                 | -                                                                                 |       |
| HCM Lane LOS             | A                                                                                 | -    | -      | A                                                                                 | -                                                                                 |       |
| HCM 95th %tile Q(veh)    | 0                                                                                 | -    | -      | 0                                                                                 | -                                                                                 |       |

HCM 6th TWSC  
9: Jesmond Dene Rd & Project Dwy #4

Opening Year 2025 with Project Conditions  
PM Peak Hour

| Intersection             |                                                                                   |          |                                                                                   |      |       |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|------|-------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 1.1                                                                               |          |                                                                                   |      |       |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR  | SBL   | SBT                                                                               |
| Lane Configurations      |  |          |  |      |       |  |
| Traffic Vol, veh/h       | 0                                                                                 | 21       | 62                                                                                | 0    | 0     | 76                                                                                |
| Future Vol, veh/h        | 0                                                                                 | 21       | 62                                                                                | 0    | 0     | 76                                                                                |
| Conflicting Peds, #/hr   | 0                                                                                 | 0        | 0                                                                                 | 0    | 0     | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free | Free  | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None | -     | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -    | -     | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -    | -     | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -    | -     | 0                                                                                 |
| Peak Hour Factor         | 92                                                                                | 92       | 92                                                                                | 92   | 92    | 92                                                                                |
| Heavy Vehicles, %        | 2                                                                                 | 2        | 2                                                                                 | 2    | 2     | 2                                                                                 |
| Mvmt Flow                | 0                                                                                 | 23       | 67                                                                                | 0    | 0     | 83                                                                                |
| Major/Minor              | Minor1                                                                            | Major1   | Major2                                                                            |      |       |                                                                                   |
| Conflicting Flow All     | 150                                                                               | 67       | 0                                                                                 | 0    | 67    | 0                                                                                 |
| Stage 1                  | 67                                                                                | -        | -                                                                                 | -    | -     | -                                                                                 |
| Stage 2                  | 83                                                                                | -        | -                                                                                 | -    | -     | -                                                                                 |
| Critical Hdwy            | 6.42                                                                              | 6.22     | -                                                                                 | -    | 4.12  | -                                                                                 |
| Critical Hdwy Stg 1      | 5.42                                                                              | -        | -                                                                                 | -    | -     | -                                                                                 |
| Critical Hdwy Stg 2      | 5.42                                                                              | -        | -                                                                                 | -    | -     | -                                                                                 |
| Follow-up Hdwy           | 3.518                                                                             | 3.318    | -                                                                                 | -    | 2.218 | -                                                                                 |
| Pot Cap-1 Maneuver       | 842                                                                               | 997      | -                                                                                 | -    | 1535  | -                                                                                 |
| Stage 1                  | 956                                                                               | -        | -                                                                                 | -    | -     | -                                                                                 |
| Stage 2                  | 940                                                                               | -        | -                                                                                 | -    | -     | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -    |       | -                                                                                 |
| Mov Cap-1 Maneuver       | 842                                                                               | 997      | -                                                                                 | -    | 1535  | -                                                                                 |
| Mov Cap-2 Maneuver       | 842                                                                               | -        | -                                                                                 | -    | -     | -                                                                                 |
| Stage 1                  | 956                                                                               | -        | -                                                                                 | -    | -     | -                                                                                 |
| Stage 2                  | 940                                                                               | -        | -                                                                                 | -    | -     | -                                                                                 |
| Approach                 | WB                                                                                | NB       | SB                                                                                |      |       |                                                                                   |
| HCM Control Delay, s     | 8.7                                                                               | 0        | 0                                                                                 |      |       |                                                                                   |
| HCM LOS                  | A                                                                                 |          |                                                                                   |      |       |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 | SBL                                                                               | SBT  |       |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | - 997    | 1535                                                                              | -    |       |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | - 0.023  | -                                                                                 | -    |       |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | - 8.7    | 0                                                                                 | -    |       |                                                                                   |
| HCM Lane LOS             | -                                                                                 | - A      | A                                                                                 | -    |       |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | - 0.1    | 0                                                                                 | -    |       |                                                                                   |

## **Appendix H** - LOS Calculation Worksheets – Horizon Year without Project Conditions

# HCM 6th Signalized Intersection Summary

## 1: I-15 SB Ramps & Deer Springs Rd

Horizon Year 2050 Conditions

AM Peak Hour

|                                                                                                    |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                                                           | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations                                                                                |  |  |  |  |  |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |
| Traffic Volume (veh/h)                                                                             | 0                                                                                 | 390                                                                               | 160                                                                               | 215                                                                               | 545                                                                               | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 135                                                                                 | 5                                                                                   | 855                                                                                 |
| Future Volume (veh/h)                                                                              | 0                                                                                 | 390                                                                               | 160                                                                               | 215                                                                               | 545                                                                               | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 135                                                                                 | 5                                                                                   | 855                                                                                 |
| Initial Q (Qb), veh                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                                                | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach                                                                              |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln                                                                             | 1758                                                                              | 1758                                                                              | 1758                                                                              | 1758                                                                              | 1758                                                                              | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 1758                                                                                | 1758                                                                                | 1758                                                                                |
| Adj Flow Rate, veh/h                                                                               | 0                                                                                 | 411                                                                               | 107                                                                               | 226                                                                               | 574                                                                               | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 142                                                                                 | 5                                                                                   | 248                                                                                 |
| Peak Hour Factor                                                                                   | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              |                                                                                     |                                                                                     |                                                                                     | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %                                                                               | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                                                                                         | 2                                                                                 | 452                                                                               | 383                                                                               | 681                                                                               | 1270                                                                              | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 273                                                                                 | 10                                                                                  | 319                                                                                 |
| Arrive On Green                                                                                    | 0.00                                                                              | 0.26                                                                              | 0.26                                                                              | 0.41                                                                              | 0.72                                                                              | 0.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 0.17                                                                                | 0.17                                                                                | 0.17                                                                                |
| Sat Flow, veh/h                                                                                    | 1674                                                                              | 1758                                                                              | 1490                                                                              | 1674                                                                              | 1758                                                                              | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 1620                                                                                | 57                                                                                  | 2622                                                                                |
| Grp Volume(v), veh/h                                                                               | 0                                                                                 | 411                                                                               | 107                                                                               | 226                                                                               | 574                                                                               | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 147                                                                                 | 0                                                                                   | 248                                                                                 |
| Grp Sat Flow(s),veh/h/ln                                                                           | 1674                                                                              | 1758                                                                              | 1490                                                                              | 1674                                                                              | 1758                                                                              | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 1677                                                                                | 0                                                                                   | 1311                                                                                |
| Q Serve(g_s), s                                                                                    | 0.0                                                                               | 22.7                                                                              | 5.7                                                                               | 9.3                                                                               | 13.5                                                                              | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 8.0                                                                                 | 0.0                                                                                 | 13.9                                                                                |
| Cycle Q Clear(g_c), s                                                                              | 0.0                                                                               | 22.7                                                                              | 5.7                                                                               | 9.3                                                                               | 13.5                                                                              | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 8.0                                                                                 | 0.0                                                                                 | 13.9                                                                                |
| Prop In Lane                                                                                       | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 0.97                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                                                             | 2                                                                                 | 452                                                                               | 383                                                                               | 681                                                                               | 1270                                                                              | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 283                                                                                 | 0                                                                                   | 319                                                                                 |
| V/C Ratio(X)                                                                                       | 0.00                                                                              | 0.91                                                                              | 0.28                                                                              | 0.33                                                                              | 0.45                                                                              | 0.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 0.52                                                                                | 0.00                                                                                | 0.78                                                                                |
| Avail Cap(c_a), veh/h                                                                              | 84                                                                                | 584                                                                               | 495                                                                               | 681                                                                               | 1270                                                                              | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 535                                                                                 | 0                                                                                   | 713                                                                                 |
| HCM Platoon Ratio                                                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(l)                                                                                 | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.30                                                                              | 0.30                                                                              | 0.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                                                                           | 0.0                                                                               | 36.0                                                                              | 29.7                                                                              | 20.3                                                                              | 5.7                                                                               | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 37.9                                                                                | 0.0                                                                                 | 87.3                                                                                |
| Incr Delay (d2), s/veh                                                                             | 0.0                                                                               | 24.8                                                                              | 1.8                                                                               | 0.0                                                                               | 0.4                                                                               | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.5                                                                                 | 0.0                                                                                 | 1.5                                                                                 |
| Initial Q Delay(d3),s/veh                                                                          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                                                           | 0.0                                                                               | 12.1                                                                              | 2.1                                                                               | 3.3                                                                               | 3.5                                                                               | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 3.3                                                                                 | 0.0                                                                                 | 0.1                                                                                 |
| Unsig. Movement Delay, s/veh                                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh                                                                               | 0.0                                                                               | 60.8                                                                              | 31.5                                                                              | 20.4                                                                              | 6.1                                                                               | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 38.4                                                                                | 0.0                                                                                 | 88.8                                                                                |
| LnGrp LOS                                                                                          | A                                                                                 | E                                                                                 | C                                                                                 | C                                                                                 | A                                                                                 | A                                                                                 |                                                                                     |                                                                                     |                                                                                     | D                                                                                   | A                                                                                   | F                                                                                   |
| Approach Vol, veh/h                                                                                |                                                                                   | 518                                                                               |                                                                                   |                                                                                   | 800                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 395                                                                                 |                                                                                     |
| Approach Delay, s/veh                                                                              |                                                                                   | 54.7                                                                              |                                                                                   |                                                                                   | 10.1                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 70.1                                                                                |                                                                                     |
| Approach LOS                                                                                       |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |
| Timer - Assigned Phs                                                                               | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                                                           | 46.5                                                                              | 31.5                                                                              |                                                                                   | 22.0                                                                              | 0.0                                                                               | 78.0                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                                                            | 5.8                                                                               | * 5.8                                                                             |                                                                                   | 5.1                                                                               | * 4.7                                                                             | 5.8                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                                                        | 19.3                                                                              | * 33                                                                              |                                                                                   | 31.9                                                                              | * 5                                                                               | 47.5                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+l1), s                                                                       | 11.3                                                                              | 24.7                                                                              |                                                                                   | 15.9                                                                              | 0.0                                                                               | 15.5                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                                                            | 0.2                                                                               | 1.1                                                                               |                                                                                   | 1.0                                                                               | 0.0                                                                               | 2.0                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay                                                                                 |                                                                                   |                                                                                   |                                                                                   | 37.4                                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                                                                                        |                                                                                   |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                                                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 2: I-15 NB Ramps & Deer Springs Rd

Horizon Year 2050 Conditions

AM Peak Hour



| Movement                     | EBL  | EBT  | EBR  | WBL  | WBT   | WBR  | NBL  | NBT  | NBR  | SBL | SBT | SBR |
|------------------------------|------|------|------|------|-------|------|------|------|------|-----|-----|-----|
| Lane Configurations          |      |      |      |      |       |      |      |      |      |     |     |     |
| Traffic Volume (veh/h)       | 260  | 265  | 0    | 0    | 585   | 105  | 175  | 0    | 160  | 0   | 0   | 0   |
| Future Volume (veh/h)        | 260  | 265  | 0    | 0    | 585   | 105  | 175  | 0    | 160  | 0   | 0   | 0   |
| Initial Q (Qb), veh          | 0    | 0    | 0    | 0    | 0     | 0    | 0    | 0    | 0    |     |     |     |
| Ped-Bike Adj(A_pbT)          | 1.00 |      | 1.00 | 1.00 |       | 1.00 | 1.00 |      | 1.00 |     |     |     |
| Parking Bus, Adj             | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 |     |     |     |
| Work Zone On Approach        | No   |      |      |      | No    |      |      |      | No   |     |     |     |
| Adj Sat Flow, veh/h/ln       | 1758 | 1758 | 0    | 0    | 1758  | 1758 | 1758 | 1758 | 1758 |     |     |     |
| Adj Flow Rate, veh/h         | 274  | 279  | 0    | 0    | 616   | 52   | 184  | 0    | 43   |     |     |     |
| Peak Hour Factor             | 0.95 | 0.95 | 0.95 | 0.95 | 0.95  | 0.95 | 0.95 | 0.95 | 0.95 |     |     |     |
| Percent Heavy Veh, %         | 3    | 3    | 0    | 0    | 3     | 3    | 3    | 3    | 3    |     |     |     |
| Cap, veh/h                   | 320  | 1183 | 0    | 0    | 676   | 573  | 193  | 0    | 172  |     |     |     |
| Arrive On Green              | 0.19 | 0.67 | 0.00 | 0.00 | 0.38  | 0.38 | 0.12 | 0.00 | 0.12 |     |     |     |
| Sat Flow, veh/h              | 1674 | 1758 | 0    | 0    | 1758  | 1490 | 1674 | 0    | 1490 |     |     |     |
| Grp Volume(v), veh/h         | 274  | 279  | 0    | 0    | 616   | 52   | 184  | 0    | 43   |     |     |     |
| Grp Sat Flow(s),veh/h/ln     | 1674 | 1758 | 0    | 0    | 1758  | 1490 | 1674 | 0    | 1490 |     |     |     |
| Q Serve(g_s), s              | 7.7  | 3.0  | 0.0  | 0.0  | 16.1  | 1.1  | 5.3  | 0.0  | 1.3  |     |     |     |
| Cycle Q Clear(g_c), s        | 7.7  | 3.0  | 0.0  | 0.0  | 16.1  | 1.1  | 5.3  | 0.0  | 1.3  |     |     |     |
| Prop In Lane                 | 1.00 |      | 0.00 | 0.00 |       | 1.00 | 1.00 |      | 1.00 |     |     |     |
| Lane Grp Cap(c), veh/h       | 320  | 1183 | 0    | 0    | 676   | 573  | 193  | 0    | 172  |     |     |     |
| V/C Ratio(X)                 | 0.85 | 0.24 | 0.00 | 0.00 | 0.91  | 0.09 | 0.95 | 0.00 | 0.25 |     |     |     |
| Avail Cap(c_a), veh/h        | 320  | 1234 | 0    | 0    | 727   | 616  | 193  | 0    | 172  |     |     |     |
| HCM Platoon Ratio            | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 |     |     |     |
| Upstream Filter(I)           | 1.00 | 1.00 | 0.00 | 0.00 | 1.00  | 1.00 | 1.00 | 0.00 | 1.00 |     |     |     |
| Uniform Delay (d), s/veh     | 19.0 | 3.1  | 0.0  | 0.0  | 14.2  | 9.5  | 21.4 | 0.0  | 19.6 |     |     |     |
| Incr Delay (d2), s/veh       | 20.2 | 0.0  | 0.0  | 0.0  | 14.4  | 0.0  | 51.3 | 0.0  | 0.8  |     |     |     |
| Initial Q Delay(d3),s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  |     |     |     |
| %ile BackOfQ(50%),veh/ln     | 4.1  | 0.2  | 0.0  | 0.0  | 7.0   | 0.2  | 4.6  | 0.0  | 0.4  |     |     |     |
| Unsig. Movement Delay, s/veh |      |      |      |      |       |      |      |      |      |     |     |     |
| LnGrp Delay(d),s/veh         | 39.2 | 3.1  | 0.0  | 0.0  | 28.6  | 9.6  | 72.7 | 0.0  | 20.3 |     |     |     |
| LnGrp LOS                    | D    | A    | A    | A    | C     | A    | E    | A    | C    |     |     |     |
| Approach Vol, veh/h          | 553  |      |      |      | 668   |      | 227  |      |      |     |     |     |
| Approach Delay, s/veh        | 21.0 |      |      |      | 27.1  |      | 62.8 |      |      |     |     |     |
| Approach LOS                 | C    |      |      |      | C     |      | E    |      |      |     |     |     |
| Timer - Assigned Phs         | 2    |      |      |      | 5     |      | 6    |      | 8    |     |     |     |
| Phs Duration (G+Y+Rc), s     | 38.5 |      |      |      | 14.0  |      | 24.5 |      | 10.1 |     |     |     |
| Change Period (Y+Rc), s      | 5.8  |      |      |      | * 4.7 |      | 5.8  |      | 4.5  |     |     |     |
| Max Green Setting (Gmax), s  | 34.1 |      |      |      | * 9.3 |      | 20.1 |      | 5.6  |     |     |     |
| Max Q Clear Time (g_c+l1), s | 5.0  |      |      |      | 9.7   |      | 18.1 |      | 7.3  |     |     |     |
| Green Ext Time (p_c), s      | 0.8  |      |      |      | 0.0   |      | 0.6  |      | 0.0  |     |     |     |

### Intersection Summary

|                    |      |
|--------------------|------|
| HCM 6th Ctrl Delay | 30.4 |
| HCM 6th LOS        | C    |

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM 6th Signalized Intersection Summary

Horizon Year 2050 Conditions

3: N Centre City Pkwy/Champagne Blvd & Deer Springs Rd/Mountain Meadow Rd AM Peak Hour



| Movement                     | EBL                                                                               | EBT                                                                               | EBR  | WBL                                                                               | WBT                                                                               | WBR   | NBL  | NBT                                                                               | NBR  | SBL   | SBT                                                                               | SBR                                                                               |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|------|-----------------------------------------------------------------------------------|------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Configurations          |  |  |      |  |  |       |      |  |      |       |  |  |
| Traffic Volume (veh/h)       | 90                                                                                | 100                                                                               | 235  | 345                                                                               | 295                                                                               | 10    | 115  | 60                                                                                | 55   | 20    | 595                                                                               | 280                                                                               |
| Future Volume (veh/h)        | 90                                                                                | 100                                                                               | 235  | 345                                                                               | 295                                                                               | 10    | 115  | 60                                                                                | 55   | 20    | 595                                                                               | 280                                                                               |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 0     | 0    | 0                                                                                 | 0    | 0     | 0                                                                                 | 0                                                                                 |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00 | 1.00                                                                              |                                                                                   | 1.00  | 1.00 |                                                                                   | 0.99 | 1.00  |                                                                                   | 1.00                                                                              |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00 | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00 | 1.00                                                                              | 1.00 | 1.00  | 1.00                                                                              | 1.00                                                                              |
| Work Zone On Approach        | No                                                                                |                                                                                   |      |                                                                                   | No                                                                                |       | No   |                                                                                   |      |       | No                                                                                |                                                                                   |
| Adj Sat Flow, veh/h/ln       | 1758                                                                              | 1758                                                                              | 1758 | 1758                                                                              | 1758                                                                              | 1758  | 1758 | 1758                                                                              | 1758 | 1758  | 1758                                                                              | 1758                                                                              |
| Adj Flow Rate, veh/h         | 95                                                                                | 105                                                                               | 61   | 363                                                                               | 311                                                                               | 9     | 121  | 63                                                                                | 50   | 21    | 626                                                                               | 295                                                                               |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95 | 0.95                                                                              | 0.95                                                                              | 0.95  | 0.95 | 0.95                                                                              | 0.95 | 0.95  | 0.95                                                                              | 0.95                                                                              |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3    | 3                                                                                 | 3                                                                                 | 3     | 3    | 3                                                                                 | 3    | 3     | 3                                                                                 | 3                                                                                 |
| Cap, veh/h                   | 371                                                                               | 349                                                                               | 190  | 292                                                                               | 368                                                                               | 11    | 171  | 89                                                                                | 71   | 17    | 505                                                                               | 443                                                                               |
| Arrive On Green              | 0.22                                                                              | 0.17                                                                              | 0.17 | 0.17                                                                              | 0.11                                                                              | 0.11  | 0.20 | 0.20                                                                              | 0.20 | 0.30  | 0.30                                                                              | 0.30                                                                              |
| Sat Flow, veh/h              | 1674                                                                              | 2088                                                                              | 1135 | 1674                                                                              | 3315                                                                              | 96    | 851  | 443                                                                               | 352  | 57    | 1698                                                                              | 1490                                                                              |
| Grp Volume(v), veh/h         | 95                                                                                | 83                                                                                | 83   | 363                                                                               | 156                                                                               | 164   | 234  | 0                                                                                 | 0    | 647   | 0                                                                                 | 295                                                                               |
| Grp Sat Flow(s),veh/h/ln     | 1674                                                                              | 1670                                                                              | 1553 | 1674                                                                              | 1670                                                                              | 1741  | 1646 | 0                                                                                 | 0    | 1755  | 0                                                                                 | 1490                                                                              |
| Q Serve(g_s), s              | 7.0                                                                               | 6.5                                                                               | 7.1  | 26.1                                                                              | 13.7                                                                              | 13.8  | 19.8 | 0.0                                                                               | 0.0  | 44.5  | 0.0                                                                               | 26.0                                                                              |
| Cycle Q Clear(g_c), s        | 7.0                                                                               | 6.5                                                                               | 7.1  | 26.1                                                                              | 13.7                                                                              | 13.8  | 19.8 | 0.0                                                                               | 0.0  | 44.5  | 0.0                                                                               | 26.0                                                                              |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.73 | 1.00                                                                              |                                                                                   | 0.05  | 0.52 |                                                                                   | 0.21 | 0.03  |                                                                                   | 1.00                                                                              |
| Lane Grp Cap(c), veh/h       | 371                                                                               | 279                                                                               | 259  | 292                                                                               | 186                                                                               | 193   | 330  | 0                                                                                 | 0    | 522   | 0                                                                                 | 443                                                                               |
| V/C Ratio(X)                 | 0.26                                                                              | 0.30                                                                              | 0.32 | 1.24                                                                              | 0.84                                                                              | 0.85  | 0.71 | 0.00                                                                              | 0.00 | 1.24  | 0.00                                                                              | 0.67                                                                              |
| Avail Cap(c_a), veh/h        | 371                                                                               | 282                                                                               | 263  | 292                                                                               | 350                                                                               | 365   | 330  | 0                                                                                 | 0    | 522   | 0                                                                                 | 443                                                                               |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00 | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00 | 1.00                                                                              | 1.00 | 1.00  | 1.00                                                                              | 1.00                                                                              |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00 | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00 | 0.00                                                                              | 0.00 | 1.00  | 0.00                                                                              | 1.00                                                                              |
| Uniform Delay (d), s/veh     | 48.1                                                                              | 54.6                                                                              | 54.9 | 61.8                                                                              | 65.2                                                                              | 65.3  | 55.8 | 0.0                                                                               | 0.0  | 52.6  | 0.0                                                                               | 46.1                                                                              |
| Incr Delay (d2), s/veh       | 0.1                                                                               | 0.2                                                                               | 0.3  | 135.2                                                                             | 3.9                                                                               | 3.9   | 5.9  | 0.0                                                                               | 0.0  | 123.6 | 0.0                                                                               | 3.1                                                                               |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0  | 0.0                                                                               | 0.0                                                                               | 0.0   | 0.0  | 0.0                                                                               | 0.0  | 0.0   | 0.0                                                                               | 0.0                                                                               |
| %ile BackOfQ(50%),veh/ln     | 2.9                                                                               | 2.7                                                                               | 2.7  | 21.8                                                                              | 5.9                                                                               | 6.2   | 8.5  | 0.0                                                                               | 0.0  | 36.6  | 0.0                                                                               | 9.7                                                                               |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |      |                                                                                   |                                                                                   |       |      |                                                                                   |      |       |                                                                                   |                                                                                   |
| LnGrp Delay(d),s/veh         | 48.2                                                                              | 54.9                                                                              | 55.2 | 197.0                                                                             | 69.2                                                                              | 69.2  | 61.7 | 0.0                                                                               | 0.0  | 176.2 | 0.0                                                                               | 49.2                                                                              |
| LnGrp LOS                    | D                                                                                 | D                                                                                 | E    | F                                                                                 | E                                                                                 | E     | E    | A                                                                                 | A    | F     | A                                                                                 | D                                                                                 |
| Approach Vol, veh/h          | 261                                                                               |                                                                                   |      |                                                                                   | 683                                                                               |       | 234  |                                                                                   |      |       | 942                                                                               |                                                                                   |
| Approach Delay, s/veh        | 52.5                                                                              |                                                                                   |      |                                                                                   | 137.1                                                                             |       | 61.7 |                                                                                   |      |       | 136.4                                                                             |                                                                                   |
| Approach LOS                 | D                                                                                 |                                                                                   |      |                                                                                   | F                                                                                 |       | E    |                                                                                   |      |       | F                                                                                 |                                                                                   |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 4    |                                                                                   | 5                                                                                 | 6     | 8    |                                                                                   |      |       |                                                                                   |                                                                                   |
| Phs Duration (G+Y+Rc), s     | 31.0                                                                              | 31.2                                                                              | 51.0 |                                                                                   | 39.4                                                                              | 22.8  | 36.5 |                                                                                   |      |       |                                                                                   |                                                                                   |
| Change Period (Y+Rc), s      | 4.9                                                                               | 6.2                                                                               | 6.5  |                                                                                   | 6.2                                                                               | * 6.2 | 6.5  |                                                                                   |      |       |                                                                                   |                                                                                   |
| Max Green Setting (Gmax), s  | 26.1                                                                              | 25.3                                                                              | 44.5 |                                                                                   | 20.0                                                                              | * 31  | 30.0 |                                                                                   |      |       |                                                                                   |                                                                                   |
| Max Q Clear Time (g_c+20, s) | 20.1                                                                              | 9.1                                                                               | 46.5 |                                                                                   | 9.0                                                                               | 15.8  | 21.8 |                                                                                   |      |       |                                                                                   |                                                                                   |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.4                                                                               | 0.0  |                                                                                   | 0.1                                                                               | 0.8   | 0.4  |                                                                                   |      |       |                                                                                   |                                                                                   |

## Intersection Summary

HCM 6th Ctrl Delay 118.1

HCM 6th LOS F

## Notes

User approved pedestrian interval to be less than phase max green.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC  
4: N Centre City Pkwy & Tierra Libertia Rd

Horizon Year 2050 Conditions  
AM Peak Hour

| Intersection             |                                                                                   |          |                                                                                   |        |       |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|--------|-------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 0.4                                                                               |          |                                                                                   |        |       |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR    | SBL   | SBT                                                                               |
| Lane Configurations      |  |          |  |        |       |  |
| Traffic Vol, veh/h       | 15                                                                                | 5        | 205                                                                               | 5      | 5     | 1135                                                                              |
| Future Vol, veh/h        | 15                                                                                | 5        | 205                                                                               | 5      | 5     | 1135                                                                              |
| Conflicting Peds, #/hr   | 0                                                                                 | 0        | 0                                                                                 | 1      | 0     | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free   | Free  | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None   | -     | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -      | -     | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -      | -     | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -      | -     | 0                                                                                 |
| Peak Hour Factor         | 95                                                                                | 95       | 95                                                                                | 95     | 95    | 95                                                                                |
| Heavy Vehicles, %        | 3                                                                                 | 3        | 3                                                                                 | 3      | 3     | 3                                                                                 |
| Mvmt Flow                | 16                                                                                | 5        | 216                                                                               | 5      | 5     | 1195                                                                              |
| Major/Minor              | Minor1                                                                            | Major1   |                                                                                   | Major2 |       |                                                                                   |
| Conflicting Flow All     | 1425                                                                              | 220      | 0                                                                                 | 0      | 222   | 0                                                                                 |
| Stage 1                  | 220                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Stage 2                  | 1205                                                                              | -        | -                                                                                 | -      | -     | -                                                                                 |
| Critical Hdwy            | 6.43                                                                              | 6.23     | -                                                                                 | -      | 4.13  | -                                                                                 |
| Critical Hdwy Stg 1      | 5.43                                                                              | -        | -                                                                                 | -      | -     | -                                                                                 |
| Critical Hdwy Stg 2      | 5.43                                                                              | -        | -                                                                                 | -      | -     | -                                                                                 |
| Follow-up Hdwy           | 3.527                                                                             | 3.327    | -                                                                                 | -      | 2.227 | -                                                                                 |
| Pot Cap-1 Maneuver       | 149                                                                               | 817      | -                                                                                 | -      | 1341  | -                                                                                 |
| Stage 1                  | 814                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Stage 2                  | 282                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -      |       | -                                                                                 |
| Mov Cap-1 Maneuver       | 147                                                                               | 816      | -                                                                                 | -      | 1340  | -                                                                                 |
| Mov Cap-2 Maneuver       | 147                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Stage 1                  | 813                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Stage 2                  | 279                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Approach                 | WB                                                                                | NB       |                                                                                   | SB     |       |                                                                                   |
| HCM Control Delay, s     | 26.9                                                                              | 0        |                                                                                   | 0      |       |                                                                                   |
| HCM LOS                  | D                                                                                 |          |                                                                                   |        |       |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 |                                                                                   | SBL    | SBT   |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | - 185    |                                                                                   | 1340   | -     |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | - 0.114  |                                                                                   | 0.004  | -     |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | - 26.9   |                                                                                   | 7.7    | 0     |                                                                                   |
| HCM Lane LOS             | -                                                                                 | - D      |                                                                                   | A      | A     |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | - 0.4    |                                                                                   | 0      | -     |                                                                                   |

HCM 6th TWSC  
5: N Centre City Pkwy & Jesmond Dene Rd

Horizon Year 2050 Conditions  
AM Peak Hour

| Intersection             |                                                                                   |          |                                                                                   |        |                                                                                   |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 1.7                                                                               |          |                                                                                   |        |                                                                                   |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR    | SBL                                                                               | SBT                                                                               |
| Lane Configurations      |  |          |  |        |  |  |
| Traffic Vol, veh/h       | 15                                                                                | 90       | 120                                                                               | 10     | 105                                                                               | 1045                                                                              |
| Future Vol, veh/h        | 15                                                                                | 90       | 120                                                                               | 10     | 105                                                                               | 1045                                                                              |
| Conflicting Peds, #/hr   | 0                                                                                 | 0        | 0                                                                                 | 0      | 0                                                                                 | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free   | Free                                                                              | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None   | -                                                                                 | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -      | 95                                                                                | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -      | -                                                                                 | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -      | -                                                                                 | 0                                                                                 |
| Peak Hour Factor         | 95                                                                                | 95       | 95                                                                                | 95     | 95                                                                                | 95                                                                                |
| Heavy Vehicles, %        | 3                                                                                 | 3        | 3                                                                                 | 3      | 3                                                                                 | 3                                                                                 |
| Mvmt Flow                | 16                                                                                | 95       | 126                                                                               | 11     | 111                                                                               | 1100                                                                              |
| Major/Minor              | Minor1                                                                            | Major1   |                                                                                   | Major2 |                                                                                   |                                                                                   |
| Conflicting Flow All     | 1454                                                                              | 132      | 0                                                                                 | 0      | 137                                                                               | 0                                                                                 |
| Stage 1                  | 132                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Stage 2                  | 1322                                                                              | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Critical Hdwy            | 6.43                                                                              | 6.23     | -                                                                                 | -      | 4.13                                                                              | -                                                                                 |
| Critical Hdwy Stg 1      | 5.43                                                                              | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Critical Hdwy Stg 2      | 5.43                                                                              | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Follow-up Hdwy           | 3.527                                                                             | 3.327    | -                                                                                 | -      | 2.227                                                                             | -                                                                                 |
| Pot Cap-1 Maneuver       | 143                                                                               | 915      | -                                                                                 | -      | 1441                                                                              | -                                                                                 |
| Stage 1                  | 892                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Stage 2                  | 248                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -      |                                                                                   | -                                                                                 |
| Mov Cap-1 Maneuver       | 132                                                                               | 915      | -                                                                                 | -      | 1441                                                                              | -                                                                                 |
| Mov Cap-2 Maneuver       | 132                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Stage 1                  | 892                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Stage 2                  | 229                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Approach                 | WB                                                                                | NB       |                                                                                   | SB     |                                                                                   |                                                                                   |
| HCM Control Delay, s     | 14.4                                                                              | 0        |                                                                                   | 0.7    |                                                                                   |                                                                                   |
| HCM LOS                  | B                                                                                 |          |                                                                                   |        |                                                                                   |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 |                                                                                   | SBL    | SBT                                                                               |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | -        |                                                                                   | 495    | 1441                                                                              |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | -        |                                                                                   | 0.223  | 0.077                                                                             |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | -        |                                                                                   | 14.4   | 7.7                                                                               |                                                                                   |
| HCM Lane LOS             | -                                                                                 | -        |                                                                                   | B      | A                                                                                 |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | -        |                                                                                   | 0.8    | 0.2                                                                               |                                                                                   |

# HCM 6th Signalized Intersection Summary

## 1: I-15 SB Ramps & Deer Springs Rd

Horizon Year 2050 Conditions

PM Peak Hour

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |
| Traffic Volume (veh/h)       | 0                                                                                 | 1140                                                                              | 290                                                                               | 200                                                                               | 475                                                                               | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 75                                                                                  | 5                                                                                   | 470                                                                                 |
| Future Volume (veh/h)        | 0                                                                                 | 1140                                                                              | 290                                                                               | 200                                                                               | 475                                                                               | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 75                                                                                  | 5                                                                                   | 470                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1758                                                                              | 1758                                                                              | 1758                                                                              | 1758                                                                              | 1758                                                                              | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 1758                                                                                | 1758                                                                                | 1758                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 1175                                                                              | 276                                                                               | 211                                                                               | 500                                                                               | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 79                                                                                  | 5                                                                                   | 118                                                                                 |
| Peak Hour Factor             | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              |                                                                                     |                                                                                     |                                                                                     | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 2                                                                                 | 1099                                                                              | 931                                                                               | 375                                                                               | 1595                                                                              | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 150                                                                                 | 9                                                                                   | 126                                                                                 |
| Arrive On Green              | 0.00                                                                              | 0.63                                                                              | 0.63                                                                              | 0.45                                                                              | 1.00                                                                              | 0.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 0.10                                                                                | 0.10                                                                                | 0.10                                                                                |
| Sat Flow, veh/h              | 1674                                                                              | 1758                                                                              | 1490                                                                              | 1674                                                                              | 1758                                                                              | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 1579                                                                                | 100                                                                                 | 2622                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 1175                                                                              | 276                                                                               | 211                                                                               | 500                                                                               | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 84                                                                                  | 0                                                                                   | 118                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1674                                                                              | 1758                                                                              | 1490                                                                              | 1674                                                                              | 1758                                                                              | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 1679                                                                                | 0                                                                                   | 1311                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 62.5                                                                              | 8.5                                                                               | 9.3                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 4.8                                                                                 | 0.0                                                                                 | 9.2                                                                                 |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 62.5                                                                              | 8.5                                                                               | 9.3                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 4.8                                                                                 | 0.0                                                                                 | 9.2                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 0.94                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 2                                                                                 | 1099                                                                              | 931                                                                               | 375                                                                               | 1595                                                                              | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 159                                                                                 | 0                                                                                   | 126                                                                                 |
| V/C Ratio(X)                 | 0.00                                                                              | 1.07                                                                              | 0.30                                                                              | 0.56                                                                              | 0.31                                                                              | 0.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 0.53                                                                                | 0.00                                                                                | 0.94                                                                                |
| Avail Cap(c_a), veh/h        | 84                                                                                | 1099                                                                              | 931                                                                               | 375                                                                               | 1595                                                                              | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 159                                                                                 | 0                                                                                   | 126                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                              | 2.00                                                                              | 1.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.19                                                                              | 0.19                                                                              | 0.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 18.8                                                                              | 8.6                                                                               | 24.0                                                                              | 0.0                                                                               | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 43.1                                                                                | 0.0                                                                                 | 149.2                                                                               |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 47.8                                                                              | 0.8                                                                               | 0.2                                                                               | 0.1                                                                               | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 1.6                                                                                 | 0.0                                                                                 | 60.4                                                                                |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 34.0                                                                              | 2.4                                                                               | 2.9                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 2.0                                                                                 | 0.0                                                                                 | 1.1                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 66.5                                                                              | 9.4                                                                               | 24.2                                                                              | 0.1                                                                               | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 44.7                                                                                | 0.0                                                                                 | 209.6                                                                               |
| LnGrp LOS                    | A                                                                                 | F                                                                                 | A                                                                                 | C                                                                                 | A                                                                                 | A                                                                                 |                                                                                     |                                                                                     |                                                                                     | D                                                                                   | A                                                                                   | F                                                                                   |
| Approach Vol, veh/h          | 1451                                                                              |                                                                                   |                                                                                   | 711                                                                               |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     | 202                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 55.7                                                                              |                                                                                   |                                                                                   | 7.3                                                                               |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     | 141.0                                                                               |                                                                                     |                                                                                     |
| Approach LOS                 | E                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 28.2                                                                              | 68.3                                                                              |                                                                                   | 14.6                                                                              | 0.0                                                                               | 96.5                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.8                                                                               | * 5.8                                                                             |                                                                                   | 5.1                                                                               | * 4.7                                                                             | 5.8                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 12.4                                                                              | * 63                                                                              |                                                                                   | 9.5                                                                               | * 5                                                                               | 69.9                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 11.3                                                                              | 64.5                                                                              |                                                                                   | 11.2                                                                              | 0.0                                                                               | 2.0                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 1.7                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

### Intersection Summary

HCM 6th Ctrl Delay 48.4

HCM 6th LOS D

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM 6th Signalized Intersection Summary 2: I-15 NB Ramps & Deer Springs Rd

Horizon Year 2050 Conditions  
PM Peak Hour



| Movement                     | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL   | NBT  | NBR  | SBL  | SBT | SBR |
|------------------------------|------|------|------|------|------|------|-------|------|------|------|-----|-----|
| Lane Configurations          |      |      |      |      |      |      |       |      |      |      |     |     |
| Traffic Volume (veh/h)       | 830  | 385  | 0    | 0    | 375  | 150  | 300   | 5    | 455  | 0    | 0   | 0   |
| Future Volume (veh/h)        | 830  | 385  | 0    | 0    | 375  | 150  | 300   | 5    | 455  | 0    | 0   | 0   |
| Initial Q (Qb), veh          | 0    | 0    | 0    | 0    | 0    | 0    | 0     | 0    | 0    |      |     |     |
| Ped-Bike Adj(A_pbT)          | 1.00 |      | 1.00 | 1.00 |      | 1.00 | 1.00  |      | 1.00 |      |     |     |
| Parking Bus, Adj             | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 |      |     |     |
| Work Zone On Approach        | No   |      |      | No   |      |      | No    |      |      |      |     |     |
| Adj Sat Flow, veh/h/ln       | 1758 | 1758 | 0    | 0    | 1758 | 1758 | 1758  | 1758 | 1758 |      |     |     |
| Adj Flow Rate, veh/h         | 874  | 405  | 0    | 0    | 395  | 39   | 316   | 5    | 22   |      |     |     |
| Peak Hour Factor             | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95  | 0.95 | 0.95 |      |     |     |
| Percent Heavy Veh, %         | 3    | 3    | 0    | 0    | 3    | 3    | 3     | 3    | 3    |      |     |     |
| Cap, veh/h                   | 1067 | 1638 | 0    | 0    | 415  | 352  | 289   | 5    | 261  |      |     |     |
| Arrive On Green              | 0.64 | 0.93 | 0.00 | 0.00 | 0.24 | 0.24 | 0.17  | 0.17 | 0.17 |      |     |     |
| Sat Flow, veh/h              | 1674 | 1758 | 0    | 0    | 1758 | 1490 | 1649  | 26   | 1490 |      |     |     |
| Grp Volume(v), veh/h         | 874  | 405  | 0    | 0    | 395  | 39   | 321   | 0    | 22   |      |     |     |
| Grp Sat Flow(s),veh/h/ln     | 1674 | 1758 | 0    | 0    | 1758 | 1490 | 1675  | 0    | 1490 |      |     |     |
| Q Serve(g_s), s              | 39.6 | 2.0  | 0.0  | 0.0  | 22.1 | 2.1  | 17.5  | 0.0  | 1.2  |      |     |     |
| Cycle Q Clear(g_c), s        | 39.6 | 2.0  | 0.0  | 0.0  | 22.1 | 2.1  | 17.5  | 0.0  | 1.2  |      |     |     |
| Prop In Lane                 | 1.00 |      | 0.00 | 0.00 |      | 1.00 | 0.98  |      | 1.00 |      |     |     |
| Lane Grp Cap(c), veh/h       | 1067 | 1638 | 0    | 0    | 415  | 352  | 293   | 0    | 261  |      |     |     |
| V/C Ratio(X)                 | 0.82 | 0.25 | 0.00 | 0.00 | 0.95 | 0.11 | 1.09  | 0.00 | 0.08 |      |     |     |
| Avail Cap(c_a), veh/h        | 1067 | 1638 | 0    | 0    | 415  | 352  | 293   | 0    | 261  |      |     |     |
| HCM Platoon Ratio            | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 |      |     |     |
| Upstream Filter(l)           | 0.09 | 0.09 | 0.00 | 0.00 | 0.88 | 0.88 | 1.00  | 0.00 | 1.00 |      |     |     |
| Uniform Delay (d), s/veh     | 13.7 | 0.3  | 0.0  | 0.0  | 37.6 | 30.0 | 41.3  | 0.0  | 34.5 |      |     |     |
| Incr Delay (d2), s/veh       | 0.5  | 0.0  | 0.0  | 0.0  | 31.1 | 0.6  | 80.3  | 0.0  | 0.1  |      |     |     |
| Initial Q Delay(d3),s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  |      |     |     |
| %ile BackOfQ(50%),veh/ln     | 1.7  | 0.0  | 0.0  | 0.0  | 12.5 | 0.8  | 13.7  | 0.0  | 0.5  |      |     |     |
| Unsig. Movement Delay, s/veh |      |      |      |      |      |      |       |      |      |      |     |     |
| LnGrp Delay(d),s/veh         | 14.3 | 0.3  | 0.0  | 0.0  | 68.7 | 30.5 | 121.6 | 0.0  | 34.7 |      |     |     |
| LnGrp LOS                    | B    | A    | A    | A    | E    | C    | F     | A    | C    |      |     |     |
| Approach Vol, veh/h          | 1279 |      |      | 434  |      |      | 343   |      |      |      |     |     |
| Approach Delay, s/veh        | 9.8  |      |      | 65.3 |      |      | 116.0 |      |      |      |     |     |
| Approach LOS                 | A    |      |      | E    |      |      | F     |      |      |      |     |     |
| Timer - Assigned Phs         | 2    |      |      | 5    |      |      | 6     |      |      | 8    |     |     |
| Phs Duration (G+Y+Rc), s     | 99.0 |      |      | 69.6 |      |      | 29.4  |      |      | 22.0 |     |     |
| Change Period (Y+Rc), s      | 5.8  |      |      | 5.8  |      |      | * 5.8 |      |      | 4.5  |     |     |
| Max Green Setting (Gmax), s  | 72.2 |      |      | 43.9 |      |      | * 24  |      |      | 17.5 |     |     |
| Max Q Clear Time (g_c+l1), s | 4.0  |      |      | 41.6 |      |      | 24.1  |      |      | 19.5 |     |     |
| Green Ext Time (p_c), s      | 1.3  |      |      | 1.2  |      |      | 0.0   |      |      | 0.0  |     |     |

## Intersection Summary

HCM 6th Ctrl Delay 39.3  
HCM 6th LOS D

## Notes

User approved pedestrian interval to be less than phase max green.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM 6th Signalized Intersection Summary

Horizon Year 2050 Conditions

3: N Centre City Pkwy/Champagne Blvd & Deer Springs Rd/Mountain Meadow Rd PM Peak Hour



| Movement                      | EBL   | EBT  | EBR  | WBL  | WBT  | WBR  | NBL   | NBT  | NBR  | SBL  | SBT  | SBR  |
|-------------------------------|-------|------|------|------|------|------|-------|------|------|------|------|------|
| Lane Configurations           |       |      |      |      |      |      |       |      |      |      |      |      |
| Traffic Volume (veh/h)        | 315   | 295  | 230  | 95   | 195  | 20   | 200   | 235  | 175  | 25   | 155  | 130  |
| Future Volume (veh/h)         | 315   | 295  | 230  | 95   | 195  | 20   | 200   | 235  | 175  | 25   | 155  | 130  |
| Initial Q (Qb), veh           | 0     | 0    | 0    | 0    | 0    | 0    | 0     | 0    | 0    | 0    | 0    | 0    |
| Ped-Bike Adj(A_pbT)           | 1.00  |      | 1.00 | 1.00 |      | 1.00 | 1.00  |      | 0.99 | 1.00 |      | 1.00 |
| Parking Bus, Adj              | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach         | No    |      |      | No   |      |      | No    |      |      | No   |      |      |
| Adj Sat Flow, veh/h/ln        | 1758  | 1758 | 1758 | 1758 | 1758 | 1758 | 1758  | 1758 | 1758 | 1758 | 1758 | 1758 |
| Adj Flow Rate, veh/h          | 332   | 311  | 126  | 100  | 205  | 15   | 211   | 247  | 173  | 26   | 160  | 24   |
| Peak Hour Factor              | 0.95  | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95  | 0.95 | 0.95 | 0.97 | 0.97 | 0.97 |
| Percent Heavy Veh, %          | 3     | 3    | 3    | 3    | 3    | 3    | 3     | 3    | 3    | 3    | 3    | 3    |
| Cap, veh/h                    | 302   | 404  | 160  | 197  | 347  | 25   | 184   | 216  | 151  | 51   | 312  | 309  |
| Arrive On Green               | 0.18  | 0.17 | 0.17 | 0.12 | 0.11 | 0.11 | 0.34  | 0.34 | 0.34 | 0.21 | 0.21 | 0.21 |
| Sat Flow, veh/h               | 1674  | 2335 | 926  | 1674 | 3157 | 229  | 549   | 643  | 450  | 244  | 1502 | 1490 |
| Grp Volume(v), veh/h          | 332   | 221  | 216  | 100  | 108  | 112  | 631   | 0    | 0    | 186  | 0    | 24   |
| Grp Sat Flow(s), veh/h/ln     | 1674  | 1670 | 1591 | 1674 | 1670 | 1717 | 1643  | 0    | 0    | 1746 | 0    | 1490 |
| Q Serve(g_s), s               | 26.1  | 18.2 | 18.8 | 8.1  | 8.9  | 9.0  | 48.5  | 0.0  | 0.0  | 13.7 | 0.0  | 1.9  |
| Cycle Q Clear(g_c), s         | 26.1  | 18.2 | 18.8 | 8.1  | 8.9  | 9.0  | 48.5  | 0.0  | 0.0  | 13.7 | 0.0  | 1.9  |
| Prop In Lane                  | 1.00  |      | 0.58 | 1.00 |      | 0.13 | 0.33  |      | 0.27 | 0.14 |      | 1.00 |
| Lane Grp Cap(c), veh/h        | 302   | 289  | 275  | 197  | 184  | 189  | 551   | 0    | 0    | 362  | 0    | 309  |
| V/C Ratio(X)                  | 1.10  | 0.76 | 0.79 | 0.51 | 0.59 | 0.59 | 1.15  | 0.00 | 0.00 | 0.51 | 0.00 | 0.08 |
| Avail Cap(c_a), veh/h         | 302   | 351  | 335  | 197  | 246  | 253  | 551   | 0    | 0    | 362  | 0    | 309  |
| HCM Platoon Ratio             | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(l)            | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh      | 59.3  | 57.0 | 57.2 | 59.9 | 61.2 | 61.3 | 48.1  | 0.0  | 0.0  | 50.8 | 0.0  | 46.2 |
| Incr Delay (d2), s/veh        | 80.8  | 6.0  | 7.8  | 0.9  | 1.1  | 1.1  | 85.2  | 0.0  | 0.0  | 0.6  | 0.0  | 0.0  |
| Initial Q Delay(d3),s/veh     | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile BackOfQ(50%),veh/ln      | 7.5   | 8.0  | 8.0  | 3.4  | 3.7  | 3.9  | 31.8  | 0.0  | 0.0  | 5.8  | 0.0  | 0.7  |
| Unsig. Movement Delay, s/veh  |       |      |      |      |      |      |       |      |      |      |      |      |
| LnGrp Delay(d),s/veh          | 140.1 | 63.0 | 65.1 | 60.8 | 62.3 | 62.4 | 133.2 | 0.0  | 0.0  | 51.4 | 0.0  | 46.2 |
| LnGrp LOS                     | F     | E    | E    | E    | E    | E    | F     | A    | A    | D    | A    | D    |
| Approach Vol, veh/h           | 769   |      |      | 320  |      |      | 631   |      |      | 210  |      |      |
| Approach Delay, s/veh         | 96.9  |      |      | 61.9 |      |      | 133.2 |      |      | 50.8 |      |      |
| Approach LOS                  | F     |      |      | E    |      |      | F     |      |      | D    |      |      |
| Timer - Assigned Phs          | 1     | 2    |      | 4    | 5    | 6    |       | 8    |      |      |      |      |
| Phs Duration (G+Y+Rc), s      | 31.9  | 31.2 |      | 36.5 | 31.0 | 22.1 |       | 55.0 |      |      |      |      |
| Change Period (Y+Rc), s       | 4.9   | 6.2  |      | 6.5  | 4.9  | 6.2  |       | 6.5  |      |      |      |      |
| Max Green Setting (Gmax), s   | 30.4  | 30.4 |      | 30.0 | 26.1 | 21.3 |       | 48.5 |      |      |      |      |
| Max Q Clear Time (g_c+T10), s | 20.8  | 20.8 |      | 15.7 | 28.1 | 11.0 |       | 50.5 |      |      |      |      |
| Green Ext Time (p_c), s       | 0.1   | 1.0  |      | 0.4  | 0.0  | 0.4  |       | 0.0  |      |      |      |      |

## Intersection Summary

HCM 6th Ctrl Delay 97.9

HCM 6th LOS F

## Notes

User approved pedestrian interval to be less than phase max green.

HCM 6th TWSC  
4: N Centre City Pkwy & Tierra Libertia Rd

Horizon Year 2050 Conditions  
PM Peak Hour

| Intersection             |                                                                                   |          |                                                                                   |        |       |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|--------|-------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 0.3                                                                               |          |                                                                                   |        |       |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR    | SBL   | SBT                                                                               |
| Lane Configurations      |  |          |  |        |       |  |
| Traffic Vol, veh/h       | 5                                                                                 | 10       | 435                                                                               | 10     | 10    | 330                                                                               |
| Future Vol, veh/h        | 5                                                                                 | 10       | 435                                                                               | 10     | 10    | 330                                                                               |
| Conflicting Peds, #/hr   | 0                                                                                 | 0        | 0                                                                                 | 1      | 0     | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free   | Free  | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None   | -     | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -      | -     | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -      | -     | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -      | -     | 0                                                                                 |
| Peak Hour Factor         | 95                                                                                | 95       | 95                                                                                | 95     | 95    | 95                                                                                |
| Heavy Vehicles, %        | 3                                                                                 | 3        | 3                                                                                 | 3      | 3     | 3                                                                                 |
| Mvmt Flow                | 5                                                                                 | 11       | 458                                                                               | 11     | 11    | 347                                                                               |
| Major/Minor              | Minor1                                                                            | Major1   |                                                                                   | Major2 |       |                                                                                   |
| Conflicting Flow All     | 834                                                                               | 465      | 0                                                                                 | 0      | 470   | 0                                                                                 |
| Stage 1                  | 465                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Stage 2                  | 369                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Critical Hdwy            | 6.43                                                                              | 6.23     | -                                                                                 | -      | 4.13  | -                                                                                 |
| Critical Hdwy Stg 1      | 5.43                                                                              | -        | -                                                                                 | -      | -     | -                                                                                 |
| Critical Hdwy Stg 2      | 5.43                                                                              | -        | -                                                                                 | -      | -     | -                                                                                 |
| Follow-up Hdwy           | 3.527                                                                             | 3.327    | -                                                                                 | -      | 2.227 | -                                                                                 |
| Pot Cap-1 Maneuver       | 337                                                                               | 595      | -                                                                                 | -      | 1086  | -                                                                                 |
| Stage 1                  | 630                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Stage 2                  | 697                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -      |       | -                                                                                 |
| Mov Cap-1 Maneuver       | 332                                                                               | 594      | -                                                                                 | -      | 1085  | -                                                                                 |
| Mov Cap-2 Maneuver       | 332                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Stage 1                  | 629                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Stage 2                  | 688                                                                               | -        | -                                                                                 | -      | -     | -                                                                                 |
| Approach                 | WB                                                                                | NB       |                                                                                   | SB     |       |                                                                                   |
| HCM Control Delay, s     | 12.9                                                                              | 0        |                                                                                   | 0.2    |       |                                                                                   |
| HCM LOS                  | B                                                                                 |          |                                                                                   |        |       |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 |                                                                                   | SBL    | SBT   |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | -        |                                                                                   | 470    | 1085  |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | -        |                                                                                   | 0.034  | 0.01  |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | -        |                                                                                   | 12.9   | 8.3   |                                                                                   |
| HCM Lane LOS             | -                                                                                 | -        |                                                                                   | B      | A     |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | -        |                                                                                   | 0.1    | 0     |                                                                                   |

HCM 6th TWSC  
5: N Centre City Pkwy & Jesmond Dene Rd

Horizon Year 2050 Conditions  
PM Peak Hour

| Intersection             |                                                                                   |          |                                                                                   |       |                                                                                   |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 2.1                                                                               |          |                                                                                   |       |                                                                                   |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR   | SBL                                                                               | SBT                                                                               |
| Lane Configurations      |  |          |  |       |  |  |
| Traffic Vol, veh/h       | 10                                                                                | 70       | 375                                                                               | 15    | 85                                                                                | 250                                                                               |
| Future Vol, veh/h        | 10                                                                                | 70       | 375                                                                               | 15    | 85                                                                                | 250                                                                               |
| Conflicting Peds, #/hr   | 0                                                                                 | 0        | 0                                                                                 | 0     | 0                                                                                 | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free  | Free                                                                              | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None  | -                                                                                 | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -     | 95                                                                                | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -     | -                                                                                 | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -     | -                                                                                 | 0                                                                                 |
| Peak Hour Factor         | 95                                                                                | 95       | 95                                                                                | 95    | 95                                                                                | 95                                                                                |
| Heavy Vehicles, %        | 3                                                                                 | 3        | 3                                                                                 | 3     | 3                                                                                 | 3                                                                                 |
| Mvmt Flow                | 11                                                                                | 74       | 395                                                                               | 16    | 89                                                                                | 263                                                                               |
| Major/Minor              | Minor1                                                                            | Major1   | Major2                                                                            |       |                                                                                   |                                                                                   |
| Conflicting Flow All     | 844                                                                               | 403      | 0                                                                                 | 0     | 411                                                                               | 0                                                                                 |
| Stage 1                  | 403                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Stage 2                  | 441                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Critical Hdwy            | 6.43                                                                              | 6.23     | -                                                                                 | -     | 4.13                                                                              | -                                                                                 |
| Critical Hdwy Stg 1      | 5.43                                                                              | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Critical Hdwy Stg 2      | 5.43                                                                              | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Follow-up Hdwy           | 3.527                                                                             | 3.327    | -                                                                                 | -     | 2.227                                                                             | -                                                                                 |
| Pot Cap-1 Maneuver       | 332                                                                               | 645      | -                                                                                 | -     | 1142                                                                              | -                                                                                 |
| Stage 1                  | 673                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Stage 2                  | 646                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -     |                                                                                   | -                                                                                 |
| Mov Cap-1 Maneuver       | 306                                                                               | 645      | -                                                                                 | -     | 1142                                                                              | -                                                                                 |
| Mov Cap-2 Maneuver       | 306                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Stage 1                  | 673                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Stage 2                  | 596                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Approach                 | WB                                                                                | NB       | SB                                                                                |       |                                                                                   |                                                                                   |
| HCM Control Delay, s     | 12.5                                                                              | 0        | 2.1                                                                               |       |                                                                                   |                                                                                   |
| HCM LOS                  | B                                                                                 |          |                                                                                   |       |                                                                                   |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 | SBL                                                                               | SBT   |                                                                                   |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | -        | 567                                                                               | 1142  | -                                                                                 |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | -        | 0.149                                                                             | 0.078 | -                                                                                 |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | -        | 12.5                                                                              | 8.4   | -                                                                                 |                                                                                   |
| HCM Lane LOS             | -                                                                                 | -        | B                                                                                 | A     | -                                                                                 |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | -        | 0.5                                                                               | 0.3   | -                                                                                 |                                                                                   |

## **Appendix I - LOS Calculation Worksheets – Horizon Year with Project Conditions**

# HCM 6th Signalized Intersection Summary

## 1: I-15 SB Ramps & Deer Springs Rd

Horizon Year 2050 with Project Conditions

AM Peak Hour

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |  |  |
| Traffic Volume (veh/h)       | 0                                                                                 | 394                                                                               | 160                                                                               | 216                                                                               | 545                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 137                                                                                 | 5                                                                                   | 855                                                                                 |
| Future Volume (veh/h)        | 0                                                                                 | 394                                                                               | 160                                                                               | 216                                                                               | 545                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 137                                                                                 | 5                                                                                   | 855                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                    |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1758                                                                              | 1758                                                                              | 1758                                                                              | 1758                                                                              | 1758                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1758                                                                                | 1758                                                                                | 1758                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 415                                                                               | 107                                                                               | 227                                                                               | 574                                                                               | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 144                                                                                 | 5                                                                                   | 248                                                                                 |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 2                                                                                 | 456                                                                               | 386                                                                               | 678                                                                               | 1269                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 274                                                                                 | 10                                                                                  | 320                                                                                 |
| Arrive On Green              | 0.00                                                                              | 0.26                                                                              | 0.26                                                                              | 0.40                                                                              | 0.72                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.17                                                                                | 0.17                                                                                | 0.17                                                                                |
| Sat Flow, veh/h              | 1674                                                                              | 1758                                                                              | 1490                                                                              | 1674                                                                              | 1758                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1621                                                                                | 56                                                                                  | 2622                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 415                                                                               | 107                                                                               | 227                                                                               | 574                                                                               | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 149                                                                                 | 0                                                                                   | 248                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1674                                                                              | 1758                                                                              | 1490                                                                              | 1674                                                                              | 1758                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1677                                                                                | 0                                                                                   | 1311                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 22.9                                                                              | 5.7                                                                               | 9.3                                                                               | 13.5                                                                              | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 8.1                                                                                 | 0.0                                                                                 | 13.9                                                                                |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 22.9                                                                              | 5.7                                                                               | 9.3                                                                               | 13.5                                                                              | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 8.1                                                                                 | 0.0                                                                                 | 13.9                                                                                |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.97                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 2                                                                                 | 456                                                                               | 386                                                                               | 678                                                                               | 1269                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 283                                                                                 | 0                                                                                   | 320                                                                                 |
| V/C Ratio(X)                 | 0.00                                                                              | 0.91                                                                              | 0.28                                                                              | 0.34                                                                              | 0.45                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.53                                                                                | 0.00                                                                                | 0.78                                                                                |
| Avail Cap(c_a), veh/h        | 84                                                                                | 584                                                                               | 495                                                                               | 678                                                                               | 1269                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 535                                                                                 | 0                                                                                   | 713                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.29                                                                              | 0.29                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 35.9                                                                              | 29.5                                                                              | 20.5                                                                              | 5.7                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 37.9                                                                                | 0.0                                                                                 | 87.3                                                                                |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 24.8                                                                              | 1.8                                                                               | 0.0                                                                               | 0.3                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.6                                                                                 | 0.0                                                                                 | 1.5                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 12.3                                                                              | 2.1                                                                               | 3.4                                                                               | 3.5                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 3.3                                                                                 | 0.0                                                                                 | 0.1                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 60.7                                                                              | 31.3                                                                              | 20.5                                                                              | 6.1                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 38.5                                                                                | 0.0                                                                                 | 88.8                                                                                |
| LnGrp LOS                    | A                                                                                 | E                                                                                 | C                                                                                 | C                                                                                 | A                                                                                 | A                                                                                 |                                                                                    |                                                                                     |                                                                                     | D                                                                                   | A                                                                                   | F                                                                                   |
| Approach Vol, veh/h          | 522                                                                               |                                                                                   |                                                                                   |                                                                                   | 801                                                                               |                                                                                   |                                                                                    |                                                                                     | 397                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 54.7                                                                              |                                                                                   |                                                                                   |                                                                                   | 10.2                                                                              |                                                                                   |                                                                                    |                                                                                     | 69.9                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 | D                                                                                 |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    |                                                                                     | E                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 46.3                                                                              | 31.7                                                                              |                                                                                   | 22.0                                                                              | 0.0                                                                               | 78.0                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.8                                                                               | * 5.8                                                                             |                                                                                   | 5.1                                                                               | * 4.7                                                                             | 5.8                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 19.3                                                                              | * 33                                                                              |                                                                                   | 31.9                                                                              | * 5                                                                               | 47.5                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 11.3                                                                              | 24.9                                                                              |                                                                                   | 15.9                                                                              | 0.0                                                                               | 15.5                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.2                                                                               | 1.1                                                                               |                                                                                   | 1.0                                                                               | 0.0                                                                               | 2.0                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   | 37.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary 2: I-15 NB Ramps & Deer Springs Rd

Horizon Year 2050 with Project Conditions

AM Peak Hour



| Movement                     | EBL                                                                               | EBT                                                                               | EBR  | WBL   | WBT                                                                               | WBR                                                                               | NBL  | NBT                                                                                 | NBR                                                                                 | SBL  | SBT | SBR |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|-----|-----|
| Lane Configurations          |  |  |      |       |  |  |      |  |  |      |     |     |
| Traffic Volume (veh/h)       | 260                                                                               | 271                                                                               | 0    | 0     | 586                                                                               | 105                                                                               | 175  | 0                                                                                   | 170                                                                                 | 0    | 0   | 0   |
| Future Volume (veh/h)        | 260                                                                               | 271                                                                               | 0    | 0     | 586                                                                               | 105                                                                               | 175  | 0                                                                                   | 170                                                                                 | 0    | 0   | 0   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0    | 0     | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                   | 0                                                                                   |      |     |     |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00 | 1.00  |                                                                                   | 1.00                                                                              | 1.00 |                                                                                     | 1.00                                                                                |      |     |     |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00 | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00 | 1.00                                                                                | 1.00                                                                                |      |     |     |
| Work Zone On Approach        | No                                                                                |                                                                                   |      | No    |                                                                                   |                                                                                   | No   |                                                                                     |                                                                                     |      |     |     |
| Adj Sat Flow, veh/h/ln       | 1758                                                                              | 1758                                                                              | 0    | 0     | 1758                                                                              | 1758                                                                              | 1758 | 1758                                                                                | 1758                                                                                |      |     |     |
| Adj Flow Rate, veh/h         | 274                                                                               | 285                                                                               | 0    | 0     | 617                                                                               | 44                                                                                | 184  | 0                                                                                   | 10                                                                                  |      |     |     |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95 | 0.95  | 0.95                                                                              | 0.95                                                                              | 0.95 | 0.95                                                                                | 0.95                                                                                |      |     |     |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 0    | 0     | 3                                                                                 | 3                                                                                 | 3    | 3                                                                                   | 3                                                                                   |      |     |     |
| Cap, veh/h                   | 320                                                                               | 1183                                                                              | 0    | 0     | 677                                                                               | 573                                                                               | 193  | 0                                                                                   | 172                                                                                 |      |     |     |
| Arrive On Green              | 0.19                                                                              | 0.67                                                                              | 0.00 | 0.00  | 0.38                                                                              | 0.38                                                                              | 0.12 | 0.00                                                                                | 0.12                                                                                |      |     |     |
| Sat Flow, veh/h              | 1674                                                                              | 1758                                                                              | 0    | 0     | 1758                                                                              | 1490                                                                              | 1674 | 0                                                                                   | 1490                                                                                |      |     |     |
| Grp Volume(v), veh/h         | 274                                                                               | 285                                                                               | 0    | 0     | 617                                                                               | 44                                                                                | 184  | 0                                                                                   | 10                                                                                  |      |     |     |
| Grp Sat Flow(s),veh/h/ln     | 1674                                                                              | 1758                                                                              | 0    | 0     | 1758                                                                              | 1490                                                                              | 1674 | 0                                                                                   | 1490                                                                                |      |     |     |
| Q Serve(g_s), s              | 7.7                                                                               | 3.1                                                                               | 0.0  | 0.0   | 16.2                                                                              | 0.9                                                                               | 5.3  | 0.0                                                                                 | 0.3                                                                                 |      |     |     |
| Cycle Q Clear(g_c), s        | 7.7                                                                               | 3.1                                                                               | 0.0  | 0.0   | 16.2                                                                              | 0.9                                                                               | 5.3  | 0.0                                                                                 | 0.3                                                                                 |      |     |     |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.00 | 0.00  |                                                                                   | 1.00                                                                              | 1.00 |                                                                                     | 1.00                                                                                |      |     |     |
| Lane Grp Cap(c), veh/h       | 320                                                                               | 1183                                                                              | 0    | 0     | 677                                                                               | 573                                                                               | 193  | 0                                                                                   | 172                                                                                 |      |     |     |
| V/C Ratio(X)                 | 0.86                                                                              | 0.24                                                                              | 0.00 | 0.00  | 0.91                                                                              | 0.08                                                                              | 0.95 | 0.00                                                                                | 0.06                                                                                |      |     |     |
| Avail Cap(c_a), veh/h        | 320                                                                               | 1233                                                                              | 0    | 0     | 727                                                                               | 616                                                                               | 193  | 0                                                                                   | 172                                                                                 |      |     |     |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00 | 1.00  | 1.00                                                                              | 1.00                                                                              | 1.00 | 1.00                                                                                | 1.00                                                                                |      |     |     |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 0.00 | 0.00  | 1.00                                                                              | 1.00                                                                              | 1.00 | 0.00                                                                                | 1.00                                                                                |      |     |     |
| Uniform Delay (d), s/veh     | 19.0                                                                              | 3.1                                                                               | 0.0  | 0.0   | 14.2                                                                              | 9.5                                                                               | 21.4 | 0.0                                                                                 | 19.2                                                                                |      |     |     |
| Incr Delay (d2), s/veh       | 20.3                                                                              | 0.0                                                                               | 0.0  | 0.0   | 14.5                                                                              | 0.0                                                                               | 51.5 | 0.0                                                                                 | 0.1                                                                                 |      |     |     |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0  | 0.0   | 0.0                                                                               | 0.0                                                                               | 0.0  | 0.0                                                                                 | 0.0                                                                                 |      |     |     |
| %ile BackOfQ(50%),veh/ln     | 4.1                                                                               | 0.2                                                                               | 0.0  | 0.0   | 7.0                                                                               | 0.2                                                                               | 4.6  | 0.0                                                                                 | 0.1                                                                                 |      |     |     |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |      |       |                                                                                   |                                                                                   |      |                                                                                     |                                                                                     |      |     |     |
| LnGrp Delay(d),s/veh         | 39.3                                                                              | 3.1                                                                               | 0.0  | 0.0   | 28.7                                                                              | 9.5                                                                               | 72.9 | 0.0                                                                                 | 19.3                                                                                |      |     |     |
| LnGrp LOS                    | D                                                                                 | A                                                                                 | A    | A     | C                                                                                 | A                                                                                 | E    | A                                                                                   | B                                                                                   |      |     |     |
| Approach Vol, veh/h          | 559                                                                               |                                                                                   |      | 661   |                                                                                   |                                                                                   | 194  |                                                                                     |                                                                                     |      |     |     |
| Approach Delay, s/veh        | 20.9                                                                              |                                                                                   |      | 27.4  |                                                                                   |                                                                                   | 70.1 |                                                                                     |                                                                                     |      |     |     |
| Approach LOS                 | C                                                                                 |                                                                                   |      | C     |                                                                                   |                                                                                   | E    |                                                                                     |                                                                                     |      |     |     |
| Timer - Assigned Phs         | 2                                                                                 |                                                                                   |      | 5     |                                                                                   |                                                                                   | 6    |                                                                                     |                                                                                     | 8    |     |     |
| Phs Duration (G+Y+Rc), s     | 38.5                                                                              |                                                                                   |      | 14.0  |                                                                                   |                                                                                   | 24.5 |                                                                                     |                                                                                     | 10.1 |     |     |
| Change Period (Y+Rc), s      | 5.8                                                                               |                                                                                   |      | * 4.7 |                                                                                   |                                                                                   | 5.8  |                                                                                     |                                                                                     | 4.5  |     |     |
| Max Green Setting (Gmax), s  | 34.1                                                                              |                                                                                   |      | * 9.3 |                                                                                   |                                                                                   | 20.1 |                                                                                     |                                                                                     | 5.6  |     |     |
| Max Q Clear Time (g_c+I1), s | 5.1                                                                               |                                                                                   |      | 9.7   |                                                                                   |                                                                                   | 18.2 |                                                                                     |                                                                                     | 7.3  |     |     |
| Green Ext Time (p_c), s      | 0.9                                                                               |                                                                                   |      | 0.0   |                                                                                   |                                                                                   | 0.5  |                                                                                     |                                                                                     | 0.0  |     |     |
| Intersection Summary         |                                                                                   |                                                                                   |      |       |                                                                                   |                                                                                   |      |                                                                                     |                                                                                     |      |     |     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   | 30.7 |       |                                                                                   |                                                                                   |      |                                                                                     |                                                                                     |      |     |     |
| HCM 6th LOS                  |                                                                                   |                                                                                   | C    |       |                                                                                   |                                                                                   |      |                                                                                     |                                                                                     |      |     |     |
| Notes                        |                                                                                   |                                                                                   |      |       |                                                                                   |                                                                                   |      |                                                                                     |                                                                                     |      |     |     |

# HCM 6th Signalized Intersection Summary

Horizon Year 2050 with Project Conditions

3: N Centre City Pkwy/Champagne Blvd & Deer Springs Rd/Mountain Meadow Rd AM Peak Hour



| Movement                     | EBL                                                                               | EBT                                                                               | EBR  | WBL                                                                               | WBT                                                                               | WBR   | NBL  | NBT                                                                               | NBR  | SBL   | SBT                                                                               | SBR                                                                               |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|------|-----------------------------------------------------------------------------------|------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Configurations          |  |  |      |  |  |       |      |  |      |       |  |  |
| Traffic Volume (veh/h)       | 90                                                                                | 100                                                                               | 251  | 347                                                                               | 295                                                                               | 10    | 116  | 60                                                                                | 55   | 20    | 597                                                                               | 280                                                                               |
| Future Volume (veh/h)        | 90                                                                                | 100                                                                               | 251  | 347                                                                               | 295                                                                               | 10    | 116  | 60                                                                                | 55   | 20    | 597                                                                               | 280                                                                               |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 0     | 0    | 0                                                                                 | 0    | 0     | 0                                                                                 | 0                                                                                 |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00 | 1.00                                                                              |                                                                                   | 1.00  | 1.00 |                                                                                   | 0.99 | 1.00  |                                                                                   | 1.00                                                                              |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00 | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00 | 1.00                                                                              | 1.00 | 1.00  | 1.00                                                                              | 1.00                                                                              |
| Work Zone On Approach        | No                                                                                |                                                                                   |      |                                                                                   | No                                                                                |       | No   |                                                                                   |      |       | No                                                                                |                                                                                   |
| Adj Sat Flow, veh/h/ln       | 1758                                                                              | 1758                                                                              | 1758 | 1758                                                                              | 1758                                                                              | 1758  | 1758 | 1758                                                                              | 1758 | 1758  | 1758                                                                              | 1758                                                                              |
| Adj Flow Rate, veh/h         | 95                                                                                | 105                                                                               | 78   | 365                                                                               | 311                                                                               | 9     | 122  | 63                                                                                | 50   | 21    | 628                                                                               | 295                                                                               |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95 | 0.95                                                                              | 0.95                                                                              | 0.95  | 0.95 | 0.95                                                                              | 0.95 | 0.95  | 0.95                                                                              | 0.95                                                                              |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3    | 3                                                                                 | 3                                                                                 | 3     | 3    | 3                                                                                 | 3    | 3     | 3                                                                                 | 3                                                                                 |
| Cap, veh/h                   | 371                                                                               | 316                                                                               | 217  | 292                                                                               | 368                                                                               | 11    | 171  | 88                                                                                | 70   | 17    | 505                                                                               | 443                                                                               |
| Arrive On Green              | 0.22                                                                              | 0.17                                                                              | 0.17 | 0.17                                                                              | 0.11                                                                              | 0.11  | 0.20 | 0.20                                                                              | 0.20 | 0.30  | 0.30                                                                              | 0.30                                                                              |
| Sat Flow, veh/h              | 1674                                                                              | 1895                                                                              | 1299 | 1674                                                                              | 3315                                                                              | 96    | 855  | 441                                                                               | 350  | 57    | 1698                                                                              | 1490                                                                              |
| Grp Volume(v), veh/h         | 95                                                                                | 91                                                                                | 92   | 365                                                                               | 156                                                                               | 164   | 235  | 0                                                                                 | 0    | 649   | 0                                                                                 | 295                                                                               |
| Grp Sat Flow(s),veh/h/ln     | 1674                                                                              | 1670                                                                              | 1524 | 1674                                                                              | 1670                                                                              | 1741  | 1647 | 0                                                                                 | 0    | 1755  | 0                                                                                 | 1490                                                                              |
| Q Serve(g_s), s              | 7.0                                                                               | 7.2                                                                               | 8.0  | 26.1                                                                              | 13.7                                                                              | 13.8  | 19.9 | 0.0                                                                               | 0.0  | 44.5  | 0.0                                                                               | 26.0                                                                              |
| Cycle Q Clear(g_c), s        | 7.0                                                                               | 7.2                                                                               | 8.0  | 26.1                                                                              | 13.7                                                                              | 13.8  | 19.9 | 0.0                                                                               | 0.0  | 44.5  | 0.0                                                                               | 26.0                                                                              |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.85 | 1.00                                                                              |                                                                                   | 0.05  | 0.52 |                                                                                   | 0.21 | 0.03  |                                                                                   | 1.00                                                                              |
| Lane Grp Cap(c), veh/h       | 371                                                                               | 279                                                                               | 255  | 292                                                                               | 186                                                                               | 193   | 330  | 0                                                                                 | 0    | 522   | 0                                                                                 | 443                                                                               |
| V/C Ratio(X)                 | 0.26                                                                              | 0.33                                                                              | 0.36 | 1.25                                                                              | 0.84                                                                              | 0.85  | 0.71 | 0.00                                                                              | 0.00 | 1.24  | 0.00                                                                              | 0.67                                                                              |
| Avail Cap(c_a), veh/h        | 371                                                                               | 282                                                                               | 258  | 292                                                                               | 350                                                                               | 365   | 330  | 0                                                                                 | 0    | 522   | 0                                                                                 | 443                                                                               |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00 | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00 | 1.00                                                                              | 1.00 | 1.00  | 1.00                                                                              | 1.00                                                                              |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00 | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00 | 0.00                                                                              | 0.00 | 1.00  | 0.00                                                                              | 1.00                                                                              |
| Uniform Delay (d), s/veh     | 48.1                                                                              | 54.9                                                                              | 55.3 | 61.8                                                                              | 65.2                                                                              | 65.3  | 55.8 | 0.0                                                                               | 0.0  | 52.6  | 0.0                                                                               | 46.1                                                                              |
| Incr Delay (d2), s/veh       | 0.1                                                                               | 0.3                                                                               | 0.3  | 137.9                                                                             | 3.9                                                                               | 3.9   | 6.1  | 0.0                                                                               | 0.0  | 125.2 | 0.0                                                                               | 3.1                                                                               |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0  | 0.0                                                                               | 0.0                                                                               | 0.0   | 0.0  | 0.0                                                                               | 0.0  | 0.0   | 0.0                                                                               | 0.0                                                                               |
| %ile BackOfQ(50%),veh/ln     | 2.9                                                                               | 3.0                                                                               | 3.0  | 22.0                                                                              | 5.9                                                                               | 6.2   | 8.6  | 0.0                                                                               | 0.0  | 36.9  | 0.0                                                                               | 9.7                                                                               |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |      |                                                                                   |                                                                                   |       |      |                                                                                   |      |       |                                                                                   |                                                                                   |
| LnGrp Delay(d),s/veh         | 48.2                                                                              | 55.2                                                                              | 55.6 | 199.7                                                                             | 69.2                                                                              | 69.2  | 61.9 | 0.0                                                                               | 0.0  | 177.8 | 0.0                                                                               | 49.2                                                                              |
| LnGrp LOS                    | D                                                                                 | E                                                                                 | E    | F                                                                                 | E                                                                                 | E     | E    | A                                                                                 | A    | F     | A                                                                                 | D                                                                                 |
| Approach Vol, veh/h          | 278                                                                               |                                                                                   |      |                                                                                   | 685                                                                               |       | 235  |                                                                                   |      |       | 944                                                                               |                                                                                   |
| Approach Delay, s/veh        | 52.9                                                                              |                                                                                   |      |                                                                                   | 138.7                                                                             |       | 61.9 |                                                                                   |      |       | 137.6                                                                             |                                                                                   |
| Approach LOS                 | D                                                                                 |                                                                                   |      |                                                                                   | F                                                                                 |       | E    |                                                                                   |      |       | F                                                                                 |                                                                                   |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 4    |                                                                                   | 5                                                                                 | 6     | 8    |                                                                                   |      |       |                                                                                   |                                                                                   |
| Phs Duration (G+Y+Rc), s     | 31.0                                                                              | 31.2                                                                              | 51.0 |                                                                                   | 39.4                                                                              | 22.8  | 36.5 |                                                                                   |      |       |                                                                                   |                                                                                   |
| Change Period (Y+Rc), s      | 4.9                                                                               | 6.2                                                                               | 6.5  |                                                                                   | 6.2                                                                               | * 6.2 | 6.5  |                                                                                   |      |       |                                                                                   |                                                                                   |
| Max Green Setting (Gmax), s  | 26.1                                                                              | 25.3                                                                              | 44.5 |                                                                                   | 20.0                                                                              | * 31  | 30.0 |                                                                                   |      |       |                                                                                   |                                                                                   |
| Max Q Clear Time (g_c+20), s | 26.1                                                                              | 10.0                                                                              | 46.5 |                                                                                   | 9.0                                                                               | 15.8  | 21.9 |                                                                                   |      |       |                                                                                   |                                                                                   |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.4                                                                               | 0.0  |                                                                                   | 0.1                                                                               | 0.8   | 0.4  |                                                                                   |      |       |                                                                                   |                                                                                   |

## Intersection Summary

HCM 6th Ctrl Delay 118.7

HCM 6th LOS F

## Notes

User approved pedestrian interval to be less than phase max green.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC  
4: N Centre City Pkwy & Tierra Libertia Rd

Horizon Year 2050 with Project Conditions  
AM Peak Hour

Intersection

Int Delay, s/veh 0.6

| Movement                 | WBL                                                                               | WBR  | NBT                                                                               | NBR  | SBL  | SBT                                                                               |
|--------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|
| Lane Configurations      |  |      |  |      |      |  |
| Traffic Vol, veh/h       | 15                                                                                | 6    | 205                                                                               | 11   | 27   | 1135                                                                              |
| Future Vol, veh/h        | 15                                                                                | 6    | 205                                                                               | 11   | 27   | 1135                                                                              |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0                                                                                 | 1    | 0    | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop | Free                                                                              | Free | Free | Free                                                                              |
| RT Channelized           | -                                                                                 | None | -                                                                                 | None | -    | None                                                                              |
| Storage Length           | 0                                                                                 | -    | -                                                                                 | -    | -    | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -    | 0                                                                                 | -    | -    | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -    | 0                                                                                 | -    | -    | 0                                                                                 |
| Peak Hour Factor         | 95                                                                                | 95   | 95                                                                                | 95   | 95   | 95                                                                                |
| Heavy Vehicles, %        | 3                                                                                 | 3    | 3                                                                                 | 3    | 3    | 3                                                                                 |
| Mvmt Flow                | 16                                                                                | 6    | 216                                                                               | 12   | 28   | 1195                                                                              |

| Major/Minor          | Minor1 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 1474   | 223    | 0      |
| Stage 1              | 223    | -      | -      |
| Stage 2              | 1251   | -      | -      |
| Critical Hdwy        | 6.43   | 6.23   | -      |
| Critical Hdwy Stg 1  | 5.43   | -      | -      |
| Critical Hdwy Stg 2  | 5.43   | -      | -      |
| Follow-up Hdwy       | 3.527  | 3.327  | -      |
| Pot Cap-1 Maneuver   | 139    | 814    | -      |
| Stage 1              | 812    | -      | -      |
| Stage 2              | 268    | -      | -      |
| Platoon blocked, %   |        | -      | -      |
| Mov Cap-1 Maneuver   | 130    | 813    | -      |
| Mov Cap-2 Maneuver   | 130    | -      | -      |
| Stage 1              | 811    | -      | -      |
| Stage 2              | 251    | -      | -      |

| Approach             | WB   | NB | SB  |
|----------------------|------|----|-----|
| HCM Control Delay, s | 29.2 | 0  | 0.2 |
| HCM LOS              | D    |    |     |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL   | SBT   |
|-----------------------|-----|----------|-------|-------|
| Capacity (veh/h)      | -   | -        | 171   | 1332  |
| HCM Lane V/C Ratio    | -   | -        | 0.129 | 0.021 |
| HCM Control Delay (s) | -   | -        | 29.2  | 7.8   |
| HCM Lane LOS          | -   | -        | D     | A     |
| HCM 95th %tile Q(veh) | -   | -        | 0.4   | 0.1   |

HCM 6th TWSC  
5: N Centre City Pkwy & Jesmond Dene Rd

Horizon Year 2050 with Project Conditions  
AM Peak Hour

| Intersection             |                                                                                   |          |                                                                                   |        |                                                                                   |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 1.7                                                                               |          |                                                                                   |        |                                                                                   |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR    | SBL                                                                               | SBT                                                                               |
| Lane Configurations      |  |          |  |        |  |  |
| Traffic Vol, veh/h       | 15                                                                                | 90       | 126                                                                               | 10     | 105                                                                               | 1045                                                                              |
| Future Vol, veh/h        | 15                                                                                | 90       | 126                                                                               | 10     | 105                                                                               | 1045                                                                              |
| Conflicting Peds, #/hr   | 0                                                                                 | 0        | 0                                                                                 | 0      | 0                                                                                 | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free   | Free                                                                              | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None   | -                                                                                 | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -      | 95                                                                                | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -      | -                                                                                 | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -      | -                                                                                 | 0                                                                                 |
| Peak Hour Factor         | 95                                                                                | 95       | 95                                                                                | 95     | 95                                                                                | 95                                                                                |
| Heavy Vehicles, %        | 3                                                                                 | 3        | 3                                                                                 | 3      | 3                                                                                 | 3                                                                                 |
| Mvmt Flow                | 16                                                                                | 95       | 133                                                                               | 11     | 111                                                                               | 1100                                                                              |
|                          |                                                                                   |          |                                                                                   |        |                                                                                   |                                                                                   |
| Major/Minor              | Minor1                                                                            | Major1   |                                                                                   | Major2 |                                                                                   |                                                                                   |
| Conflicting Flow All     | 1461                                                                              | 139      | 0                                                                                 | 0      | 144                                                                               | 0                                                                                 |
| Stage 1                  | 139                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Stage 2                  | 1322                                                                              | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Critical Hdwy            | 6.43                                                                              | 6.23     | -                                                                                 | -      | 4.13                                                                              | -                                                                                 |
| Critical Hdwy Stg 1      | 5.43                                                                              | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Critical Hdwy Stg 2      | 5.43                                                                              | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Follow-up Hdwy           | 3.527                                                                             | 3.327    | -                                                                                 | -      | 2.227                                                                             | -                                                                                 |
| Pot Cap-1 Maneuver       | 141                                                                               | 907      | -                                                                                 | -      | 1432                                                                              | -                                                                                 |
| Stage 1                  | 885                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Stage 2                  | 248                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -      |                                                                                   | -                                                                                 |
| Mov Cap-1 Maneuver       | 130                                                                               | 907      | -                                                                                 | -      | 1432                                                                              | -                                                                                 |
| Mov Cap-2 Maneuver       | 130                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Stage 1                  | 885                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
| Stage 2                  | 229                                                                               | -        | -                                                                                 | -      | -                                                                                 | -                                                                                 |
|                          |                                                                                   |          |                                                                                   |        |                                                                                   |                                                                                   |
|                          |                                                                                   |          |                                                                                   |        |                                                                                   |                                                                                   |
| Approach                 | WB                                                                                | NB       |                                                                                   | SB     |                                                                                   |                                                                                   |
| HCM Control Delay, s     | 14.5                                                                              | 0        |                                                                                   | 0.7    |                                                                                   |                                                                                   |
| HCM LOS                  | B                                                                                 |          |                                                                                   |        |                                                                                   |                                                                                   |
|                          |                                                                                   |          |                                                                                   |        |                                                                                   |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 | SBL                                                                               | SBT    |                                                                                   |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | -        | 489                                                                               | 1432   | -                                                                                 |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | -        | 0.226                                                                             | 0.077  | -                                                                                 |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | -        | 14.5                                                                              | 7.7    | -                                                                                 |                                                                                   |
| HCM Lane LOS             | -                                                                                 | -        | B                                                                                 | A      | -                                                                                 |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | -        | 0.9                                                                               | 0.3    | -                                                                                 |                                                                                   |

HCM 6th TWSC  
6: Project Dwy #1 & Tierra Libertia Rd

Horizon Year 2050 with Project Conditions  
AM Peak Hour

| Intersection             |                                                                                   |        |       |                                                                                   |                                                                                   |       |
|--------------------------|-----------------------------------------------------------------------------------|--------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|
| Int Delay, s/veh         | 0                                                                                 |        |       |                                                                                   |                                                                                   |       |
| Movement                 | EBT                                                                               | EBR    | WBL   | WBT                                                                               | NBL                                                                               | NBR   |
| Lane Configurations      |  |        |       |  |  |       |
| Traffic Vol, veh/h       | 24                                                                                | 14     | 0     | 21                                                                                | 0                                                                                 | 0     |
| Future Vol, veh/h        | 24                                                                                | 14     | 0     | 21                                                                                | 0                                                                                 | 0     |
| Conflicting Peds, #/hr   | 0                                                                                 | 0      | 0     | 0                                                                                 | 0                                                                                 | 0     |
| Sign Control             | Free                                                                              | Free   | Free  | Free                                                                              | Stop                                                                              | Stop  |
| RT Channelized           | -                                                                                 | None   | -     | None                                                                              | -                                                                                 | None  |
| Storage Length           | -                                                                                 | -      | -     | -                                                                                 | 0                                                                                 | -     |
| Veh in Median Storage, # | 0                                                                                 | -      | -     | 0                                                                                 | 0                                                                                 | -     |
| Grade, %                 | 0                                                                                 | -      | -     | 0                                                                                 | 0                                                                                 | -     |
| Peak Hour Factor         | 95                                                                                | 95     | 95    | 95                                                                                | 95                                                                                | 95    |
| Heavy Vehicles, %        | 2                                                                                 | 2      | 2     | 2                                                                                 | 2                                                                                 | 2     |
| Mvmt Flow                | 25                                                                                | 15     | 0     | 22                                                                                | 0                                                                                 | 0     |
|                          |                                                                                   |        |       |                                                                                   |                                                                                   |       |
| Major/Minor              | Major1                                                                            | Major2 |       | Minor1                                                                            |                                                                                   |       |
| Conflicting Flow All     | 0                                                                                 | 0      | 40    | 0                                                                                 | 55                                                                                | 33    |
| Stage 1                  | -                                                                                 | -      | -     | -                                                                                 | 33                                                                                | -     |
| Stage 2                  | -                                                                                 | -      | -     | -                                                                                 | 22                                                                                | -     |
| Critical Hdwy            | -                                                                                 | -      | 4.12  | -                                                                                 | 6.42                                                                              | 6.22  |
| Critical Hdwy Stg 1      | -                                                                                 | -      | -     | -                                                                                 | 5.42                                                                              | -     |
| Critical Hdwy Stg 2      | -                                                                                 | -      | -     | -                                                                                 | 5.42                                                                              | -     |
| Follow-up Hdwy           | -                                                                                 | -      | 2.218 | -                                                                                 | 3.518                                                                             | 3.318 |
| Pot Cap-1 Maneuver       | -                                                                                 | -      | 1570  | -                                                                                 | 953                                                                               | 1041  |
| Stage 1                  | -                                                                                 | -      | -     | -                                                                                 | 989                                                                               | -     |
| Stage 2                  | -                                                                                 | -      | -     | -                                                                                 | 1001                                                                              | -     |
| Platoon blocked, %       | -                                                                                 | -      |       | -                                                                                 |                                                                                   |       |
| Mov Cap-1 Maneuver       | -                                                                                 | -      | 1570  | -                                                                                 | 953                                                                               | 1041  |
| Mov Cap-2 Maneuver       | -                                                                                 | -      | -     | -                                                                                 | 953                                                                               | -     |
| Stage 1                  | -                                                                                 | -      | -     | -                                                                                 | 989                                                                               | -     |
| Stage 2                  | -                                                                                 | -      | -     | -                                                                                 | 1001                                                                              | -     |
|                          |                                                                                   |        |       |                                                                                   |                                                                                   |       |
|                          |                                                                                   |        |       |                                                                                   |                                                                                   |       |
| Approach                 | EB                                                                                | WB     |       | NB                                                                                |                                                                                   |       |
| HCM Control Delay, s     | 0                                                                                 | 0      |       | 0                                                                                 |                                                                                   |       |
| HCM LOS                  | A                                                                                 |        |       |                                                                                   |                                                                                   |       |
|                          |                                                                                   |        |       |                                                                                   |                                                                                   |       |
|                          |                                                                                   |        |       |                                                                                   |                                                                                   |       |
| Minor Lane/Major Mvmt    | NBLn1                                                                             | EBT    | EBR   | WBL                                                                               | WBT                                                                               |       |
| Capacity (veh/h)         | -                                                                                 | -      | -     | 1570                                                                              | -                                                                                 |       |
| HCM Lane V/C Ratio       | -                                                                                 | -      | -     | -                                                                                 | -                                                                                 |       |
| HCM Control Delay (s)    | 0                                                                                 | -      | -     | 0                                                                                 | -                                                                                 |       |
| HCM Lane LOS             | A                                                                                 | -      | -     | A                                                                                 | -                                                                                 |       |
| HCM 95th %tile Q(veh)    | -                                                                                 | -      | -     | 0                                                                                 | -                                                                                 |       |

HCM 6th TWSC  
7: Project Dwy #2 & Tierra Libertia Rd

Horizon Year 2050 with Project Conditions  
AM Peak Hour

| Intersection             |                                                                                   |        |       |                                                                                   |                                                                                   |       |
|--------------------------|-----------------------------------------------------------------------------------|--------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|
| Int Delay, s/veh         | 0                                                                                 |        |       |                                                                                   |                                                                                   |       |
| Movement                 | EBT                                                                               | EBR    | WBL   | WBT                                                                               | NBL                                                                               | NBR   |
| Lane Configurations      |  |        |       |  |  |       |
| Traffic Vol, veh/h       | 17                                                                                | 7      | 0     | 21                                                                                | 0                                                                                 | 0     |
| Future Vol, veh/h        | 17                                                                                | 7      | 0     | 21                                                                                | 0                                                                                 | 0     |
| Conflicting Peds, #/hr   | 0                                                                                 | 0      | 0     | 0                                                                                 | 0                                                                                 | 0     |
| Sign Control             | Free                                                                              | Free   | Free  | Free                                                                              | Stop                                                                              | Stop  |
| RT Channelized           | -                                                                                 | None   | -     | None                                                                              | -                                                                                 | None  |
| Storage Length           | -                                                                                 | -      | -     | -                                                                                 | 0                                                                                 | -     |
| Veh in Median Storage, # | 0                                                                                 | -      | -     | 0                                                                                 | 0                                                                                 | -     |
| Grade, %                 | 0                                                                                 | -      | -     | 0                                                                                 | 0                                                                                 | -     |
| Peak Hour Factor         | 95                                                                                | 95     | 95    | 95                                                                                | 95                                                                                | 95    |
| Heavy Vehicles, %        | 2                                                                                 | 2      | 2     | 2                                                                                 | 2                                                                                 | 2     |
| Mvmt Flow                | 18                                                                                | 7      | 0     | 22                                                                                | 0                                                                                 | 0     |
|                          |                                                                                   |        |       |                                                                                   |                                                                                   |       |
| Major/Minor              | Major1                                                                            | Major2 |       | Minor1                                                                            |                                                                                   |       |
| Conflicting Flow All     | 0                                                                                 | 0      | 25    | 0                                                                                 | 44                                                                                | 22    |
| Stage 1                  | -                                                                                 | -      | -     | -                                                                                 | 22                                                                                | -     |
| Stage 2                  | -                                                                                 | -      | -     | -                                                                                 | 22                                                                                | -     |
| Critical Hdwy            | -                                                                                 | -      | 4.12  | -                                                                                 | 6.42                                                                              | 6.22  |
| Critical Hdwy Stg 1      | -                                                                                 | -      | -     | -                                                                                 | 5.42                                                                              | -     |
| Critical Hdwy Stg 2      | -                                                                                 | -      | -     | -                                                                                 | 5.42                                                                              | -     |
| Follow-up Hdwy           | -                                                                                 | -      | 2.218 | -                                                                                 | 3.518                                                                             | 3.318 |
| Pot Cap-1 Maneuver       | -                                                                                 | -      | 1589  | -                                                                                 | 967                                                                               | 1055  |
| Stage 1                  | -                                                                                 | -      | -     | -                                                                                 | 1001                                                                              | -     |
| Stage 2                  | -                                                                                 | -      | -     | -                                                                                 | 1001                                                                              | -     |
| Platoon blocked, %       | -                                                                                 | -      |       | -                                                                                 |                                                                                   |       |
| Mov Cap-1 Maneuver       | -                                                                                 | -      | 1589  | -                                                                                 | 967                                                                               | 1055  |
| Mov Cap-2 Maneuver       | -                                                                                 | -      | -     | -                                                                                 | 967                                                                               | -     |
| Stage 1                  | -                                                                                 | -      | -     | -                                                                                 | 1001                                                                              | -     |
| Stage 2                  | -                                                                                 | -      | -     | -                                                                                 | 1001                                                                              | -     |
|                          |                                                                                   |        |       |                                                                                   |                                                                                   |       |
| Approach                 | EB                                                                                | WB     |       | NB                                                                                |                                                                                   |       |
| HCM Control Delay, s     | 0                                                                                 | 0      |       | 0                                                                                 |                                                                                   |       |
| HCM LOS                  |                                                                                   |        |       | A                                                                                 |                                                                                   |       |
|                          |                                                                                   |        |       |                                                                                   |                                                                                   |       |
| Minor Lane/Major Mvmt    | NBLn1                                                                             | EBT    | EBR   | WBL                                                                               | WBT                                                                               |       |
| Capacity (veh/h)         | -                                                                                 | -      | -     | 1589                                                                              | -                                                                                 |       |
| HCM Lane V/C Ratio       | -                                                                                 | -      | -     | -                                                                                 | -                                                                                 |       |
| HCM Control Delay (s)    | 0                                                                                 | -      | -     | 0                                                                                 | -                                                                                 |       |
| HCM Lane LOS             | A                                                                                 | -      | -     | A                                                                                 | -                                                                                 |       |
| HCM 95th %tile Q(veh)    | -                                                                                 | -      | -     | 0                                                                                 | -                                                                                 |       |

HCM 6th TWSC  
8: Project Dwy #3 & Tierra Libertia Rd

Horizon Year 2050 with Project Conditions  
AM Peak Hour

| Intersection             |                                                                                   |        |       |                                                                                   |                                                                                   |       |
|--------------------------|-----------------------------------------------------------------------------------|--------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|
| Int Delay, s/veh         | 0.2                                                                               |        |       |                                                                                   |                                                                                   |       |
| Movement                 | EBT                                                                               | EBR    | WBL   | WBT                                                                               | NBL                                                                               | NBR   |
| Lane Configurations      |  |        |       |  |  |       |
| Traffic Vol, veh/h       | 10                                                                                | 7      | 0     | 20                                                                                | 1                                                                                 | 0     |
| Future Vol, veh/h        | 10                                                                                | 7      | 0     | 20                                                                                | 1                                                                                 | 0     |
| Conflicting Peds, #/hr   | 0                                                                                 | 0      | 0     | 0                                                                                 | 0                                                                                 | 0     |
| Sign Control             | Free                                                                              | Free   | Free  | Free                                                                              | Stop                                                                              | Stop  |
| RT Channelized           | -                                                                                 | None   | -     | None                                                                              | -                                                                                 | None  |
| Storage Length           | -                                                                                 | -      | -     | -                                                                                 | 0                                                                                 | -     |
| Veh in Median Storage, # | 0                                                                                 | -      | -     | 0                                                                                 | 0                                                                                 | -     |
| Grade, %                 | 0                                                                                 | -      | -     | 0                                                                                 | 0                                                                                 | -     |
| Peak Hour Factor         | 95                                                                                | 95     | 95    | 95                                                                                | 95                                                                                | 95    |
| Heavy Vehicles, %        | 2                                                                                 | 2      | 2     | 2                                                                                 | 2                                                                                 | 2     |
| Mvmt Flow                | 11                                                                                | 7      | 0     | 21                                                                                | 1                                                                                 | 0     |
| Major/Minor              | Major1                                                                            | Major2 |       | Minor1                                                                            |                                                                                   |       |
| Conflicting Flow All     | 0                                                                                 | 0      | 18    | 0                                                                                 | 36                                                                                | 15    |
| Stage 1                  | -                                                                                 | -      | -     | -                                                                                 | 15                                                                                | -     |
| Stage 2                  | -                                                                                 | -      | -     | -                                                                                 | 21                                                                                | -     |
| Critical Hdwy            | -                                                                                 | -      | 4.12  | -                                                                                 | 6.42                                                                              | 6.22  |
| Critical Hdwy Stg 1      | -                                                                                 | -      | -     | -                                                                                 | 5.42                                                                              | -     |
| Critical Hdwy Stg 2      | -                                                                                 | -      | -     | -                                                                                 | 5.42                                                                              | -     |
| Follow-up Hdwy           | -                                                                                 | -      | 2.218 | -                                                                                 | 3.518                                                                             | 3.318 |
| Pot Cap-1 Maneuver       | -                                                                                 | -      | 1599  | -                                                                                 | 977                                                                               | 1065  |
| Stage 1                  | -                                                                                 | -      | -     | -                                                                                 | 1008                                                                              | -     |
| Stage 2                  | -                                                                                 | -      | -     | -                                                                                 | 1002                                                                              | -     |
| Platoon blocked, %       | -                                                                                 | -      | -     | -                                                                                 | -                                                                                 | -     |
| Mov Cap-1 Maneuver       | -                                                                                 | -      | 1599  | -                                                                                 | 977                                                                               | 1065  |
| Mov Cap-2 Maneuver       | -                                                                                 | -      | -     | -                                                                                 | 977                                                                               | -     |
| Stage 1                  | -                                                                                 | -      | -     | -                                                                                 | 1008                                                                              | -     |
| Stage 2                  | -                                                                                 | -      | -     | -                                                                                 | 1002                                                                              | -     |
| Approach                 | EB                                                                                |        | WB    |                                                                                   | NB                                                                                |       |
| HCM Control Delay, s     | 0                                                                                 |        | 0     |                                                                                   | 8.7                                                                               |       |
| HCM LOS                  |                                                                                   |        |       |                                                                                   | A                                                                                 |       |
| Minor Lane/Major Mvmt    | NBLn1                                                                             | EBT    | EBR   | WBL                                                                               | WBT                                                                               |       |
| Capacity (veh/h)         | 977                                                                               | -      | -     | 1599                                                                              | -                                                                                 |       |
| HCM Lane V/C Ratio       | 0.001                                                                             | -      | -     | -                                                                                 | -                                                                                 |       |
| HCM Control Delay (s)    | 8.7                                                                               | -      | -     | 0                                                                                 | -                                                                                 |       |
| HCM Lane LOS             | A                                                                                 | -      | -     | A                                                                                 | -                                                                                 |       |
| HCM 95th %tile Q(veh)    | 0                                                                                 | -      | -     | 0                                                                                 | -                                                                                 |       |

HCM 6th TWSC  
9: Jesmond Dene Rd & Project Dwy #4

Horizon Year 2050 with Project Conditions  
AM Peak Hour

| Intersection             |                                                                                   |        |                                                                                   |      |      |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 0                                                                                 |        |                                                                                   |      |      |                                                                                   |
| Movement                 | WBL                                                                               | WBR    | NBT                                                                               | NBR  | SBL  | SBT                                                                               |
| Lane Configurations      |  |        |  |      |      |  |
| Traffic Vol, veh/h       | 0                                                                                 | 0      | 105                                                                               | 0    | 0    | 115                                                                               |
| Future Vol, veh/h        | 0                                                                                 | 0      | 105                                                                               | 0    | 0    | 115                                                                               |
| Conflicting Peds, #/hr   | 0                                                                                 | 0      | 0                                                                                 | 0    | 0    | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop   | Free                                                                              | Free | Free | Free                                                                              |
| RT Channelized           | -                                                                                 | None   | -                                                                                 | None | -    | None                                                                              |
| Storage Length           | 0                                                                                 | -      | -                                                                                 | -    | -    | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -      | 0                                                                                 | -    | -    | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -      | 0                                                                                 | -    | -    | 0                                                                                 |
| Peak Hour Factor         | 95                                                                                | 95     | 95                                                                                | 95   | 95   | 95                                                                                |
| Heavy Vehicles, %        | 2                                                                                 | 2      | 2                                                                                 | 2    | 2    | 2                                                                                 |
| Mvmt Flow                | 0                                                                                 | 0      | 111                                                                               | 0    | 0    | 121                                                                               |
| Major/Minor              | Minor1                                                                            | Major1 | Major2                                                                            |      |      |                                                                                   |
| Conflicting Flow All     | 232                                                                               | 111    | 0                                                                                 | -    | -    | -                                                                                 |
| Stage 1                  | 111                                                                               | -      | -                                                                                 | -    | -    | -                                                                                 |
| Stage 2                  | 121                                                                               | -      | -                                                                                 | -    | -    | -                                                                                 |
| Critical Hdwy            | 6.42                                                                              | 6.22   | -                                                                                 | -    | -    | -                                                                                 |
| Critical Hdwy Stg 1      | 5.42                                                                              | -      | -                                                                                 | -    | -    | -                                                                                 |
| Critical Hdwy Stg 2      | 5.42                                                                              | -      | -                                                                                 | -    | -    | -                                                                                 |
| Follow-up Hdwy           | 3.518                                                                             | 3.318  | -                                                                                 | -    | -    | -                                                                                 |
| Pot Cap-1 Maneuver       | 756                                                                               | 942    | -                                                                                 | 0    | 0    | -                                                                                 |
| Stage 1                  | 914                                                                               | -      | -                                                                                 | 0    | 0    | -                                                                                 |
| Stage 2                  | 904                                                                               | -      | -                                                                                 | 0    | 0    | -                                                                                 |
| Platoon blocked, %       |                                                                                   |        | -                                                                                 |      |      | -                                                                                 |
| Mov Cap-1 Maneuver       | 756                                                                               | 942    | -                                                                                 | -    | -    | -                                                                                 |
| Mov Cap-2 Maneuver       | 756                                                                               | -      | -                                                                                 | -    | -    | -                                                                                 |
| Stage 1                  | 914                                                                               | -      | -                                                                                 | -    | -    | -                                                                                 |
| Stage 2                  | 904                                                                               | -      | -                                                                                 | -    | -    | -                                                                                 |
| Approach                 | WB                                                                                | NB     | SB                                                                                |      |      |                                                                                   |
| HCM Control Delay, s     | 0                                                                                 | 0      | 0                                                                                 |      |      |                                                                                   |
| HCM LOS                  | A                                                                                 |        |                                                                                   |      |      |                                                                                   |
| Minor Lane/Major Mvmt    | NBTWBLn1                                                                          |        | SBT                                                                               |      |      |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | -      | -                                                                                 |      |      |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | -      | -                                                                                 |      |      |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | 0      | -                                                                                 |      |      |                                                                                   |
| HCM Lane LOS             | -                                                                                 | A      | -                                                                                 |      |      |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | -      | -                                                                                 |      |      |                                                                                   |

# HCM 6th Signalized Intersection Summary

## 1: I-15 SB Ramps & Deer Springs Rd

Horizon Year 2050 with Project Conditions

PM Peak Hour

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |
| Traffic Volume (veh/h)       | 0                                                                                 | 1142                                                                              | 290                                                                               | 218                                                                               | 481                                                                               | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 76                                                                                  | 5                                                                                   | 470                                                                                 |
| Future Volume (veh/h)        | 0                                                                                 | 1142                                                                              | 290                                                                               | 218                                                                               | 481                                                                               | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 76                                                                                  | 5                                                                                   | 470                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1758                                                                              | 1758                                                                              | 1758                                                                              | 1758                                                                              | 1758                                                                              | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 1758                                                                                | 1758                                                                                | 1758                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 1177                                                                              | 276                                                                               | 229                                                                               | 506                                                                               | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 80                                                                                  | 5                                                                                   | 118                                                                                 |
| Peak Hour Factor             | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              |                                                                                     |                                                                                     |                                                                                     | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 3                                                                                 | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 3                                                                                   | 3                                                                                   | 3                                                                                   |
| Cap, veh/h                   | 2                                                                                 | 1090                                                                              | 924                                                                               | 384                                                                               | 1596                                                                              | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 144                                                                                 | 9                                                                                   | 115                                                                                 |
| Arrive On Green              | 0.00                                                                              | 0.62                                                                              | 0.62                                                                              | 0.46                                                                              | 1.00                                                                              | 0.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 0.09                                                                                | 0.09                                                                                | 0.09                                                                                |
| Sat Flow, veh/h              | 1674                                                                              | 1758                                                                              | 1490                                                                              | 1674                                                                              | 1758                                                                              | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 1580                                                                                | 99                                                                                  | 2622                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 1177                                                                              | 276                                                                               | 229                                                                               | 506                                                                               | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 85                                                                                  | 0                                                                                   | 118                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1674                                                                              | 1758                                                                              | 1490                                                                              | 1674                                                                              | 1758                                                                              | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 1679                                                                                | 0                                                                                   | 1311                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 62.0                                                                              | 8.6                                                                               | 10.2                                                                              | 0.0                                                                               | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 4.8                                                                                 | 0.0                                                                                 | 9.1                                                                                 |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 62.0                                                                              | 8.6                                                                               | 10.2                                                                              | 0.0                                                                               | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 4.8                                                                                 | 0.0                                                                                 | 9.1                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 0.94                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 2                                                                                 | 1090                                                                              | 924                                                                               | 384                                                                               | 1596                                                                              | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 153                                                                                 | 0                                                                                   | 115                                                                                 |
| V/C Ratio(X)                 | 0.00                                                                              | 1.08                                                                              | 0.30                                                                              | 0.60                                                                              | 0.32                                                                              | 0.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 0.56                                                                                | 0.00                                                                                | 1.02                                                                                |
| Avail Cap(c_a), veh/h        | 84                                                                                | 1090                                                                              | 924                                                                               | 384                                                                               | 1596                                                                              | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     | 153                                                                                 | 0                                                                                   | 115                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                              | 2.00                                                                              | 1.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.12                                                                              | 0.12                                                                              | 0.00                                                                              |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 19.0                                                                              | 8.9                                                                               | 23.6                                                                              | 0.0                                                                               | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 43.5                                                                                | 0.0                                                                                 | 152.3                                                                               |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 51.5                                                                              | 0.8                                                                               | 0.2                                                                               | 0.1                                                                               | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 2.7                                                                                 | 0.0                                                                                 | 90.0                                                                                |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 35.0                                                                              | 2.5                                                                               | 3.2                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 2.1                                                                                 | 0.0                                                                                 | 1.4                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 70.5                                                                              | 9.7                                                                               | 23.8                                                                              | 0.1                                                                               | 0.0                                                                               |                                                                                     |                                                                                     |                                                                                     | 46.2                                                                                | 0.0                                                                                 | 242.4                                                                               |
| LnGrp LOS                    | A                                                                                 | F                                                                                 | A                                                                                 | C                                                                                 | A                                                                                 | A                                                                                 |                                                                                     |                                                                                     |                                                                                     | D                                                                                   | A                                                                                   | F                                                                                   |
| Approach Vol, veh/h          | 1453                                                                              |                                                                                   |                                                                                   | 735                                                                               |                                                                                   |                                                                                   | 203                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 59.0                                                                              |                                                                                   |                                                                                   | 7.5                                                                               |                                                                                   |                                                                                   | 160.2                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 | E                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | F                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 28.8                                                                              | 67.8                                                                              |                                                                                   | 14.2                                                                              | 0.0                                                                               | 96.6                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.8                                                                               | * 5.8                                                                             |                                                                                   | 5.1                                                                               | * 4.7                                                                             | 5.8                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 13.3                                                                              | * 62                                                                              |                                                                                   | 9.1                                                                               | * 5                                                                               | 70.3                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 12.2                                                                              | 64.0                                                                              |                                                                                   | 11.1                                                                              | 0.0                                                                               | 2.0                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 1.7                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

### Intersection Summary

HCM 6th Ctrl Delay 51.7

HCM 6th LOS D

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM 6th Signalized Intersection Summary 2: I-15 NB Ramps & Deer Springs Rd

Horizon Year 2050 with Project Conditions  
PM Peak Hour



| Movement                     | EBL                                                                               | EBT                                                                               | EBR  | WBL  | WBT                                                                               | WBR                                                                               | NBL   | NBT                                                                                | NBR                                                                                 | SBL  | SBT | SBR |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|-----|-----|
| Lane Configurations          |  |  |      |      |  |  |       |  |  |      |     |     |
| Traffic Volume (veh/h)       | 830                                                                               | 388                                                                               | 0    | 0    | 399                                                                               | 154                                                                               | 300   | 5                                                                                  | 460                                                                                 | 0    | 0   | 0   |
| Future Volume (veh/h)        | 830                                                                               | 388                                                                               | 0    | 0    | 399                                                                               | 154                                                                               | 300   | 5                                                                                  | 460                                                                                 | 0    | 0   | 0   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                 | 0                                                                                 | 0     | 0                                                                                  | 0                                                                                   |      |     |     |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00 | 1.00 |                                                                                   | 1.00                                                                              | 1.00  |                                                                                    | 1.00                                                                                |      |     |     |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00 | 1.00 | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                               | 1.00                                                                                |      |     |     |
| Work Zone On Approach        | No                                                                                |                                                                                   |      |      | No                                                                                |                                                                                   |       |                                                                                    | No                                                                                  |      |     |     |
| Adj Sat Flow, veh/h/ln       | 1758                                                                              | 1758                                                                              | 0    | 0    | 1758                                                                              | 1758                                                                              | 1758  | 1758                                                                               | 1758                                                                                |      |     |     |
| Adj Flow Rate, veh/h         | 874                                                                               | 408                                                                               | 0    | 0    | 420                                                                               | 115                                                                               | 316   | 5                                                                                  | 159                                                                                 |      |     |     |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95 | 0.95 | 0.95                                                                              | 0.95                                                                              | 0.95  | 0.95                                                                               | 0.95                                                                                |      |     |     |
| Percent Heavy Veh, %         | 3                                                                                 | 3                                                                                 | 0    | 0    | 3                                                                                 | 3                                                                                 | 3     | 3                                                                                  | 3                                                                                   |      |     |     |
| Cap, veh/h                   | 1080                                                                              | 1664                                                                              | 0    | 0    | 429                                                                               | 363                                                                               | 289   | 5                                                                                  | 261                                                                                 |      |     |     |
| Arrive On Green              | 0.64                                                                              | 0.95                                                                              | 0.00 | 0.00 | 0.24                                                                              | 0.24                                                                              | 0.17  | 0.17                                                                               | 0.17                                                                                |      |     |     |
| Sat Flow, veh/h              | 1674                                                                              | 1758                                                                              | 0    | 0    | 1758                                                                              | 1490                                                                              | 1649  | 26                                                                                 | 1490                                                                                |      |     |     |
| Grp Volume(v), veh/h         | 874                                                                               | 408                                                                               | 0    | 0    | 420                                                                               | 115                                                                               | 321   | 0                                                                                  | 159                                                                                 |      |     |     |
| Grp Sat Flow(s),veh/h/ln     | 1674                                                                              | 1758                                                                              | 0    | 0    | 1758                                                                              | 1490                                                                              | 1675  | 0                                                                                  | 1490                                                                                |      |     |     |
| Q Serve(g_s), s              | 38.8                                                                              | 1.6                                                                               | 0.0  | 0.0  | 23.7                                                                              | 6.3                                                                               | 17.5  | 0.0                                                                                | 9.9                                                                                 |      |     |     |
| Cycle Q Clear(g_c), s        | 38.8                                                                              | 1.6                                                                               | 0.0  | 0.0  | 23.7                                                                              | 6.3                                                                               | 17.5  | 0.0                                                                                | 9.9                                                                                 |      |     |     |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.00 | 0.00 |                                                                                   | 1.00                                                                              | 0.98  |                                                                                    | 1.00                                                                                |      |     |     |
| Lane Grp Cap(c), veh/h       | 1080                                                                              | 1664                                                                              | 0    | 0    | 429                                                                               | 363                                                                               | 293   | 0                                                                                  | 261                                                                                 |      |     |     |
| V/C Ratio(X)                 | 0.81                                                                              | 0.25                                                                              | 0.00 | 0.00 | 0.98                                                                              | 0.32                                                                              | 1.09  | 0.00                                                                               | 0.61                                                                                |      |     |     |
| Avail Cap(c_a), veh/h        | 1080                                                                              | 1664                                                                              | 0    | 0    | 429                                                                               | 363                                                                               | 293   | 0                                                                                  | 261                                                                                 |      |     |     |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00 | 1.00 | 1.00                                                                              | 1.00                                                                              | 1.00  | 1.00                                                                               | 1.00                                                                                |      |     |     |
| Upstream Filter(I)           | 0.09                                                                              | 0.09                                                                              | 0.00 | 0.00 | 0.80                                                                              | 0.80                                                                              | 1.00  | 0.00                                                                               | 1.00                                                                                |      |     |     |
| Uniform Delay (d), s/veh     | 13.2                                                                              | 0.2                                                                               | 0.0  | 0.0  | 37.5                                                                              | 31.0                                                                              | 41.3  | 0.0                                                                                | 38.1                                                                                |      |     |     |
| Incr Delay (d2), s/veh       | 0.5                                                                               | 0.0                                                                               | 0.0  | 0.0  | 34.1                                                                              | 1.8                                                                               | 80.3  | 0.0                                                                                | 4.1                                                                                 |      |     |     |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0  | 0.0  | 0.0                                                                               | 0.0                                                                               | 0.0   | 0.0                                                                                | 0.0                                                                                 |      |     |     |
| %ile BackOfQ(50%),veh/ln     | 1.3                                                                               | 0.0                                                                               | 0.0  | 0.0  | 13.5                                                                              | 2.3                                                                               | 13.7  | 0.0                                                                                | 3.9                                                                                 |      |     |     |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |      |      |                                                                                   |                                                                                   |       |                                                                                    |                                                                                     |      |     |     |
| LnGrp Delay(d),s/veh         | 13.7                                                                              | 0.2                                                                               | 0.0  | 0.0  | 71.6                                                                              | 32.8                                                                              | 121.6 | 0.0                                                                                | 42.2                                                                                |      |     |     |
| LnGrp LOS                    | B                                                                                 | A                                                                                 | A    | A    | E                                                                                 | C                                                                                 | F     | A                                                                                  | D                                                                                   |      |     |     |
| Approach Vol, veh/h          |                                                                                   |                                                                                   |      |      |                                                                                   |                                                                                   |       |                                                                                    |                                                                                     |      |     |     |
|                              |                                                                                   | 1282                                                                              |      |      |                                                                                   | 535                                                                               |       |                                                                                    |                                                                                     | 480  |     |     |
| Approach Delay, s/veh        |                                                                                   |                                                                                   |      |      |                                                                                   |                                                                                   |       |                                                                                    |                                                                                     |      |     |     |
|                              |                                                                                   | 9.4                                                                               |      |      |                                                                                   | 63.3                                                                              |       |                                                                                    |                                                                                     | 95.3 |     |     |
| Approach LOS                 |                                                                                   |                                                                                   |      |      |                                                                                   |                                                                                   |       |                                                                                    |                                                                                     |      |     |     |
|                              |                                                                                   | A                                                                                 |      |      |                                                                                   | E                                                                                 |       |                                                                                    |                                                                                     | F    |     |     |
| Timer - Assigned Phs         |                                                                                   |                                                                                   |      |      |                                                                                   |                                                                                   |       |                                                                                    |                                                                                     |      |     |     |
|                              |                                                                                   | 2                                                                                 |      |      |                                                                                   | 5                                                                                 |       | 6                                                                                  |                                                                                     | 8    |     |     |
| Phs Duration (G+Y+Rc), s     |                                                                                   |                                                                                   |      |      |                                                                                   |                                                                                   |       |                                                                                    |                                                                                     |      |     |     |
|                              |                                                                                   | 100.5                                                                             |      |      |                                                                                   | 70.3                                                                              |       | 30.2                                                                               |                                                                                     | 22.0 |     |     |
| Change Period (Y+Rc), s      |                                                                                   |                                                                                   |      |      |                                                                                   |                                                                                   |       |                                                                                    |                                                                                     |      |     |     |
|                              |                                                                                   | 5.8                                                                               |      |      |                                                                                   | 5.8                                                                               |       | * 5.8                                                                              |                                                                                     | 4.5  |     |     |
| Max Green Setting (Gmax), s  |                                                                                   |                                                                                   |      |      |                                                                                   |                                                                                   |       |                                                                                    |                                                                                     |      |     |     |
|                              |                                                                                   | 72.2                                                                              |      |      |                                                                                   | 43.1                                                                              |       | * 24                                                                               |                                                                                     | 17.5 |     |     |
| Max Q Clear Time (g_c+I1), s |                                                                                   |                                                                                   |      |      |                                                                                   |                                                                                   |       |                                                                                    |                                                                                     |      |     |     |
|                              |                                                                                   | 3.6                                                                               |      |      |                                                                                   | 40.8                                                                              |       | 25.7                                                                               |                                                                                     | 19.5 |     |     |
| Green Ext Time (p_c), s      |                                                                                   |                                                                                   |      |      |                                                                                   |                                                                                   |       |                                                                                    |                                                                                     |      |     |     |
|                              |                                                                                   | 1.3                                                                               |      |      |                                                                                   | 1.2                                                                               |       | 0.0                                                                                |                                                                                     | 0.0  |     |     |
| Intersection Summary         |                                                                                   |                                                                                   |      |      |                                                                                   |                                                                                   |       |                                                                                    |                                                                                     |      |     |     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   |      |      |                                                                                   |                                                                                   |       |                                                                                    |                                                                                     |      |     |     |
|                              |                                                                                   |                                                                                   | 39.9 |      |                                                                                   |                                                                                   |       |                                                                                    |                                                                                     |      |     |     |
| HCM 6th LOS                  |                                                                                   |                                                                                   |      |      |                                                                                   |                                                                                   |       |                                                                                    |                                                                                     |      |     |     |
|                              |                                                                                   |                                                                                   | D    |      |                                                                                   |                                                                                   |       |                                                                                    |                                                                                     |      |     |     |

# HCM 6th Signalized Intersection Summary

Horizon Year 2050 with Project Conditions

3: N Centre City Pkwy/Champagne Blvd & Deer Springs Rd/Mountain Meadow Rd PM Peak Hour



| Movement                      | EBL   | EBT  | EBR  | WBL  | WBT  | WBR  | NBL   | NBT  | NBR  | SBL  | SBT  | SBR  |
|-------------------------------|-------|------|------|------|------|------|-------|------|------|------|------|------|
| Lane Configurations           |       |      |      |      |      |      |       |      |      |      |      |      |
| Traffic Volume (veh/h)        | 315   | 295  | 238  | 96   | 195  | 20   | 228   | 237  | 179  | 25   | 156  | 130  |
| Future Volume (veh/h)         | 315   | 295  | 238  | 96   | 195  | 20   | 228   | 237  | 179  | 25   | 156  | 130  |
| Initial Q (Qb), veh           | 0     | 0    | 0    | 0    | 0    | 0    | 0     | 0    | 0    | 0    | 0    | 0    |
| Ped-Bike Adj(A_pbT)           | 1.00  |      | 1.00 | 1.00 |      | 1.00 | 1.00  |      | 0.99 | 1.00 |      | 1.00 |
| Parking Bus, Adj              | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach         | No    |      |      | No   |      |      | No    |      |      | No   |      |      |
| Adj Sat Flow, veh/h/ln        | 1758  | 1758 | 1758 | 1758 | 1758 | 1758 | 1758  | 1758 | 1758 | 1758 | 1758 | 1758 |
| Adj Flow Rate, veh/h          | 332   | 311  | 135  | 101  | 205  | 15   | 240   | 249  | 177  | 26   | 161  | 24   |
| Peak Hour Factor              | 0.95  | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95  | 0.95 | 0.95 | 0.97 | 0.97 | 0.97 |
| Percent Heavy Veh, %          | 3     | 3    | 3    | 3    | 3    | 3    | 3     | 3    | 3    | 3    | 3    | 3    |
| Cap, veh/h                    | 329   | 395  | 168  | 197  | 297  | 22   | 199   | 206  | 146  | 50   | 312  | 309  |
| Arrive On Green               | 0.20  | 0.17 | 0.17 | 0.12 | 0.09 | 0.09 | 0.34  | 0.34 | 0.34 | 0.21 | 0.21 | 0.21 |
| Sat Flow, veh/h               | 1674  | 2283 | 970  | 1674 | 3157 | 229  | 592   | 614  | 437  | 243  | 1503 | 1490 |
| Grp Volume(v), veh/h          | 332   | 226  | 220  | 101  | 108  | 112  | 666   | 0    | 0    | 187  | 0    | 24   |
| Grp Sat Flow(s),veh/h/ln      | 1674  | 1670 | 1583 | 1674 | 1670 | 1717 | 1643  | 0    | 0    | 1746 | 0    | 1490 |
| Q Serve(g_s), s               | 28.4  | 18.7 | 19.3 | 8.2  | 9.0  | 9.2  | 48.5  | 0.0  | 0.0  | 13.7 | 0.0  | 1.9  |
| Cycle Q Clear(g_c), s         | 28.4  | 18.7 | 19.3 | 8.2  | 9.0  | 9.2  | 48.5  | 0.0  | 0.0  | 13.7 | 0.0  | 1.9  |
| Prop In Lane                  | 1.00  |      | 0.61 | 1.00 |      | 0.13 | 0.36  |      | 0.27 | 0.14 |      | 1.00 |
| Lane Grp Cap(c), veh/h        | 329   | 289  | 274  | 197  | 157  | 161  | 551   | 0    | 0    | 362  | 0    | 309  |
| V/C Ratio(X)                  | 1.01  | 0.78 | 0.80 | 0.51 | 0.69 | 0.70 | 1.21  | 0.00 | 0.00 | 0.52 | 0.00 | 0.08 |
| Avail Cap(c_a), veh/h         | 329   | 351  | 333  | 197  | 219  | 226  | 551   | 0    | 0    | 362  | 0    | 309  |
| HCM Platoon Ratio             | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(l)            | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh      | 58.1  | 57.2 | 57.5 | 59.9 | 63.4 | 63.5 | 48.1  | 0.0  | 0.0  | 50.9 | 0.0  | 46.2 |
| Incr Delay (d2), s/veh        | 52.1  | 7.1  | 9.3  | 1.0  | 2.0  | 2.0  | 110.0 | 0.0  | 0.0  | 0.6  | 0.0  | 0.0  |
| Initial Q Delay(d3),s/veh     | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile BackOfQ(50%),veh/ln      | 16.4  | 8.2  | 8.2  | 3.5  | 3.8  | 4.0  | 35.7  | 0.0  | 0.0  | 5.9  | 0.0  | 0.7  |
| Unsig. Movement Delay, s/veh  |       |      |      |      |      |      |       |      |      |      |      |      |
| LnGrp Delay(d),s/veh          | 110.2 | 64.3 | 66.7 | 60.9 | 65.4 | 65.5 | 158.0 | 0.0  | 0.0  | 51.4 | 0.0  | 46.2 |
| LnGrp LOS                     | F     | E    | E    | E    | E    | E    | F     | A    | A    | D    | A    | D    |
| Approach Vol, veh/h           | 778   |      |      | 321  |      |      | 666   |      |      | 211  |      |      |
| Approach Delay, s/veh         | 84.6  |      |      | 64.0 |      |      | 158.0 |      |      | 50.8 |      |      |
| Approach LOS                  | F     |      |      | E    |      |      | F     |      |      | D    |      |      |
| Timer - Assigned Phs          | 1     | 2    |      | 4    | 5    | 6    |       | 8    |      |      |      |      |
| Phs Duration (G+Y+Rc), s      | 31.9  | 31.2 |      | 36.5 | 33.3 | 19.8 |       | 55.0 |      |      |      |      |
| Change Period (Y+Rc), s       | 4.9   | 6.2  |      | 6.5  | 4.9  | 6.2  |       | 6.5  |      |      |      |      |
| Max Green Setting (Gmax), s   | 30.4  | 30.4 |      | 30.0 | 28.4 | 19.0 |       | 48.5 |      |      |      |      |
| Max Q Clear Time (g_c+max), s | 21.3  | 21.3 |      | 15.7 | 30.4 | 11.2 |       | 50.5 |      |      |      |      |
| Green Ext Time (p_c), s       | 0.1   | 1.0  |      | 0.4  | 0.0  | 0.4  |       | 0.0  |      |      |      |      |

## Intersection Summary

HCM 6th Ctrl Delay 102.4

HCM 6th LOS F

## Notes

User approved pedestrian interval to be less than phase max green.

HCM 6th TWSC  
4: N Centre City Pkwy & Tierra Libertia Rd

Horizon Year 2050 with Project Conditions  
PM Peak Hour

Intersection

Int Delay, s/veh 0.8

| Movement                 | WBL                                                                               | WBR  | NBT                                                                               | NBR  | SBL  | SBT                                                                               |
|--------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|
| Lane Configurations      |  |      |  |      |      |  |
| Traffic Vol, veh/h       | 9                                                                                 | 27   | 452                                                                               | 13   | 20   | 325                                                                               |
| Future Vol, veh/h        | 9                                                                                 | 27   | 452                                                                               | 13   | 20   | 325                                                                               |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0                                                                                 | 1    | 0    | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop | Free                                                                              | Free | Free | Free                                                                              |
| RT Channelized           | -                                                                                 | None | -                                                                                 | None | -    | None                                                                              |
| Storage Length           | 0                                                                                 | -    | -                                                                                 | -    | -    | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -    | 0                                                                                 | -    | -    | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -    | 0                                                                                 | -    | -    | 0                                                                                 |
| Peak Hour Factor         | 95                                                                                | 95   | 95                                                                                | 95   | 95   | 95                                                                                |
| Heavy Vehicles, %        | 3                                                                                 | 3    | 3                                                                                 | 3    | 3    | 3                                                                                 |
| Mvmt Flow                | 9                                                                                 | 28   | 476                                                                               | 14   | 21   | 342                                                                               |

| Major/Minor          | Minor1 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 868    | 484    | 0      |
| Stage 1              | 484    | -      | -      |
| Stage 2              | 384    | -      | -      |
| Critical Hdwy        | 6.43   | 6.23   | -      |
| Critical Hdwy Stg 1  | 5.43   | -      | -      |
| Critical Hdwy Stg 2  | 5.43   | -      | -      |
| Follow-up Hdwy       | 3.527  | 3.327  | -      |
| Pot Cap-1 Maneuver   | 322    | 581    | -      |
| Stage 1              | 618    | -      | -      |
| Stage 2              | 686    | -      | -      |
| Platoon blocked, %   |        | -      | -      |
| Mov Cap-1 Maneuver   | 314    | 580    | -      |
| Mov Cap-2 Maneuver   | 314    | -      | -      |
| Stage 1              | 617    | -      | -      |
| Stage 2              | 670    | -      | -      |

| Approach             | WB   | NB | SB  |
|----------------------|------|----|-----|
| HCM Control Delay, s | 13.2 | 0  | 0.5 |
| HCM LOS              | B    |    |     |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL   | SBT  |
|-----------------------|-----|----------|-------|------|
| Capacity (veh/h)      | -   | -        | 479   | 1066 |
| HCM Lane V/C Ratio    | -   | -        | 0.079 | 0.02 |
| HCM Control Delay (s) | -   | -        | 13.2  | 8.4  |
| HCM Lane LOS          | -   | -        | B     | A    |
| HCM 95th %tile Q(veh) | -   | -        | 0.3   | 0.1  |

HCM 6th TWSC  
5: N Centre City Pkwy & Jesmond Dene Rd

Horizon Year 2050 with Project Conditions  
PM Peak Hour

| Intersection             |                                                                                   |          |                                                                                   |       |                                                                                   |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 2.4                                                                               |          |                                                                                   |       |                                                                                   |                                                                                   |
| Movement                 | WBL                                                                               | WBR      | NBT                                                                               | NBR   | SBL                                                                               | SBT                                                                               |
| Lane Configurations      |  |          |  |       |  |  |
| Traffic Vol, veh/h       | 14                                                                                | 87       | 378                                                                               | 15    | 85                                                                                | 254                                                                               |
| Future Vol, veh/h        | 14                                                                                | 87       | 378                                                                               | 15    | 85                                                                                | 254                                                                               |
| Conflicting Peds, #/hr   | 0                                                                                 | 0        | 0                                                                                 | 0     | 0                                                                                 | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop     | Free                                                                              | Free  | Free                                                                              | Free                                                                              |
| RT Channelized           | -                                                                                 | None     | -                                                                                 | None  | -                                                                                 | None                                                                              |
| Storage Length           | 0                                                                                 | -        | -                                                                                 | -     | 95                                                                                | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -        | 0                                                                                 | -     | -                                                                                 | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -        | 0                                                                                 | -     | -                                                                                 | 0                                                                                 |
| Peak Hour Factor         | 95                                                                                | 95       | 95                                                                                | 95    | 95                                                                                | 95                                                                                |
| Heavy Vehicles, %        | 3                                                                                 | 3        | 3                                                                                 | 3     | 3                                                                                 | 3                                                                                 |
| Mvmt Flow                | 15                                                                                | 92       | 398                                                                               | 16    | 89                                                                                | 267                                                                               |
| Major/Minor              | Minor1                                                                            | Major1   | Major2                                                                            |       |                                                                                   |                                                                                   |
| Conflicting Flow All     | 851                                                                               | 406      | 0                                                                                 | 0     | 414                                                                               | 0                                                                                 |
| Stage 1                  | 406                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Stage 2                  | 445                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Critical Hdwy            | 6.43                                                                              | 6.23     | -                                                                                 | -     | 4.13                                                                              | -                                                                                 |
| Critical Hdwy Stg 1      | 5.43                                                                              | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Critical Hdwy Stg 2      | 5.43                                                                              | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Follow-up Hdwy           | 3.527                                                                             | 3.327    | -                                                                                 | -     | 2.227                                                                             | -                                                                                 |
| Pot Cap-1 Maneuver       | 329                                                                               | 643      | -                                                                                 | -     | 1140                                                                              | -                                                                                 |
| Stage 1                  | 671                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Stage 2                  | 644                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Platoon blocked, %       |                                                                                   |          | -                                                                                 | -     |                                                                                   | -                                                                                 |
| Mov Cap-1 Maneuver       | 303                                                                               | 643      | -                                                                                 | -     | 1140                                                                              | -                                                                                 |
| Mov Cap-2 Maneuver       | 303                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Stage 1                  | 671                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Stage 2                  | 594                                                                               | -        | -                                                                                 | -     | -                                                                                 | -                                                                                 |
| Approach                 | WB                                                                                | NB       | SB                                                                                |       |                                                                                   |                                                                                   |
| HCM Control Delay, s     | 13                                                                                | 0        | 2.1                                                                               |       |                                                                                   |                                                                                   |
| HCM LOS                  | B                                                                                 |          |                                                                                   |       |                                                                                   |                                                                                   |
| Minor Lane/Major Mvmt    | NBT                                                                               | NBRWBLn1 | SBL                                                                               | SBT   |                                                                                   |                                                                                   |
| Capacity (veh/h)         | -                                                                                 | -        | 556                                                                               | 1140  | -                                                                                 |                                                                                   |
| HCM Lane V/C Ratio       | -                                                                                 | -        | 0.191                                                                             | 0.078 | -                                                                                 |                                                                                   |
| HCM Control Delay (s)    | -                                                                                 | -        | 13                                                                                | 8.4   | -                                                                                 |                                                                                   |
| HCM Lane LOS             | -                                                                                 | -        | B                                                                                 | A     | -                                                                                 |                                                                                   |
| HCM 95th %tile Q(veh)    | -                                                                                 | -        | 0.7                                                                               | 0.3   | -                                                                                 |                                                                                   |

HCM 6th TWSC  
6: Project Dwy #1 & Tierra Libertia Rd

Horizon Year 2050 with Project Conditions  
PM Peak Hour

| Intersection             |                                                                                   |        |       |                                                                                   |                                                                                   |       |
|--------------------------|-----------------------------------------------------------------------------------|--------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|
| Int Delay, s/veh         | 0                                                                                 |        |       |                                                                                   |                                                                                   |       |
| Movement                 | EBT                                                                               | EBR    | WBL   | WBT                                                                               | NBL                                                                               | NBR   |
| Lane Configurations      |  |        |       |  |  |       |
| Traffic Vol, veh/h       | 26                                                                                | 7      | 0     | 36                                                                                | 0                                                                                 | 0     |
| Future Vol, veh/h        | 26                                                                                | 7      | 0     | 36                                                                                | 0                                                                                 | 0     |
| Conflicting Peds, #/hr   | 0                                                                                 | 0      | 0     | 0                                                                                 | 0                                                                                 | 0     |
| Sign Control             | Free                                                                              | Free   | Free  | Free                                                                              | Stop                                                                              | Stop  |
| RT Channelized           | -                                                                                 | None   | -     | None                                                                              | -                                                                                 | None  |
| Storage Length           | -                                                                                 | -      | -     | -                                                                                 | 0                                                                                 | -     |
| Veh in Median Storage, # | 0                                                                                 | -      | -     | 0                                                                                 | 0                                                                                 | -     |
| Grade, %                 | 0                                                                                 | -      | -     | 0                                                                                 | 0                                                                                 | -     |
| Peak Hour Factor         | 95                                                                                | 95     | 95    | 95                                                                                | 95                                                                                | 95    |
| Heavy Vehicles, %        | 2                                                                                 | 2      | 2     | 2                                                                                 | 2                                                                                 | 2     |
| Mvmt Flow                | 27                                                                                | 7      | 0     | 38                                                                                | 0                                                                                 | 0     |
| Major/Minor              | Major1                                                                            | Major2 |       | Minor1                                                                            |                                                                                   |       |
| Conflicting Flow All     | 0                                                                                 | 0      | 34    | 0                                                                                 | 69                                                                                | 31    |
| Stage 1                  | -                                                                                 | -      | -     | -                                                                                 | 31                                                                                | -     |
| Stage 2                  | -                                                                                 | -      | -     | -                                                                                 | 38                                                                                | -     |
| Critical Hdwy            | -                                                                                 | -      | 4.12  | -                                                                                 | 6.42                                                                              | 6.22  |
| Critical Hdwy Stg 1      | -                                                                                 | -      | -     | -                                                                                 | 5.42                                                                              | -     |
| Critical Hdwy Stg 2      | -                                                                                 | -      | -     | -                                                                                 | 5.42                                                                              | -     |
| Follow-up Hdwy           | -                                                                                 | -      | 2.218 | -                                                                                 | 3.518                                                                             | 3.318 |
| Pot Cap-1 Maneuver       | -                                                                                 | -      | 1578  | -                                                                                 | 936                                                                               | 1043  |
| Stage 1                  | -                                                                                 | -      | -     | -                                                                                 | 992                                                                               | -     |
| Stage 2                  | -                                                                                 | -      | -     | -                                                                                 | 984                                                                               | -     |
| Platoon blocked, %       | -                                                                                 | -      | -     | -                                                                                 | -                                                                                 | -     |
| Mov Cap-1 Maneuver       | -                                                                                 | -      | 1578  | -                                                                                 | 936                                                                               | 1043  |
| Mov Cap-2 Maneuver       | -                                                                                 | -      | -     | -                                                                                 | 936                                                                               | -     |
| Stage 1                  | -                                                                                 | -      | -     | -                                                                                 | 992                                                                               | -     |
| Stage 2                  | -                                                                                 | -      | -     | -                                                                                 | 984                                                                               | -     |
| Approach                 | EB                                                                                |        | WB    |                                                                                   | NB                                                                                |       |
| HCM Control Delay, s     | 0                                                                                 |        | 0     |                                                                                   | 0                                                                                 |       |
| HCM LOS                  |                                                                                   |        |       |                                                                                   | A                                                                                 |       |
| Minor Lane/Major Mvmt    | NBLn1                                                                             | EBT    | EBR   | WBL                                                                               | WBT                                                                               |       |
| Capacity (veh/h)         | -                                                                                 | -      | -     | 1578                                                                              | -                                                                                 |       |
| HCM Lane V/C Ratio       | -                                                                                 | -      | -     | -                                                                                 | -                                                                                 |       |
| HCM Control Delay (s)    | 0                                                                                 | -      | -     | 0                                                                                 | -                                                                                 |       |
| HCM Lane LOS             | A                                                                                 | -      | -     | A                                                                                 | -                                                                                 |       |
| HCM 95th %tile Q(veh)    | -                                                                                 | -      | -     | 0                                                                                 | -                                                                                 |       |

HCM 6th TWSC  
7: Project Dwy #2 & Tierra Libertia Rd

Horizon Year 2050 with Project Conditions  
PM Peak Hour

| Intersection             |                                                                                   |        |       |                                                                                   |                                                                                   |       |
|--------------------------|-----------------------------------------------------------------------------------|--------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|
| Int Delay, s/veh         | 1.6                                                                               |        |       |                                                                                   |                                                                                   |       |
| Movement                 | EBT                                                                               | EBR    | WBL   | WBT                                                                               | NBL                                                                               | NBR   |
| Lane Configurations      |  |        |       |  |  |       |
| Traffic Vol, veh/h       | 23                                                                                | 3      | 0     | 25                                                                                | 11                                                                                | 0     |
| Future Vol, veh/h        | 23                                                                                | 3      | 0     | 25                                                                                | 11                                                                                | 0     |
| Conflicting Peds, #/hr   | 0                                                                                 | 0      | 0     | 0                                                                                 | 0                                                                                 | 0     |
| Sign Control             | Free                                                                              | Free   | Free  | Free                                                                              | Stop                                                                              | Stop  |
| RT Channelized           | -                                                                                 | None   | -     | None                                                                              | -                                                                                 | None  |
| Storage Length           | -                                                                                 | -      | -     | -                                                                                 | 0                                                                                 | -     |
| Veh in Median Storage, # | 0                                                                                 | -      | -     | 0                                                                                 | 0                                                                                 | -     |
| Grade, %                 | 0                                                                                 | -      | -     | 0                                                                                 | 0                                                                                 | -     |
| Peak Hour Factor         | 95                                                                                | 95     | 95    | 95                                                                                | 95                                                                                | 95    |
| Heavy Vehicles, %        | 2                                                                                 | 2      | 2     | 2                                                                                 | 2                                                                                 | 2     |
| Mvmt Flow                | 24                                                                                | 3      | 0     | 26                                                                                | 12                                                                                | 0     |
|                          |                                                                                   |        |       |                                                                                   |                                                                                   |       |
| Major/Minor              | Major1                                                                            | Major2 |       | Minor1                                                                            |                                                                                   |       |
| Conflicting Flow All     | 0                                                                                 | 0      | 27    | 0                                                                                 | 52                                                                                | 26    |
| Stage 1                  | -                                                                                 | -      | -     | -                                                                                 | 26                                                                                | -     |
| Stage 2                  | -                                                                                 | -      | -     | -                                                                                 | 26                                                                                | -     |
| Critical Hdwy            | -                                                                                 | -      | 4.12  | -                                                                                 | 6.42                                                                              | 6.22  |
| Critical Hdwy Stg 1      | -                                                                                 | -      | -     | -                                                                                 | 5.42                                                                              | -     |
| Critical Hdwy Stg 2      | -                                                                                 | -      | -     | -                                                                                 | 5.42                                                                              | -     |
| Follow-up Hdwy           | -                                                                                 | -      | 2.218 | -                                                                                 | 3.518                                                                             | 3.318 |
| Pot Cap-1 Maneuver       | -                                                                                 | -      | 1587  | -                                                                                 | 957                                                                               | 1050  |
| Stage 1                  | -                                                                                 | -      | -     | -                                                                                 | 997                                                                               | -     |
| Stage 2                  | -                                                                                 | -      | -     | -                                                                                 | 997                                                                               | -     |
| Platoon blocked, %       | -                                                                                 | -      |       | -                                                                                 |                                                                                   |       |
| Mov Cap-1 Maneuver       | -                                                                                 | -      | 1587  | -                                                                                 | 957                                                                               | 1050  |
| Mov Cap-2 Maneuver       | -                                                                                 | -      | -     | -                                                                                 | 957                                                                               | -     |
| Stage 1                  | -                                                                                 | -      | -     | -                                                                                 | 997                                                                               | -     |
| Stage 2                  | -                                                                                 | -      | -     | -                                                                                 | 997                                                                               | -     |
|                          |                                                                                   |        |       |                                                                                   |                                                                                   |       |
| Approach                 | EB                                                                                | WB     |       | NB                                                                                |                                                                                   |       |
| HCM Control Delay, s     | 0                                                                                 | 0      |       | 8.8                                                                               |                                                                                   |       |
| HCM LOS                  | A                                                                                 |        |       |                                                                                   |                                                                                   |       |
|                          |                                                                                   |        |       |                                                                                   |                                                                                   |       |
| Minor Lane/Major Mvmt    | NBLn1                                                                             | EBT    | EBR   | WBL                                                                               | WBT                                                                               |       |
| Capacity (veh/h)         | 957                                                                               | -      | -     | 1587                                                                              | -                                                                                 |       |
| HCM Lane V/C Ratio       | 0.012                                                                             | -      | -     | -                                                                                 | -                                                                                 |       |
| HCM Control Delay (s)    | 8.8                                                                               | -      | -     | 0                                                                                 | -                                                                                 |       |
| HCM Lane LOS             | A                                                                                 | -      | -     | A                                                                                 | -                                                                                 |       |
| HCM 95th %tile Q(veh)    | 0                                                                                 | -      | -     | 0                                                                                 | -                                                                                 |       |

HCM 6th TWSC  
8: Project Dwy #3 & Tierra Libertia Rd

Horizon Year 2050 with Project Conditions  
PM Peak Hour

| Intersection             |                                                                                   |      |        |                                                                                   |                                                                                   |       |
|--------------------------|-----------------------------------------------------------------------------------|------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|
| Int Delay, s/veh         | 1.8                                                                               |      |        |                                                                                   |                                                                                   |       |
| Movement                 | EBT                                                                               | EBR  | WBL    | WBT                                                                               | NBL                                                                               | NBR   |
| Lane Configurations      |  |      |        |  |  |       |
| Traffic Vol, veh/h       | 20                                                                                | 3    | 0      | 15                                                                                | 10                                                                                | 0     |
| Future Vol, veh/h        | 20                                                                                | 3    | 0      | 15                                                                                | 10                                                                                | 0     |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0      | 0                                                                                 | 0                                                                                 | 0     |
| Sign Control             | Free                                                                              | Free | Free   | Free                                                                              | Stop                                                                              | Stop  |
| RT Channelized           | -                                                                                 | None | -      | None                                                                              | -                                                                                 | None  |
| Storage Length           | -                                                                                 | -    | -      | -                                                                                 | 0                                                                                 | -     |
| Veh in Median Storage, # | 0                                                                                 | -    | -      | 0                                                                                 | 0                                                                                 | -     |
| Grade, %                 | 0                                                                                 | -    | -      | 0                                                                                 | 0                                                                                 | -     |
| Peak Hour Factor         | 95                                                                                | 95   | 95     | 95                                                                                | 95                                                                                | 95    |
| Heavy Vehicles, %        | 2                                                                                 | 2    | 2      | 2                                                                                 | 2                                                                                 | 2     |
| Mvmt Flow                | 21                                                                                | 3    | 0      | 16                                                                                | 11                                                                                | 0     |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |       |
| Major/Minor              | Major1                                                                            |      | Major2 |                                                                                   | Minor1                                                                            |       |
| Conflicting Flow All     | 0                                                                                 | 0    | 24     | 0                                                                                 | 39                                                                                | 23    |
| Stage 1                  | -                                                                                 | -    | -      | -                                                                                 | 23                                                                                | -     |
| Stage 2                  | -                                                                                 | -    | -      | -                                                                                 | 16                                                                                | -     |
| Critical Hdwy            | -                                                                                 | -    | 4.12   | -                                                                                 | 6.42                                                                              | 6.22  |
| Critical Hdwy Stg 1      | -                                                                                 | -    | -      | -                                                                                 | 5.42                                                                              | -     |
| Critical Hdwy Stg 2      | -                                                                                 | -    | -      | -                                                                                 | 5.42                                                                              | -     |
| Follow-up Hdwy           | -                                                                                 | -    | 2.218  | -                                                                                 | 3.518                                                                             | 3.318 |
| Pot Cap-1 Maneuver       | -                                                                                 | -    | 1591   | -                                                                                 | 973                                                                               | 1054  |
| Stage 1                  | -                                                                                 | -    | -      | -                                                                                 | 1000                                                                              | -     |
| Stage 2                  | -                                                                                 | -    | -      | -                                                                                 | 1007                                                                              | -     |
| Platoon blocked, %       | -                                                                                 | -    |        | -                                                                                 |                                                                                   |       |
| Mov Cap-1 Maneuver       | -                                                                                 | -    | 1591   | -                                                                                 | 973                                                                               | 1054  |
| Mov Cap-2 Maneuver       | -                                                                                 | -    | -      | -                                                                                 | 973                                                                               | -     |
| Stage 1                  | -                                                                                 | -    | -      | -                                                                                 | 1000                                                                              | -     |
| Stage 2                  | -                                                                                 | -    | -      | -                                                                                 | 1007                                                                              | -     |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |       |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |       |
| Approach                 | EB                                                                                |      | WB     |                                                                                   | NB                                                                                |       |
| HCM Control Delay, s     | 0                                                                                 |      | 0      |                                                                                   | 8.7                                                                               |       |
| HCM LOS                  |                                                                                   |      |        |                                                                                   | A                                                                                 |       |
|                          |                                                                                   |      |        |                                                                                   |                                                                                   |       |
| Minor Lane/Major Mvmt    | NBLn1                                                                             | EBT  | EBR    | WBL                                                                               | WBT                                                                               |       |
| Capacity (veh/h)         | 973                                                                               | -    | -      | 1591                                                                              | -                                                                                 |       |
| HCM Lane V/C Ratio       | 0.011                                                                             | -    | -      | -                                                                                 | -                                                                                 |       |
| HCM Control Delay (s)    | 8.7                                                                               | -    | -      | 0                                                                                 | -                                                                                 |       |
| HCM Lane LOS             | A                                                                                 | -    | -      | A                                                                                 | -                                                                                 |       |
| HCM 95th %tile Q(veh)    | 0                                                                                 | -    | -      | 0                                                                                 | -                                                                                 |       |

HCM 6th TWSC  
9: Jesmond Dene Rd & Project Dwy #4

Horizon Year 2050 with Project Conditions  
PM Peak Hour

| Intersection             |                                                                                   |        |                                                                                   |      |      |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 0.9                                                                               |        |                                                                                   |      |      |                                                                                   |
| Movement                 | WBL                                                                               | WBR    | NBT                                                                               | NBR  | SBL  | SBT                                                                               |
| Lane Configurations      |  |        |  |      |      |  |
| Traffic Vol, veh/h       | 0                                                                                 | 21     | 80                                                                                | 0    | 0    | 100                                                                               |
| Future Vol, veh/h        | 0                                                                                 | 21     | 80                                                                                | 0    | 0    | 100                                                                               |
| Conflicting Peds, #/hr   | 0                                                                                 | 0      | 0                                                                                 | 0    | 0    | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop   | Free                                                                              | Free | Free | Free                                                                              |
| RT Channelized           | -                                                                                 | None   | -                                                                                 | None | -    | None                                                                              |
| Storage Length           | 0                                                                                 | -      | -                                                                                 | -    | -    | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -      | 0                                                                                 | -    | -    | 0                                                                                 |
| Grade, %                 | 0                                                                                 | -      | 0                                                                                 | -    | -    | 0                                                                                 |
| Peak Hour Factor         | 95                                                                                | 95     | 95                                                                                | 95   | 95   | 95                                                                                |
| Heavy Vehicles, %        | 2                                                                                 | 2      | 2                                                                                 | 2    | 2    | 2                                                                                 |
| Mvmt Flow                | 0                                                                                 | 22     | 84                                                                                | 0    | 0    | 105                                                                               |
| Major/Minor              | Minor1                                                                            | Major1 | Major2                                                                            |      |      |                                                                                   |
| Conflicting Flow All     | 189                                                                               | 84     | 0                                                                                 | -    | -    | -                                                                                 |
| Stage 1                  | 84                                                                                | -      | -                                                                                 | -    | -    | -                                                                                 |
| Stage 2                  | 105                                                                               | -      | -                                                                                 | -    | -    | -                                                                                 |
| Critical Hdwy            | 6.42                                                                              | 6.22   | -                                                                                 | -    | -    | -                                                                                 |
| Critical Hdwy Stg 1      | 5.42                                                                              | -      | -                                                                                 | -    | -    | -                                                                                 |
| Critical Hdwy Stg 2      | 5.42                                                                              | -      | -                                                                                 | -    | -    | -                                                                                 |
| Follow-up Hdwy           | 3.518                                                                             | 3.318  | -                                                                                 | -    | -    | -                                                                                 |
| Pot Cap-1 Maneuver       | 800                                                                               | 975    | -                                                                                 | 0    | 0    | -                                                                                 |
| Stage 1                  | 939                                                                               | -      | -                                                                                 | 0    | 0    | -                                                                                 |
| Stage 2                  | 919                                                                               | -      | -                                                                                 | 0    | 0    | -                                                                                 |
| Platoon blocked, %       |                                                                                   |        | -                                                                                 |      |      | -                                                                                 |
| Mov Cap-1 Maneuver       | 800                                                                               | 975    | -                                                                                 | -    | -    | -                                                                                 |
| Mov Cap-2 Maneuver       | 800                                                                               | -      | -                                                                                 | -    | -    | -                                                                                 |
| Stage 1                  | 939                                                                               | -      | -                                                                                 | -    | -    | -                                                                                 |
| Stage 2                  | 919                                                                               | -      | -                                                                                 | -    | -    | -                                                                                 |
| Approach                 | WB                                                                                | NB     | SB                                                                                |      |      |                                                                                   |
| HCM Control Delay, s     | 8.8                                                                               | 0      | 0                                                                                 |      |      |                                                                                   |
| HCM LOS                  | A                                                                                 |        |                                                                                   |      |      |                                                                                   |
| Minor Lane/Major Mvmt    | NBTWBLn1                                                                          |        | SBT                                                                               |      |      |                                                                                   |
| Capacity (veh/h)         | - 975                                                                             |        | -                                                                                 |      |      |                                                                                   |
| HCM Lane V/C Ratio       | - 0.023                                                                           |        | -                                                                                 |      |      |                                                                                   |
| HCM Control Delay (s)    | - 8.8                                                                             |        | -                                                                                 |      |      |                                                                                   |
| HCM Lane LOS             | - A                                                                               |        | -                                                                                 |      |      |                                                                                   |
| HCM 95th %tile Q(veh)    | - 0.1                                                                             |        | -                                                                                 |      |      |                                                                                   |

## **Appendix J - Parking Analysis**



TO: Terry Mathew, Project Planner; CCI – Consultants Collaborative

FROM: Jonathan Sanchez, PE, TE, PTOE; CR Associates  
Cristian Belmudez; CR Associates

DATE: May 4, 2023

RE: Karve Ski Park – Parking Analysis and Recommendations

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The purpose of this memorandum is to document the parking analysis conducted for the proposed Karve Ski Park project (the “Project”).

## Project Description

The Project proposes to develop a 10.15 acres synthetic ski park (also known as a dry ski slope) located at 26351 N Center City Parkway within San Diego County. The ski park will be an outdoor, year-round synthetic snow sports complex and recreational park catering to all ages, abilities, and skill levels. The primary activities will be the ones that take place at the artificial ski slope which mimics the attributes of snow for both day and nighttime skiing and snowboarding.

The Project’s hours of operation are anticipated to be as follows:

- Monday – Thursday: 9 AM to 10 PM
- Friday: 8 AM – 10 AM – Golf Driving Range
- Friday: 9 AM to 11 PM
- Saturday: 8 AM to 11 PM
- Sunday: 8 AM to 10 PM

The activities allowed and facilities available at the site are listed below:

- 147 parking space parking lot (including 6 EV charging spaces, 5 ADA compliant, and 11 clean air vehicle spaces)
- Skiing, Snowboarding, and Tubing
- Ziplining (Two zipline towers)
- Golf Driving Range (9 tee boxes)
- Village Area Amenities/Services – Four buildings totaling 9,525 square feet:
  - o Building A – 2,000 square-foot building including Box Office and Guest Services, and First Aid and Management Office
  - o Building B – 4,125 square-foot building including Pavilion with food and bar with seating indoor and outdoor; Restrooms including large ADA-compliant restrooms.
  - o Building C – 2,400 square-foot building with Equipment rental and Event rooms (4) for groups. Each event room accommodates 20-30 guests.
  - o Building D – 1,000 square-foot building including maintenance and storage space.
- Outdoor Patio – surrounding the Pavilion and will provide additional seating and serve as an observation area. There will also be space for two (2) food trucks at the rear of Building C.
- Tot Lot

To minimize the potential of insufficient parking, the Project will operate using an online reservation system where guests select a date and time slot for their desired activities. This system is intended to ensure that the Project does not exceed capacity. As such, during peak operations the maximum number of people on ski lifts will be 100.

**Figure 1** displays the Project's regional location. **Figure 2** displays the Project's site plan.

## Parking Analysis

The parking requirements for the proposed Project were evaluated based on the County of San Diego Ordinance No. 10251 (the Parking Ordinance), which provides off-street parking regulations for major land use categories. The two land uses (gold driving range and Karve Ski Park) were evaluated separately to ensure that the project provides the necessary number of parking spaces.

### Golf Driving Range

The Parking Ordinance requires 1 parking space per tee plus 1 parking space per employee but not less than 3. Based on this requirement, the proposed Project would need to provide 12 parking spaces (nine spaces for each of the tees and three spaces for employees).

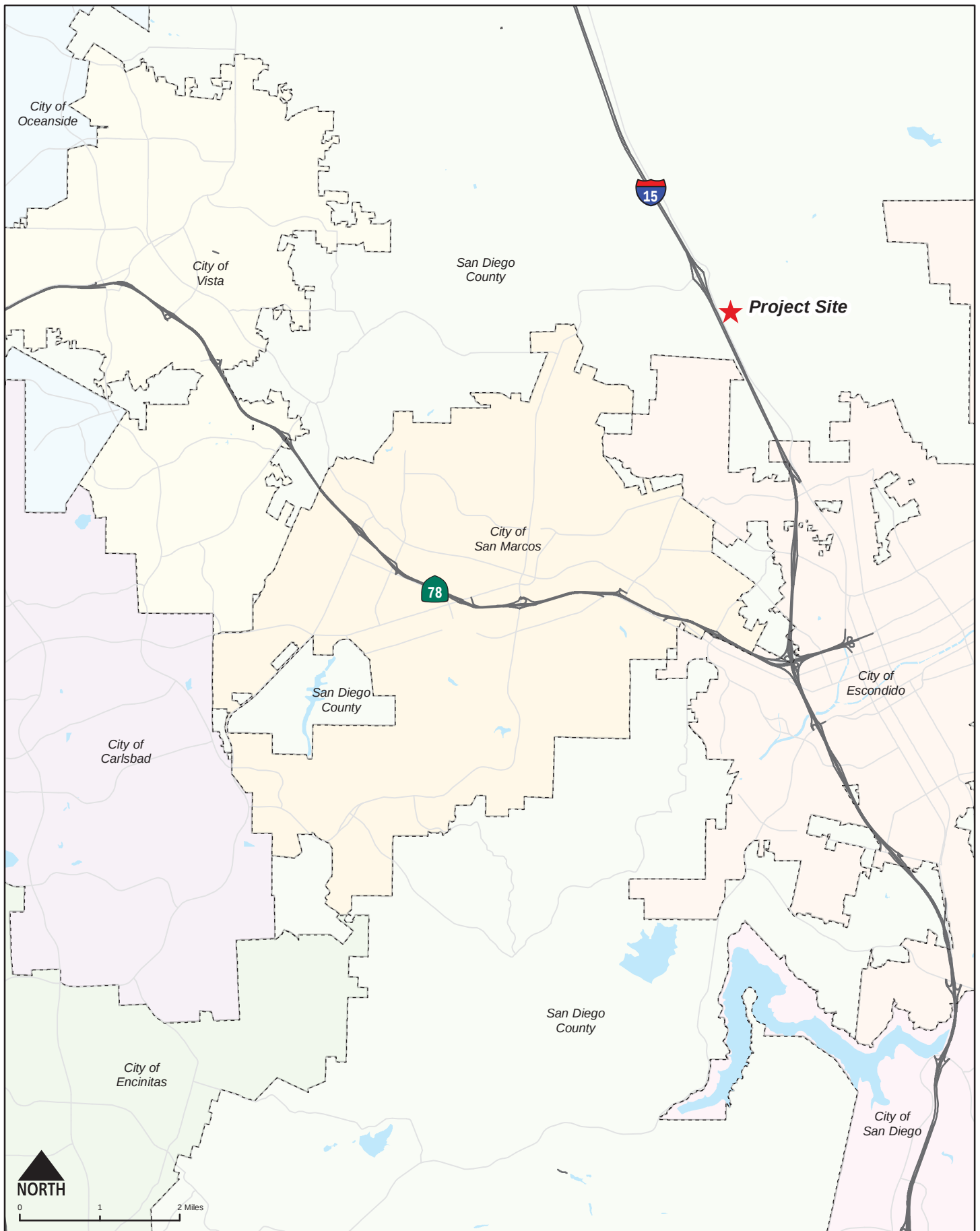
### Karve Ski Park

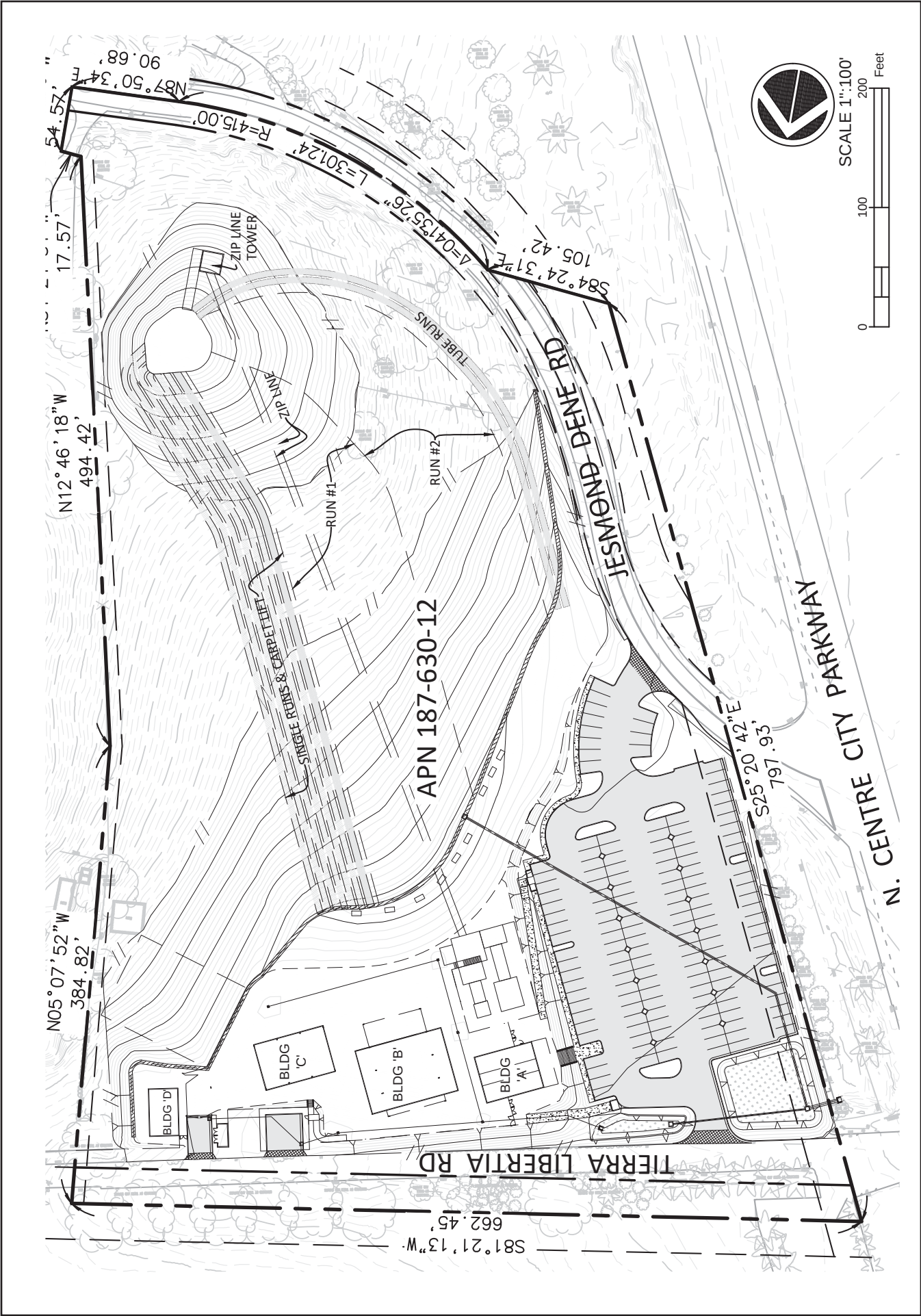
The Parking Ordinance does not include parking requirements for ski facilities. Therefore, the parking generation rate for the ski area component of the Project was obtained from the Institute of Transportation Engineers (ITE) Parking Generation Manual, 5<sup>th</sup> edition, which also provides parking generation rates for a variety of land uses. The ITE Parking Generation Manual provides a parking generation rate of 0.22 parking spaces per daily lift tickets sold. The parking generation rate was calculated utilizing data obtained on Saturdays.

The Project proposes to sell lift tickets on a 2.5-hour time slot basis (controlled by the online reservation system) and will have a maximum capacity of 100 lift tickets per time-slot. The lift operation and ski slope will be the primary land use, whereas the remaining land uses such as the Bocce Balls Courts are amenities for guests to use while they wait for their turn at the lift.

For a conservative analysis, it is assumed that the longest period of operations for the proposed Project would be from 8 AM to 11 PM (15 hours), with an average duration of 2.5 hours per person at the hill, and a turnover rate of ski lift users of 6 times per day (15 hours divided by 2.5-hour time-slots = 6), resulting in a total of 600 daily lift tickets sold (6 time-slots per day X 100 clients per time-slot = 600 daily lift tickets sold).

It should be noted that 600 daily lift tickets sold is a conservative estimate since it assumes that the Project is operating at peak capacity over the 15 hours of operation. However, per ITE's Parking Generation Manual, peak parking demand occurs at 12 PM, while hours before 9 AM and after 2 PM have a parking demand less than 50% of the peak. **Table 1** displays the Project's parking requirements and recommendations for both land uses. Relevant excerpts of each parking generation rate source are provided in **Attachment A**.





**Table 1 - Project Parking Generation**

| Land Use                  | Units                       | Parking Generation Rate                                                                                                              | Parking Required | Parking Provided by Project |
|---------------------------|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------------------|
| Ski Area                  | 600 Daily Lift Tickets Sold | 0.22 Parking Spaces per Daily Lift Tickets Sold                                                                                      | 132 <sup>1</sup> | 147                         |
| The sum of the following: |                             |                                                                                                                                      |                  |                             |
| Golf Driving Range        | 9 Tee Boxes                 | <ul style="list-style-type: none"> <li>1 Parking Space per Tee Box</li> <li>1 Parking Space per Employee (No less than 3)</li> </ul> | 12               |                             |
| <b>Total</b>              |                             |                                                                                                                                      | <b>144</b>       | <b>147</b>                  |

Source: CR Associates (2022)

Note:

<sup>1</sup> 106 required parking spaces includes both clients and employees.

As shown, the ski area component is required to provide 132 parking spaces and the golf driving range is required to provide 12 parking spaces, for a total of 144 required parking spaces. The proposed Project will provide a total of 147 parking spaces which is sufficient for the anticipated parking demand for the proposed Project.

## Parking Validation

Since synthetic ski parks are not common in Southern California or in the United States, the parking generation/requirements documented above were validated against similar facilities and traditional snow resorts. The proposed Project was first compared against other similar facilities, including the following types of synthetic ski facilities:

1. Temporary Synthetic Ski Slope: These are dry ski slopes operated on a temporary basis, typically using the excess parking spaces at urban malls. Examples of these includes Urban Snow Park which operates in the San Francisco area and DIVERTSessions which operates in Santa Ana. Because these facilities use excess parking spaces, the actual parking demand is unknown, and therefore was not included in the comparison.
2. Facilities with Synthetic Ski Slopes in a building that is shared with other uses: These facilities are located inside a commercial or industrial building. Examples of these include Adventure Ski & Snowboard School in the City of Encinitas and ProSlopes in the City of Anaheim. Since these facilities share their parking spaces with other uses, the stand-alone demand is unknown, and therefore was not included in the comparison.
3. Liberty Mountain Snowflex Center<sup>1</sup>, Lynchburg, VA – This facility provides year-round synthetic ski activities for Liberty University students, faculty, staff, and the general public. The facility provides 159 standard parking spaces and 4 ADA parking spaces, for a total of 163 parking spaces. However, this facility also shares its parking lot with two trails that are part of the Liberty Mountain Trail System (Mike Donahue and Lake Trails). Since this facility also shares their parking spaces with other uses, the stand-alone demand is unknown, and therefore was not included in the comparison.

<sup>1</sup> <https://www.liberty.edu/campusrec/snowflex/>

Due to the limited sample of synthetic ski slope facilities, the validation process includes traditional ski facilities. The following developments were selected for evaluation based on their location (i.e., southern California) and shared land use characteristics (i.e., outdoor recreation, ski resorts, snow tubing, etc.):

1. Big Bear Snow Play – This facility offers year-round recreation with activities including snow tubing, go-karts, multi-level ropes course, and zipline. The facility is 14 acres in size and provides 255 parking spaces.
2. Alpine Slide – This facility offers winter bobsled tracks & summer water slides. The facility is 10.5 acres in size and provides 150 parking spaces.
3. Big Bear Mountain Resort – This facility offers outdoor experiences such as skiing and snowboarding in the winter and lift-served hiking and mountain biking during the summer months. The facility is 827 acres in size and provides 400 parking spaces.
4. Snow Valley Mountain Resort – This facility offers runs for all skill levels, plus terrain parks, a snow play area for sledding & dining options. The facility is 1,493 acres in size and provides 107 parking spaces.

The acreage and parking supply for each development was obtained from planning documents (i.e., conditional use permits), aerial imagery, or online sources (i.e., ski resort website).

Because the number of daily lift tickets sold are proprietary information for each of these resorts, for an apples-to-apples comparison, a parking-space-to-acres ratio was developed for each of the facilities. **Table 2** summarizes the average parking generation rate per acre for the observed developments. **Attachment B** provides relevant excerpts of these sources. Please note that these are the total number of parking spaces provided (on-the-ground conditions) and not the average parking demand.

As shown, the average parking per acre rate for the observed developments is 12.1 parking spaces per acre. This ratio would result in 123 parking spaces (10.15 acres X 12.1 parking spaces per acre = 123 parking spaces) for the proposed Project or a combined total of 132 parking spaces (123 parking spaces<sup>2</sup> for Karve Ski Park + 9 parking spaces for golf driving range).

**Table 2 - Parking Generation Rate per Acre for Observed Developments**

| Development                   | Address                                          | Parking Provided | Acres | Parking Per Acre Rate |
|-------------------------------|--------------------------------------------------|------------------|-------|-----------------------|
| Big Bear Snow Play            | 42825 Big Bear Blvd, Big Bear Lake, CA 92315     | 255              | 14    | 18.2                  |
| Alpine Slide                  | 800 Wildrose Ln, Big Bear Lake, CA 92315         | 150              | 10.5  | 14.3                  |
| Big Bear Mountain Resort      | 880 Summit Blvd Suite A, Big Bear Lake, CA 92315 | 827              | 400   | 2.1                   |
| Snow Valley Mountain Resort   | 35100 CA-18, Running Springs, CA 92382           | 1,493            | 107   | 14.0                  |
| Average Parking per Acre Rate |                                                  |                  |       | 12.1                  |

Source: CR Associates (2022)

<sup>2</sup> Includes employee parking spaces.

## **Conclusion**

Both the parking requirements calculated using the ITE Parking Generation Manual and the parking validation utilizing existing similar facilities show that the 147 parking spaces proposed by the Project would be sufficient to accommodate the parking needs of both the ski park and the golf driving range.

## Attachment A - Parking Generation Sources

## Land Use: 466 Snow Ski Area

### Description

A snow ski area typically includes chair lifts, ski runs, and a lodge facility. Snow ski areas may also contain equipment rental facilities, refreshment areas, locker rooms, and small commercial/office space.

### Time of Day Distribution for Parking Demand

The following table presents a time-of-day distribution of parking demand on a Saturday at one study site.

| Hour Beginning  | Percent of Saturday Peak Parking Demand |
|-----------------|-----------------------------------------|
| 12:00–4:00 a.m. | —                                       |
| 5:00 a.m.       | —                                       |
| 6:00 a.m.       | —                                       |
| 7:00 a.m.       | 6                                       |
| 8:00 a.m.       | 26                                      |
| 9:00 a.m.       | 62                                      |
| 10:00 a.m.      | 79                                      |
| 11:00 a.m.      | 94                                      |
| 12:00 p.m.      | 100                                     |
| 1:00 p.m.       | 95                                      |
| 2:00 p.m.       | 81                                      |
| 3:00 p.m.       | 48                                      |
| 4:00 p.m.       | 13                                      |
| 5:00 p.m.       | 2                                       |
| 6:00 p.m.       | —                                       |
| 7:00 p.m.       | —                                       |
| 8:00 p.m.       | —                                       |
| 9:00 p.m.       | —                                       |
| 10:00 p.m.      | —                                       |
| 11:00 p.m.      | —                                       |

## **Additional Data**

The average parking supply ratio for the five study sites with parking supply information is 1.0 spaces per acre of ski trails.

The sites were surveyed in the 1980s and the 2010s in Colorado and Montana.

*Although acres of ski trails and number of lift tickets sold are used as independent variables, many other factors can have potentially significant effects on parking demand, including special events at the site, lift ticket fees, proportion of season pass versus daily lift ticket buyers and proximity to an urban area (in other words, population available for day trips).*

## **Source Numbers**

29, 518

## Snow Ski Area (466)

Peak Period Parking Demand vs: **Daily Lift Tickets**

On a: **Saturday**

Setting/Location: **Rural**

Peak Period of Parking Demand: **11:00 a.m. - 2:00 p.m.**

Number of Studies: **4**

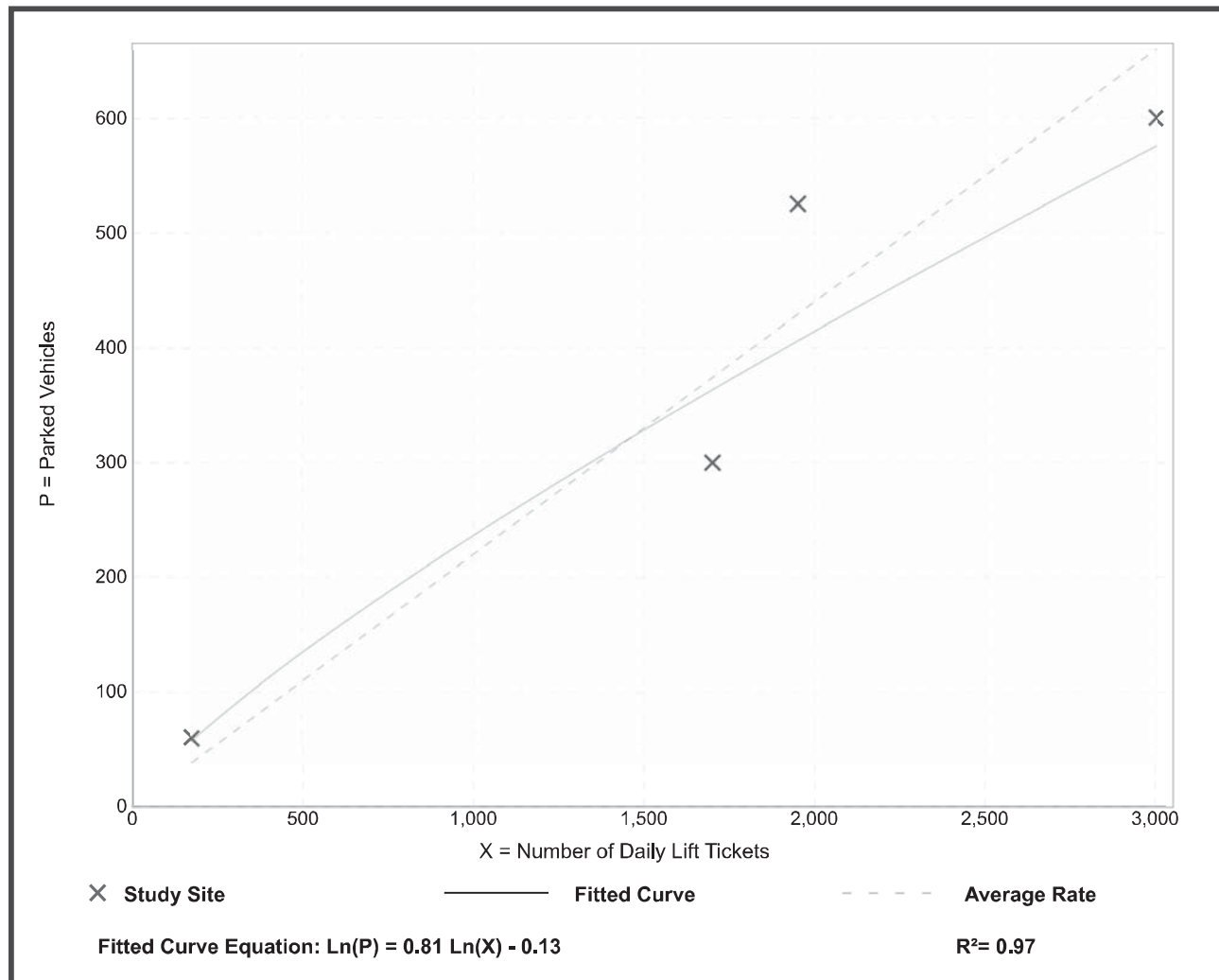
Avg. Num. of Daily Lift Tickets: **1706**

### Peak Period Parking Demand per Daily Lift Ticket

| Average Rate | Range of Rates | 33rd / 85th Percentile | 95% Confidence Interval | Standard Deviation (Coeff. of Variation) |
|--------------|----------------|------------------------|-------------------------|------------------------------------------|
| 0.22         | 0.18 - 0.34    | 0.19 / 0.34            | ***                     | 0.05 (23%)                               |

### Data Plot and Equation

**Caution – Small Sample Size**



Parking Generation Manual, 5th Edition • Institute of Transportation Engineers

## Attachment B - Observed Developments

of the property for commercial recreation purposes, including food, beverage and alcohol services, indoor and outdoor seating, and a Ropes Course, are consistent with the intent of this zone. The Development Code requirements are shown in the following table:

#### Development Code Requirements

|    |                          |                                                                                                                                                            |
|----|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. | Site Area:               | 14 acres                                                                                                                                                   |
| 2. | Building Setbacks        |                                                                                                                                                            |
|    | Buildings and Parking    |                                                                                                                                                            |
|    | Required:                | 15 feet                                                                                                                                                    |
|    | Proposed:                | Parking – 15 feet, ticket/restroom building – 340 feet                                                                                                     |
| 3. | Building Height:         |                                                                                                                                                            |
|    | Required:                | 40 maximum                                                                                                                                                 |
|    | Proposed:                | 35 feet 6 inches building, Ropes Course - 24 feet                                                                                                          |
| 4. | Parking Spaces Provided: | Summer – 167 spaces, 8 accessible for the disabled<br>Winter - 255 spaces, 8 accessible for the disabled                                                   |
| 5. | Floor Area Ratio         | Maximum allowed: 0.5 of 624,215 sq. ft. (14 acres), 312,000 square feet.<br>Provided: .04 FAR, approx. 28,000 sq. ft. of buildings, tanks and Ropes Course |
| 6. | Open Space               | Minimum allowed: 20% of lot area (624,215 sq. ft.) 124,843 sq. ft. minimum<br>Provided: 73% of lot (449,825 sq. ft.) undeveloped open space                |

#### Parking

##### *Winter Operations*

The parking requirement for a recreation area is based on capacity of the proposed use. The applicant indicates that the peak season is winter. Peak capacity of the snow play hill is currently approximately 400 people. Based on a ski industry average of 2.5 people per vehicle, approximately 160 parking spaces are required for the snow play use at this time. The applicant has installed approximately 255 paved spaces on the property, which are available during the winter season (November through April). Vehicles are directed to park by parking attendants to maximize the number of vehicles parked on the property. The parking lot accommodates passenger vehicles and tour busses.

### Parking

The Alpine Coaster is not anticipated to increase the parking demand of the amusement park. This ride is proposed as another amusement activity within the park. The property is developed with approximately 150 striped parking spaces. At peak times, parking attendants are used to maximize the number of vehicles that can be accommodated on the property, which can total up to 300 parking spaces. No additional parking is needed or required at this time.

### Noise

Several videos of Alpine Coasters are available to view on the internet, and these were viewed to determine if the ride would generate additional noise. The ride is a fast, yet smooth, glide down from the top of the up-tracks. As mentioned earlier within this report, the carts are pulled by cable to the top of the tracks which does not create excess noise, such as a traditional roller coaster. Because of the design of the Alpine Coaster, it is not anticipated that riders will scream in terror, however, riders may cheer and laugh, but these are not expected to exceed a 60 CNEL (dBA) decibel level that is normally acceptable in residential neighborhoods. This noise is not anticipated to be excessively loud or significant, nor any different than the noise from people using the snow play hill, alpine slide, water slide, zip line or other amusement rides at the facility.

### Tree Removal

No trees over 12" in diameter at breast height (DBH) are proposed for removal with this project. Minor brush clearing and grading will be performed. No replacement trees are required to be planted because of the existence of a sufficient tree canopy on the entire property.

### Lighting

All lighting will be subject to Development Code Section 17.35 lighting standards for decorative and accessory lighting within commercial developments. Minimal lighting for safety and aesthetic purposes are permitted, however, cannot be intrusive to adjacent properties or shine directly into the right of way. Animated and flashing lights are not permitted. The applicant has proposed sections of LED rope lighting (white) for track awareness and safety. Carts will also be equipped with headlights and taillights for safety and visibility.

### Design Review

The standard color of the Alpine Coaster structure is raw galvanized metal. For safety and maintenance, vinyl coating may not be applied to the rail structure. Additionally, cables are not painted or coated. The overall design of the existing and proposed structures will be similar to the *Mine Shaft* theme seen in Figure 2 of this report. Where applicable, railings and platforms will be constructed with wood in lieu of galvanized metal.

efficiency and circulation patterns into and out of the Valley during “peak events”, as well as traffic management of BBMR parking procedures. These plans have worked well for two years and are reviewed and refined accordingly before, during and after each season.

BBMR has offered paid parking for select individuals for many years. It was originally only for stock holders and select season pass holders and has slowly expanded into what is being proposed today. The proposed paid parking program was part of the BBMR’s plan to offer a VIP experience for customers in the entire base area of both BBMR’s. The expansion of this size was a change from previous ownership and operations and created new challenges to City, Sheriff, and BBMR management. After review and during the snow season of 2017, the City allowed it to continue as a trial under a Temporary Use Permit, 2017-129/TUP for the 2017-2018 season. Because of the uncertainty of the success of the TMP, the Temporary Use Permit was approved for one season, from December 2017, until approximately October 2018. As a condition of approval for the Temporary Use Permit, the applicant was required to apply for a Conditional Use Permit once the pilot parking plan and new Sheriff’s traffic plan was implemented. As required, City staff, Sheriff’s Office, and BBMR’s met on several occasions to evaluate the success of the plan. This proposal is a result of the on-going discussions and cooperation between the agencies and applicant.

**Zoning:** Commercial-Recreation (C-4)

**General Plan Designation:** Commercial Recreation (CR)

**Existing Land Use:** Paved and un-paved parking

**Adjacent Land Uses:** *North* – Multiple-family residential dwelling units (duplexes) and single-family residential units along Switzerland, zoned R-3.  
*South* – Ski, snowboarding trails on resort-owned land, zoned C-4  
*East* – Multiple-family residential dwelling units (condominiums); zoned R-3.  
*West* – Multiple-family residential dwelling units (condominiums) zoned R-3 and single-family residential units, zoned R-1, and Pine Summit Camp, zoned R-L;

## ANALYSIS

The proposal to operate a paid parking lot requires a conditional use permit pursuant to Table 17.35.030(A) in the Commercial-Recreation (C-4) zone, which provides the principal uses permitted in commercial zones. The main base lot is entirely zoned C-4 and accommodates approximately 827 parked cars. The proposal by the BBMR is to implement paid parking on Fridays, Saturdays, Sundays, and holidays, including the week between Christmas and New Year’s and the week following New Year’s commonly considered “winter break.” Free parking will be allowed on non-holiday Mondays through Thursdays during the winter season, with the ability to charge for parking during the summer for special events. During a typical winter season the breakdown is approximately 85 days of non-paid parking and 65 days of paid parking. Paid parking must be either through the purchase of a Big Bear Mountain Resort’s parking pass or cash payment upon arrival. The process for money collection at Snow Summit is as follows. The two