LINSCOTT LAW & GREENSPAN engineers

LOCAL MOBILITY ANALYSIS

COTTONWOOD SAND MINE

County of San Diego, California
September 2021

LLG Ref. 3-19-2958

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1.0 INTRODUCTION

Linscott, Law & Greenspan, Engineers (LLG) has prepared this Local Mobility Analysis (LMA) for the Cottonwood Sand Mine Project (proposed project) in the County of San Diego. The project proposes a redevelopment of the existing Cottonwood Golf Club for mining mineral resources. The project site is located at 3121 Willow Glen Drive, east of Jamacha Road in the Valle de Oro community of the County of San Diego. A maximum production limit of 570,000-tons (380,000 cubic yards) of construction grade aggregate (sand and gravel) in any calendar year is anticipated. This report addresses the potential construction transportation impacts from the proposed project.

This LMA has been prepared to assess the transportation effects of the Project on mobility, access and circulation in the proximate area of the Project. The potential transportation impacts of the proposed Project are based on Vehicle Miles Traveled (VMT) to satisfy the California Environmental Quality Act (CEQA) guidelines through Senate Bill (SB) 743 consistent with the Office of Planning and Research (OPR) Technical Advisory. Therefore, consistent with SB 743 and CEQA Guidelines 15064.3, the CEQA significance determination for the Project is based only on VMT and not on LOS. A VMT Report was prepared and included under a separate cover.

The report is organized as follow:

Section 1.0 Introduction
Section 2.0 Project Description
Section 3.0 Study Area, Analysis Approach & Methodology
Section 4.0 Existing Conditions Discussion
Section 5.0 Trip Generation, Distribution & Assignment
Section 6.0 Analysis of Existing Conditions
Section 7.0 Analysis of Near-Term Scenarios
Section 8.0 Vehicular Mobility Improvements

2.0 PROJECT DESCRIPTION

2.1 Project Location

The project proposes a Major Use Permit (MUP) to allow sand mining activities on 251 acres of an approximately 280-acre site in the unincorporated community of Rancho San Diego in eastern San Diego County. The Project site is currently occupied by the existing Cottonwood Golf Club, which is located on the south side of Willow Glen Drive, east and west of Steele Canyon Road in the County of San Diego.

Figure 2–1 shows the vicinity map. ***Figure 2–2*** shows a more detailed Project area map.

2.2 Project Description

The property is currently occupied by the Cottonwood Golf Club, which is permitted to operate two 18-hole golf courses referred to as the Lakes course and the Ivanhoe course. The project proposes to convert the golf courses to a sand mining operation that would be conducted in three phases, with three to four sub-phases in each phase of less than 30 acres each, and a fourth phase for cleanup, equipment removal, and final reclamation. Mining is expected to be completed over an approximately 10 year period. The project proposes to extract approximately 4.3 million cubic yards (CY; 6.40 million tons) of material, with approximately 3.8 million CY (5.7 million tons) produced for market use. Extraction operations would be limited to a maximum production of 380,000 cy (570,000 tons) of construction grade aggregate per calendar year. Material extracted and processed at the site would be suitable for construction uses and would be available to customers in San Diego County.

In association with the MUP, a Reclamation Plan would be required to specify the standards to which the site must be reclaimed upon completion of mining activities. Areas disturbed by resource extraction would be progressively reclaimed in an ongoing process that commences when mining operations have ceased within a given area and continues until all mining-related disturbance is reclaimed and all equipment involved in the operations has been removed. Reclaimed areas would be restored to an end use of open space, recreational trails, and land suitable for uses allowed by the General Plan and existing zoning classifications. Surface areas included within the MUP boundary that would not be disturbed by mining would be subject to removal of invasive species in the Sweetwater River channel on the southwest portion of the site or be left in their current condition.

Sand excavation and processing will occur Monday through Friday, between the hours of 7:00 a.m. and 5:00 p.m. Trucking operations for material sales would occur from 9:00 a.m. to 3:30 p.m. Monday through Friday to avoid peak traffic periods. Construction traffic would include heavy vehicles and light vehicles. A total of 88 trucks, 14 employee light vehicles and 4 vendor vehicles are assumed to commute to the construction site on a daily basis. This represents a conservative assumption as only 9 employees are expected.

The primary truck and employee access to the project site is proposed via two driveways (one inbound and one outbound) on Willow Glen Drive, east of Steele Canyon Road. The Project

proposes to restripe Willow Glen Drive between Steele Canyon Road and the Project ingress driveway to provide Class II buffered bike lanes on both sides of the roadway per the County Roadway Standards. To facilitate deceleration of right-turning vehicles into the project ingress driveway, a dedicated right-turn lane would also be constructed, which would serve as the primary access for mining operations, material sales, employees, and vendors. A new egress point would be established in the approximate center of the existing parking lot. The project also proposes to construct a two-way left-turn lane between the ingress and egress driveways, which would serve as a refuge lane for trucks to complete their outbound maneuver. A pedestrian pathway would be provided along the northern project frontage/Willow Glen Drive east of Steele Canyon Road to provide pedestrian access within the project vicinity where there are no existing sidewalks. In addition, a new access point to the property from Willow Glen Drive west of the Steele Canyon Road (Phase 1 area) would be necessary as the clearance height of the bridge that crosses the Sweetwater River on Steele Canyon Road would not allow most large trucks used by service vendors to pass beneath the bridge. This additional access point is proposed to be constructed at the intersection of Willow Glen Drive and Muirfield Drive and would be restricted to use by service vendors only.

2.3 Project Phasing

The project will be developed in three continuous mining phases, with 20- to 30-acre sub-phases in each major phase and a fourth (4^{th}) phase for final reclamation. Operations would commence west of the Steele Canyon Road bridge on the closed Lakes course, and then generally proceed in a southwest-to-northeast direction across the project site. Processing facilities would be located near the center of the Project area, adjacent to Willow Glen Drive and west of the existing golf course parking lot. A portable conveyor line would be installed to minimize the use of on-site roads to transport excavated materials to the processing plant from the excavation areas.

Phase 1 would include site development for the construction of the access road and processing plant pad, as well as installation of screening berms, the conveyor line, and the processing plant. Sand extraction during Phase 1 would be located within the area currently occupied by the closed Lakes course to the west of Steele Canyon Road. Phase 2 would be located in the center of the site, east of Steele Canyon Road, on the currently operating Ivanhoe course. Public use of the Ivanhoe golf course would cease upon approval of the project/major use permit. Phase 3 mining operations would encompass the remaining acreage of the project site located to the east of Phase 2. Each phase would include three to four sub-phases that are less than 30 acres each to begin reclamation as soon as possible. Excavation in each sub-phase would be completed before moving the conveyor and excavation equipment to the next sub-phase and reclamation would begin in the completed sub-phase. Areas disturbed by resource extraction would be progressively reclaimed as mine operations within a given sub-phase area are completed. Phase 4 would consist of removal of the processing plant, grading to final contours, final reclamation and revegetation efforts, cleanup, and equipment removal. Revegetation monitoring will continue for a minimum of five years or until revegetation standards are met after this final phase.

Figure 2–3 shows a project phasing plan.

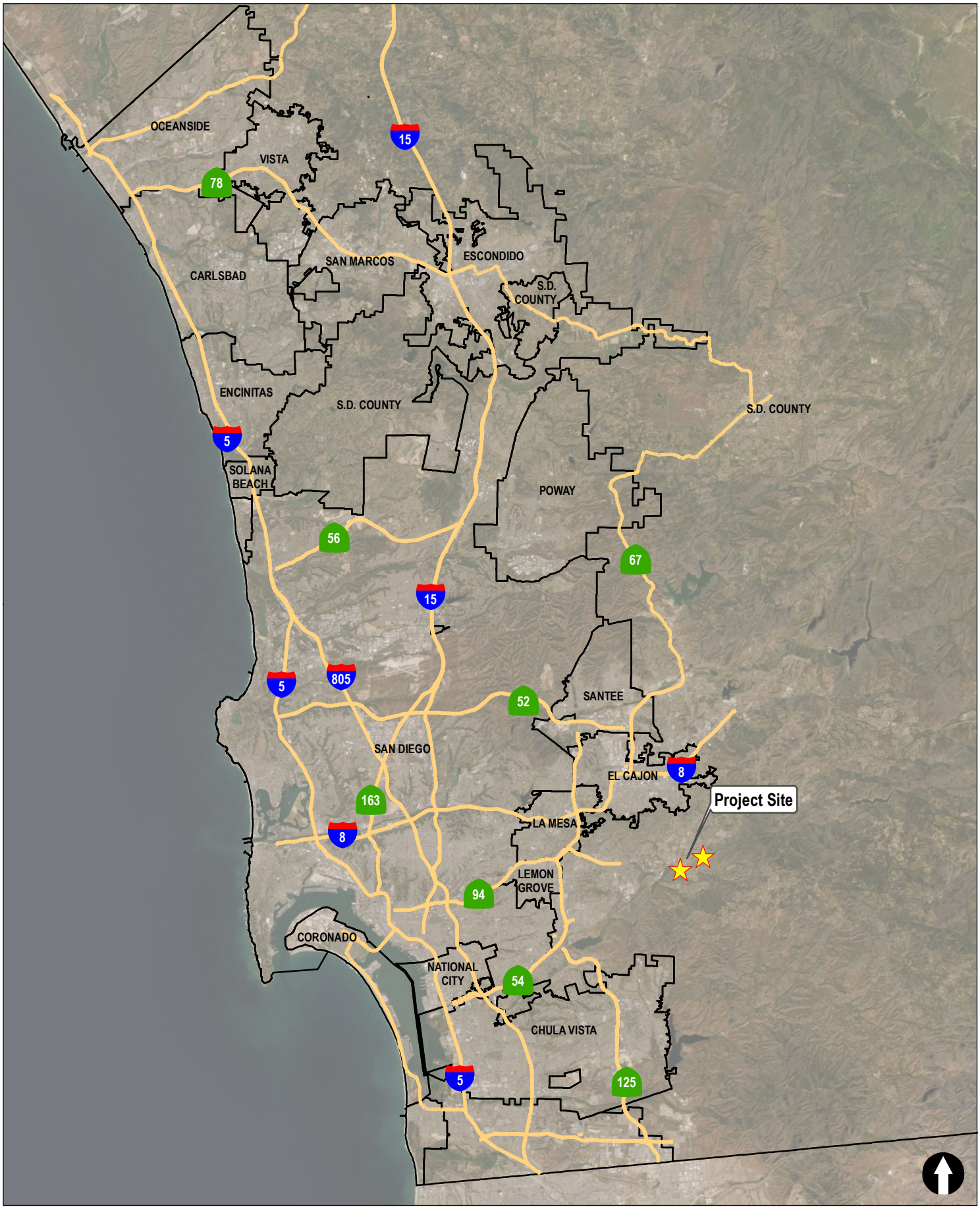

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Figure 2-1

Vicinity Map

Cottonwood Sand Mine

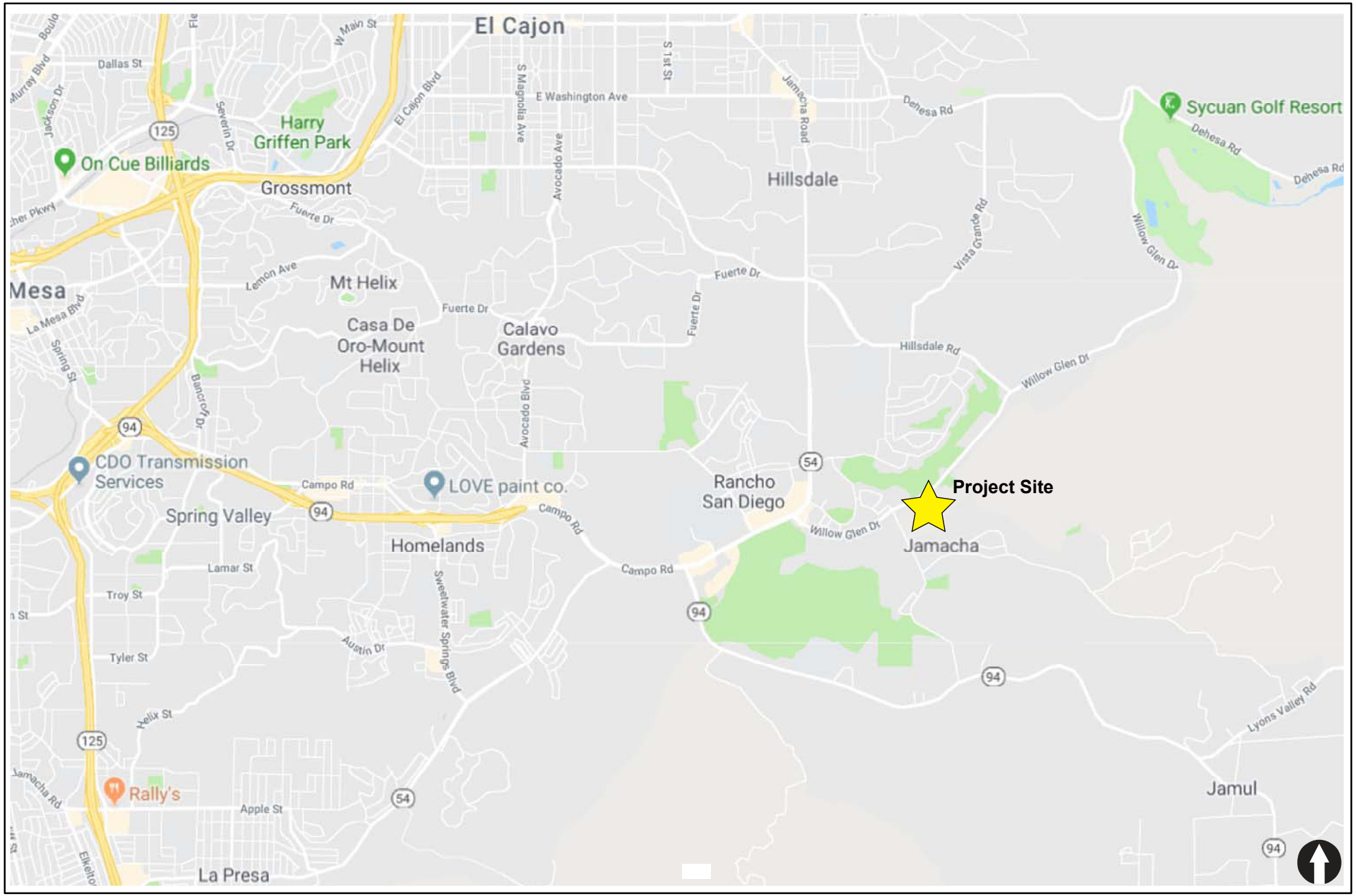

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Figure 2-2

Project Area Map

COTTONWOOD SAND MINE

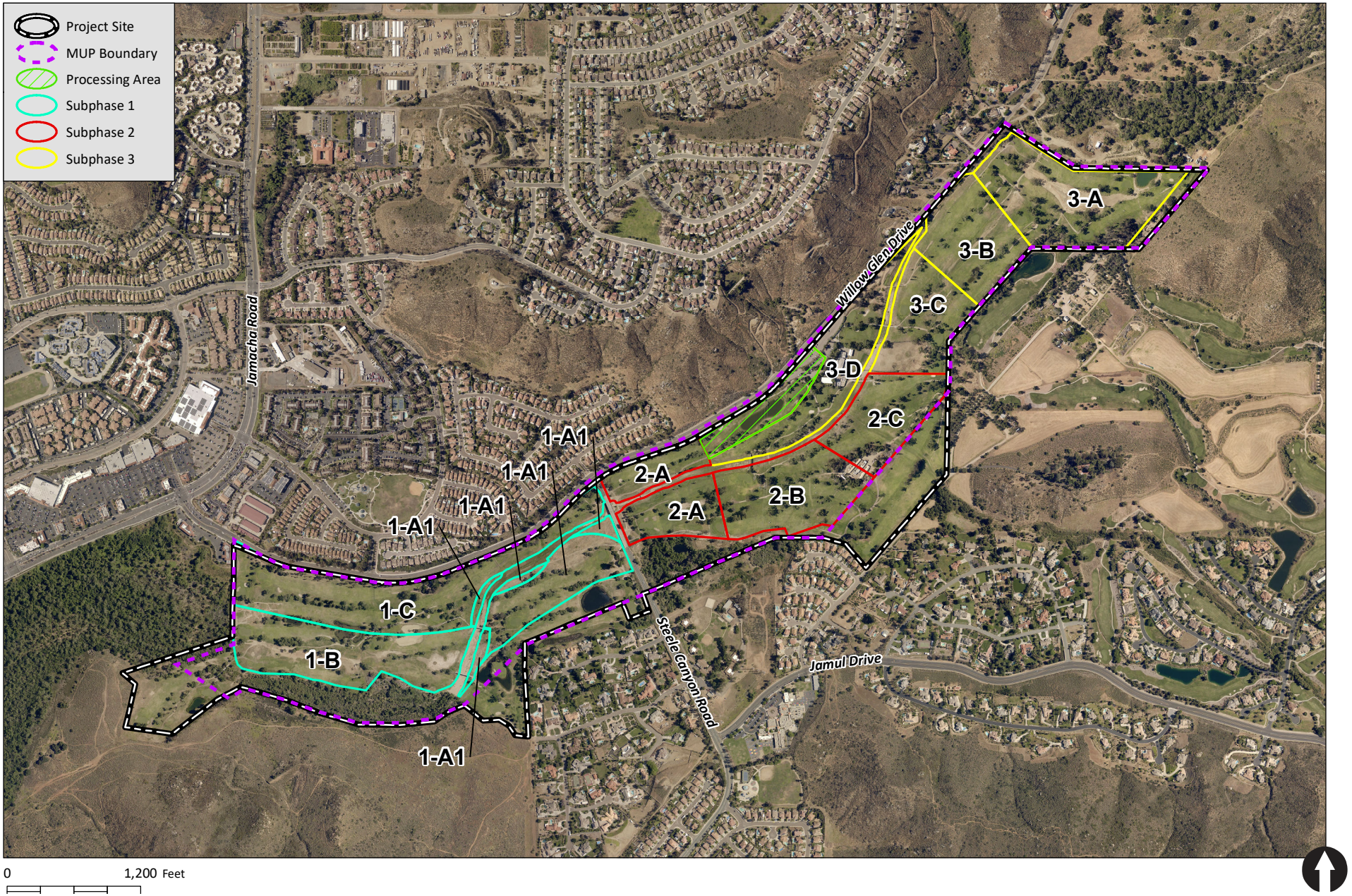

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Figure 2-3

Project Phasing Plan

COTTONWOOD SAND MINE

3.0 ASSESSMENT APPROACH AND METHODOLOGY

3.1 Level of Service

Level of service (LOS) is the term used to denote the different operating conditions which occur on a given roadway segment under various traffic volume loads. It is a qualitative measure used to describe a quantitative assessment taking into account factors such as roadway geometries, signal phasing, speed, travel delay, freedom to maneuver, and safety. Level of service provides an index to the operational qualities of a roadway segment or an intersection. Level of service designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. Level of service designations are reported differently for signalized intersections, unsignalized intersections and roadway segments.

3.2 Intersections

Signalized intersections were analyzed under AM and PM peak hour conditions. Average vehicle delay and LOS were determined utilizing the methodology found in *Highway Capacity Manual 6th edition (HCM),* with the assistance of the *Synchro* (version 10.0) computer software. The delay values (represented in seconds) were qualified with a corresponding intersection LOS. Signalized intersection calculation worksheets and a more detailed explanation of the methodology are attached in ***Appendix A***.

Unsignalized intersections were analyzed under AM and PM peak hour conditions. Average vehicle delay and LOS were determined based upon the procedures found in Volume 3: Interrupted Flow, Chapter 19 for two-way stop-controlled intersections of the *Highway Capacity Manual 6th edition (HCM),* with the assistance of the *Synchro* (version 10.0) computer software. Unsignalized intersection calculation worksheets and a more detailed explanation of the methodology are attached in *Appendix A.*

4.0 VEHICULAR MOBILITY CRITERIA

The following project-specific criteria were utilized to evaluate potential vehicular mobility improvements.

4.1 Signalized Intersections

An improvement is required at a signalized intersection if any of the following are triggered:

- 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.

4.2 Unsignalized Intersections

An improvement is required at an unsignalized intersection if any of the following are triggered:

4.2.1 *Side Street Stop Controlled*

- 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

4.2.2 *All-Way Stop Controlled*

- 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.

5.0 EXISTING CONDITIONS

5.1 Study Area

The following intersections were included in the study area and listed below.

1. Jamacha Road / Willow Glen Drive
2. Willow Glen Drive / Muirfield Drive / Project Driveway
3. Willow Glen Drive / Steele Canyon Road
4. Willow Glen Drive / Project Driveway (West)
5. Willow Glen Drive / Project Driveway (East)

5.2 Existing Roadway Conditions

The following is a description of the major roadways located within the immediate vicinity of the Project site at the time of the existing counts. ***Figure 5–1*** depicts the existing traffic conditions and the study area intersections.

Campo Road (SR 94) is classified as a Freeway/6.1 Expressway from La Mesa City limits to Jamacha Road on the County of San Diego General Plan, Valle de Oro Mobility Element Network. Campo Road is currently constructed as a five-lane divided roadway, west of Jamacha Boulevard, and as a six-lane divided roadway between Jamacha Boulevard and Jamacha Road. Bike lanes and bus stops are provided on Campo Road in the study area. On street parking is not permitted.

Jamacha Road is classified as a 6.2 Prime Arterial from SR 94/ Campo Road to Chase Avenue on the County of San Diego General Plan, Valle de Oro Mobility Element Network. Jamacha Road is currently constructed as a six-lane divided roadway in the project study area. Bike lanes and bus stops are provided on Jamacha Road in the study area. On street parking is not permitted. It should be noted that the General Plan has identified and accepted Jamacha Road between SR 94 / Campo Road and Fury Lane as operating at a future LOS F.

Jamacha Boulevard is classified as a 4.1A Major Road from Spring Valley to SR 94/ Campo Road on the County of San Diego General Plan, Valle de Oro Mobility Element Network. Jamacha Boulevard is currently constructed as a four-lane undivided roadway in the project study area. Bike lanes and bus stops are provided on Jamacha Boulevard in the study area. On street parking is not permitted.

Willow Glen Drive is classified as a 4.1B Major Road on the County of San Diego General Plan, Valle de Oro Mobility Element Network. Willow Glen Drive is currently constructed as a four-lane undivided roadway between Jamacha Road and Steele Canyon Road and as a three-lane roadway with a two-way left-turn lane between Steele Canyon Road and the east project boundary. Bus stops are not provided and on street parking is not permitted.

5.3 Existing Intersection Traffic Volumes

Weekday AM/PM peak hour intersection turning movement volume counts were commissioned on Thursday, August 30, 2018. The intersection counts were conducted between the hours of 7:00-9:00 AM and 4:00-6:00 PM to capture peak commuter activity. Area schools were in session during the time of the counts.

Appendix B contains the peak hour intersection count sheets. ***Figure 5–2*** shows the existing traffic volumes.

5.4 Existing Bicycle Network

Currently, Class II bike lanes are provided on both sides of Willow Glen Drive within the study area.

5.5 Existing Pedestrian Conditions

Pedestrian sidewalks are intermittently provided on both sides of Willow Glen Drive within the study area.

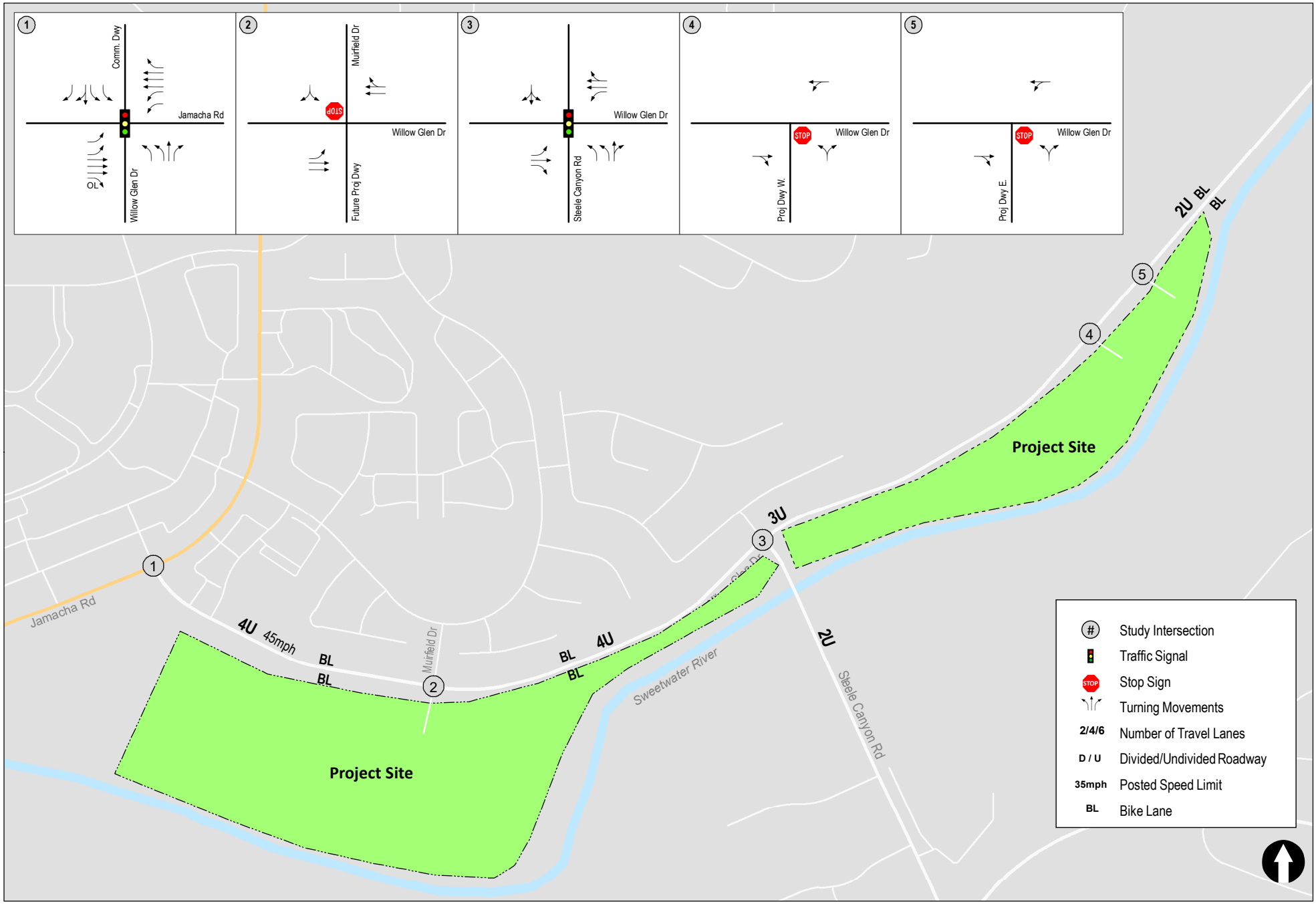

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Figure 5-1

Existing Conditions Diagram

Cottonwood Sand Mine

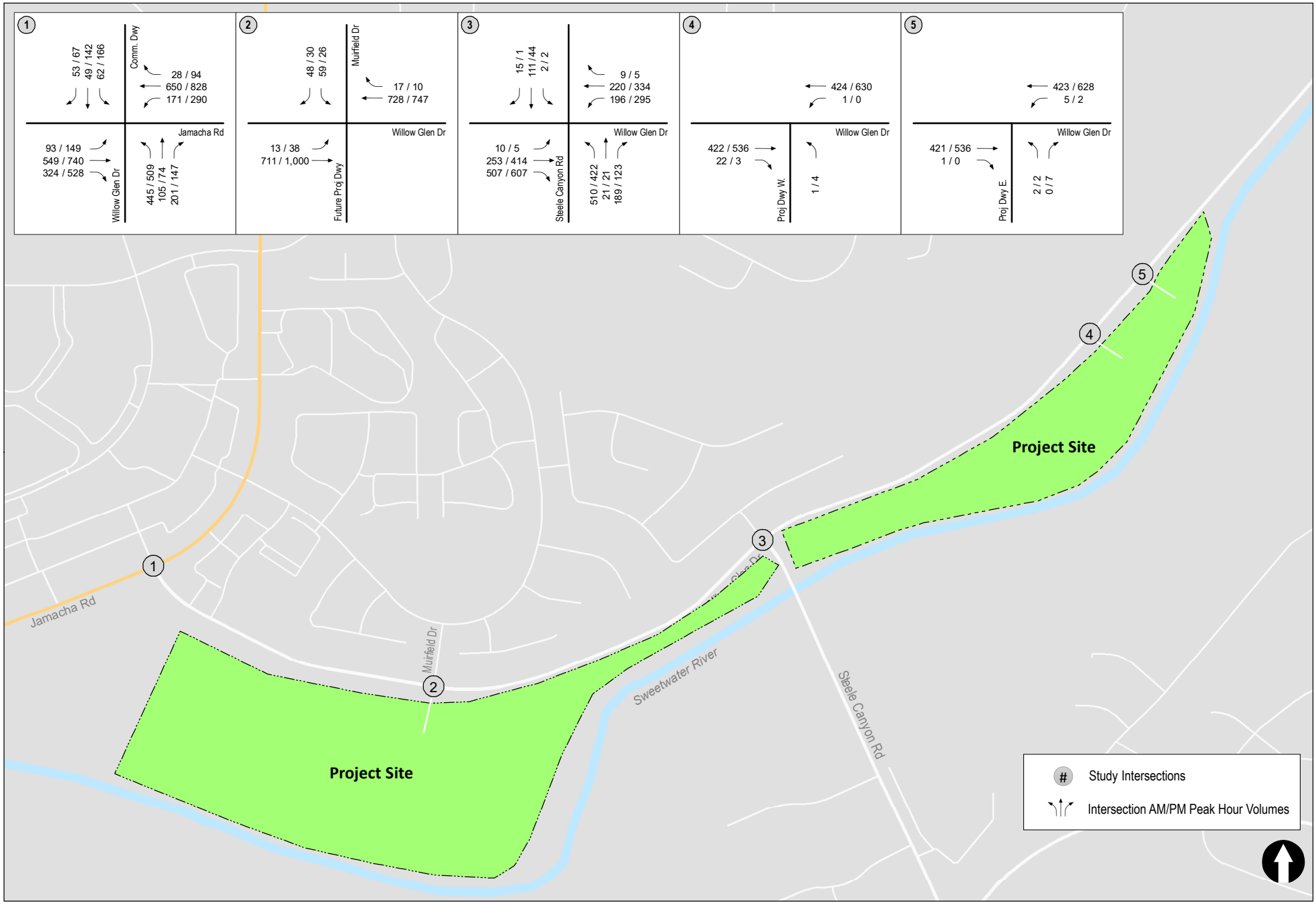

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Figure 5-2

Existing Traffic Volumes

Cottonwood Sand Mine

6.0 ASSESSMENT OF EXISTING VEHICULAR CONDITIONS

Table 6–1 summarizes the existing intersection operations in the project vicinity. As seen in *Table 6–1*, all intersections are calculated to currently operate at LOS D or better except for the following intersection:

- Willow Glen Drive / Muirfield Drive (LOS E during AM and PM peak periods)

Appendix C contains the existing intersection assessment worksheets.

TABLE 6–1
EXISTING INTERSECTION OPERATIONS

Intersection	Control Type	Jurisdiction	Peak Hour	Existing	
				Delay[a]	LOS[b]
1. Jamacha Road / Willow Glen Drive	Signal	County	AM PM	33.1 38.0	C D
2. Willow Glen Drive / Muirfield Drive	TWSC[c,d]	County	AM PM	**49.6** **35.1**	**E** **E**
3. Willow Glen Drive / Steele Canyon Road	Signal	County	AM PM	34.3 38.0	C D
4. Willow Glen Drive / Project Drwy (West)	TWSC[c,d]	County	AM PM	20.9 24.3	C C
5. Willow Glen Drive / Project Drwy (East)	TWSC[c,d]	County	AM PM	21.3 14.9	C B

Footnotes:
a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. TWSC – Two-Way Stop-Controlled intersection
d. Delay is reported for minor street left-turn movement.

General Notes:
1. **Bold** typeface indicates intersections operating at LOS E or F.

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

7.0 TRIP GENERATION, DISTRIBUTION AND ASSIGNMENT

7.1 Construction Project Trip Generation

This report analyzes the potential impacts of the daily construction trips during the mining period. Construction trips include construction worker (employee) trips in passenger vehicles/light trucks, as well as material export trips made in heavy vehicles (haul trucks) to/from and around the excavation site. The traffic analyses in this report analyze the potential impacts of these trips during the construction period.

The project is expected to be fully completed in 12 years with mining anticipated for 10 years and reclamation commencing 2 years after the start of mining.

Based on coordination with the client, the construction workforce on a typical day was identified based on the maximum production and a typical truck tonnage capacity. A typical mining day would include a maximum of 88 heavy vehicles accessing the project site, spread between the hours of 9:00 am to 3:30 pm. In addition to the heavy vehicle trips, a total of 14 employee and visitor light vehicles and 4 vendors were assumed to access the project site on a typical day. This represents a conservative assumption as only 9 employees are expected.

7.1.1 *Heavy Vehicle Traffic*

Heavy vehicle traffic would include trucks carrying loads of construction aggregate, supplies, fuel, parts, etc. The weight capacity of a standard heavy vehicle for outgoing loads is approximately 25 tons per truck. A maximum construction day would include 88 one-way heavy vehicles accessing the project site. Trucking operations during the week will operate from 9:00 am to 3:30 pm to avoid peak traffic periods in the area.

According to Highway Capacity Manual 6th edition, Passenger Car Equivalence (PCE) is defined as the number of passenger cars that are displaced by a single heavy vehicle of a particular type under the prevailing traffic conditions. Heavy vehicles have a greater traffic impact than passenger cars since they are larger than passenger cars, and therefore, occupy more roadway space; and their performance characteristics are generally inferior to passenger cars, leading to the formation of downstream gaps in the traffic stream, which cannot always be effectively filled by normal passing maneuvers.

Exhibit 12–25, PCE's for Heavy Vehicles in General Terrain Segments, (obtained from "Highway Capacity Manual prepared by Transportation Research Board) summarizes PCE factors for trucks. The type of terrain in the project area is level, which corresponds to a PCE factor of 2.0 However, to be conservative, a PCE factor of 2.5 for trucks was used.

7.1.2 *Light Vehicle Traffic*

Light vehicle traffic would include vehicles used by employees and miscellaneous visitors such as cars, pick-up trucks and small service vehicles. A total of 14 mining employees and visitors were conservatively assumed to access the project site on a typical day. To estimate the employee trips, LLG assumed that all the light vehicle traffic occurs during the commuter peak hours. This is

considered conservative as the trip generation for light vehicles does not account for workers using other modes of transportation to reach the site or carpooling, which could occur.

7.1.3 *Vendor Traffic*

Vendor trips (fuel, supplies, service companies, etc.) were also included. A total of 4 vendors are expected to access the project site on a typical day. To estimate the vendor trips, LLG assumed that some vendor traffic does occur during the commuter peak hours with approximately 15% in each peak hour. This is considered conservative as majority of the vendor vehicles are expected to arrive/depart during the non-commute peak hours.

Table 7–1 tabulates the project traffic generation for Phase 1. The project is calculated to generate approximately 476 ADT (PCE adjusted), 15 trips (14 inbound, 1 outbound) during AM peak period and 15 trips (2 inbound, 13 outbound) during PM peak period. The currently operating Ivanhoe golf course would be completely closed during the project Phase 1. However, to be conservative, no existing traffic credit associated with this closure was assumed.

For project Phases 2 and 3, the same construction workforce as Phase 1 was assumed. However, during Phases 2 and 3, an existing traffic credit commensurate with the golf course closure was included based on existing driveway counts. While the golf course would be closed during Phase 1 as well, no existing trip credit was taken to be conservative. ***Table 7–2*** tabulates the total project traffic generation for Phases 2 and 3. The project is calculated to generate approximately 342 ADT, zero (0) trips during AM peak period and 6 trips (0 inbound, 6 outbound) during PM peak period.

The traffic assessment in this report was conducted for Phase 1 of the project Phase 1 given that the project trip generation in Phases 2 and 3 is lower than Phase 1. The assessment in Phase 1 is conservative in that respect.

7.2 Project Traffic Distribution

LLG developed the project traffic distribution based on coordination with the applicant regarding the potential truck routes using the location of the various concrete batch plants (which are spread across San Diego County) to which the material will be delivered, existing roadway classifications and traffic in the project area etc.

Figure 7–1 shows project trip distribution.

7.3 Project Traffic Assignment

The project traffic was assigned for the trucks, employees and vendors based on the trips shown in *Table 7–1* and the project trip distribution. The primary access to the project site is via the existing driveways on Willow Glen Drive, east of Steele Canyon Road. The westerly golf club driveway would serve inbound movements for both trucks and light vehicles while the easterly driveway would serve outbound movements. A secondary driveway on Willow Glen Drive, south of Muirfield Drive is also proposed but the traffic anticipated at this driveway is assumed to be nominal as the

driveways east of Steele Canyon Road would serve as the major driveway. ***Figure 7–2*** shows project trip assignment for Phase 1. ***Figure 7–3*** shows Existing + Project Phase 1 traffic volumes.

TABLE 7–1
TRIP GENERATION – PHASE 1

Use	Quantity	PCE[a]	Daily Trips		AM Peak Hour					PM Peak Hour				
			Rate	ADT[b]	% of ADT	In : Out Split	In	Out	Total	% of ADT	In : Out Split	In	Out	Total
Mining Traffic														
Heavy Vehicle (trucks)[c, d]	88	2.5	2 /veh	440	0%	50% : 50%	0	0	0	0%	50% : 50%	0	0	0
Light Vehicles (Employees)[e]	14	1.0	2 /veh	28	50%	90% : 10%	13	1	14	50%	10% : 90%	1	13	14
Vendors [d,f]	4	1.0	2 /veh	8	15%	50% : 50%	1	0	1	15%	50% : 50%	1	0	1
Net New Traffic				***476***			***14***	***1***	***15***			***2***	***13***	***15***

Footnotes:

a. PCE – Passenger car equivalence.
b. ADT – Average daily traffic.
c. Heavy vehicle traffic includes trucks carrying loads of construction aggregate, fuel, parts, etc.
d. Trucking operations for material sales would occur from 9:00 a.m. to 3:30 p.m. Monday through Friday to avoid peak traffic periods.
e. Light vehicle traffic includes vehicles used by approximately 9 employees and 5 miscellaneous visitors such as cars, pick-up trucks and small service vehicles.
f. Vendor trips include fuel, supplies, service companies, etc.

General Notes:

1. The currently operating Ivanhoe golf course would be completely closed during the project Phase 1. However, to be conservative, no existing traffic credit associated with this closure was assumed.

TABLE 7–2
TRIP GENERATION - PHASES 2 AND 3

Use	Quantity	PCE	Daily Trips		AM Peak Hour					PM Peak Hour				
			Rate	ADT[a]	% of ADT	In : Out Split	Volume In	Volume Out	Volume Total	% of ADT	In : Out Split	Volume In	Volume Out	Volume Total
Mining Traffic														
Heavy Vehicles (trucks)[b, c]	88	2.5	2 /veh	440	0%	50% : 50%	0	0	0	0%	50% : 50%	0	0	0
Light Vehicles (Employees)[d]	14	1.0	2 /veh	28	50%	90% : 10%	13	1	14	50%	10% : 90%	1	13	14
Vendors[c,e]	4	1.0	2 /veh	8	15%	50% : 50%	1	0	1	15%	50% : 50%	1	0	1
Subtotal	106		-	476			14	1	15			2	13	15
Existing Traffic To Be Removed														
Golf Course (holes)[f]	9	1.0	per count[g]	(134)	11%	93% : 7%	(14)	(1)	(15)	7%	22% : 78%	(2)	(7)	(9)
Net New Traffic				***342***			***0***	***0***	***0***			***0***	***6***	***6***

Footnotes:

a. ADT – Average daily traffic.
b. Heavy vehicle traffic includes trucks carrying loads of construction aggregate, fuel, parts, etc.
c. Trucking operations for material sales would occur from 9:00 a.m. to 3:30 p.m. Monday through Friday to avoid peak traffic periods.
d. Light vehicle traffic includes vehicles used by approximately 9 employees and miscellaneous visitors such as cars, pick-up trucks and small service vehicles.
e. Vendor trips include fuel, supplies, service companies, etc.
f. In phases 2 and 3, the 18-hole golf course is assumed to be closed. To be conservative, a traffic credit for 9 holes were taken.
g. A traffic count at the golf course driveway was taken, which showed 269 ADT for 18-holes. The existing credit was calculated for 9 holes (i.e. half of 269 ADT)

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Figure 7-1

Project Traffic Distribution

Cottonwood Sand Mine

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Figure 7-2

Project Traffic Volumes (Phase 1)

Cottonwood Sand Mine

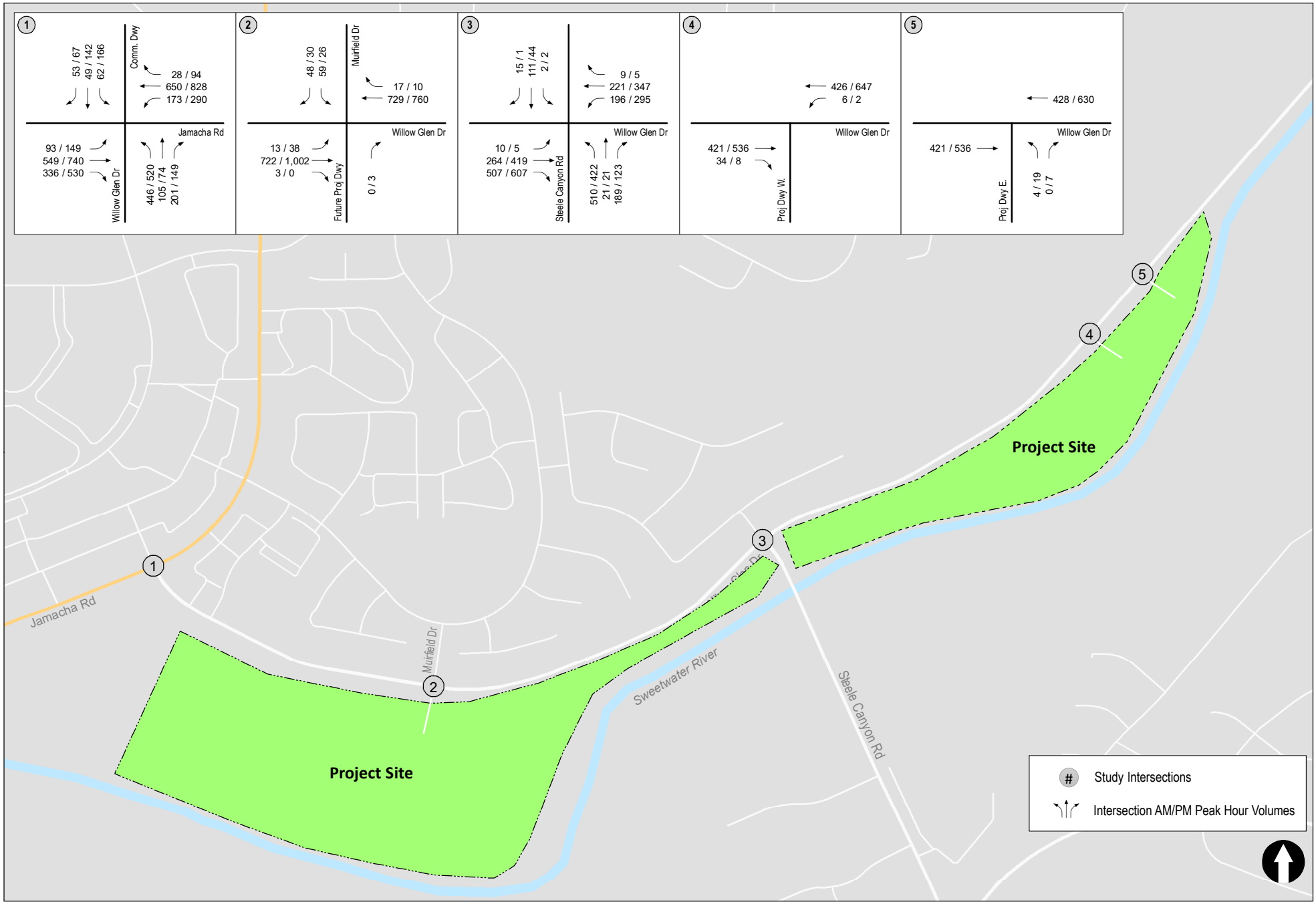

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Figure 7-3

Existing + Phase 1 Project Traffic Volumes

Cottonwood Sand Mine

8.0 ASSESSMENT OF NEAR-TERM VEHICULAR CONDITIONS

8.1 Existing + Project Phase 1 Intersection Assessment

Table 8–1 summarizes the Existing + Phase 1 Project intersections LOS. As seen in *Table 8–1*, the following intersection is calculated to operate at LOS E or worse:

- Willow Glen Drive / Muirfield Drive (LOS F during AM and LOS E during PM peak period)

Based on the criteria discussed in *Section 4.0*, no vehicular mobility deficiencies are calculated to occur at the listed intersection since the project contribution does not exceed the allowable thresholds.

Appendix D contains the Existing + Project Phase 1 intersection assessment worksheets.

8.2 Near-Term Traffic Forecasting

To forecast near-term traffic volumes, based on discussions with County staff, a review was conducted of the cumulative project development and the regional traffic growth contained in the SANDAG Series 13 Model within the project area.

Within the project area, the highest traffic growth shown in the model was about 0.5% per year as shown in ***Appendix E.*** To be conservative, a 1% per year growth factor for three (3) years was applied to the existing volumes to forecast Near-Term traffic volumes. Traffic volumes from the nearby Ivanhoe Ranch project and the Cuyamaca College Master Plan project were also accounted for and included in addition to the 1% growth to be conservative.

Figure 8–1 shows Near-Term traffic volumes. ***Figure 8–2*** shows Near-Term + Project Phase 1 traffic volumes.

8.3 Near-Term without Project Intersection Assessment

Table 8–2 summarizes the Near-Term without Project intersections LOS. As seen in *Table 8–2*, the following intersection is calculated to operate at LOS E or worse:

- Willow Glen Drive / Muirfield Drive (LOS F during AM and LOS E during PM peak period)

Appendix F contains the Near-Term without Project intersection assessment worksheets.

8.4 Near-Term + Project Phase 1 Intersection Assessment

Table 8–2 summarizes the Near-Term + Phase 1 Project intersections LOS. As seen in *Table 8–2*, the following intersection is calculated to operate at LOS E or worse:

- Willow Glen Drive / Muirfield Drive (LOS F during AM and LOS E during PM peak period)

Based on the criteria discussed in *Section 4.0*, no vehicular mobility deficiencies are calculated to occur at the listed intersection since the project contribution does not exceed the allowable thresholds.

Appendix G contains the Near-Term + Project Phase 1 intersection assessment worksheets.

TABLE 8–1
EXISTING INTERSECTION OPERATIONS - PHASE 1

Intersection	Control Type	Peak Hour	Existing		Existing + Phase 1 Project		Δ[c]	Deficiency
			Delay[a]	LOS[b]	Delay	LOS		
1. Jamacha Road / Willow Glen Drive	Signal	AM	33.1	C	33.2	C	0.1	No
		PM	38.0	D	38.3	D	0.3	No
2. Willow Glen Drive / Muirfield Drive	TWSC[d]	AM	49.6	**E**	50.1	**F**	0.5	No
		PM	35.1	**E**	35.7	**E**	0.6	No
3. Willow Glen Drive / Steele Canyon Road	Signal	AM	34.3	C	34.6	C	0.3	No
		PM	38.0	D	38.5	D	0.5	No
4. Willow Glen Drive / Project Drwy (West)	TWSC[d]	AM	20.9	C	8.7	A	(12.2)[e]	No
		PM	24.3	C	8.7	A	(15.6)[e]	No
5. Willow Glen Drive / Project Drwy (East)	TWSC[d]	AM	21.3	C	21.2	C	(0.1)[e]	No
		PM	14.9	B	22.4	C	7.5[e]	No

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. "Δ" denotes the project-induced increase in delay.
d. TWSC – Two-Way Stop-Controlled intersection. Minor street left-turn delay is reported.
e. With the proposed project, access to the project site will be limited to inbound only at Project Driveway (West) and outbound only at Project Driveway (East).

General Notes:

1. **Bold** typeface indicates intersections operating at LOS E or worse.

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

TABLE 8–2
NEAR-TERM INTERSECTION OPERATIONS - PHASE 1

Intersection	Control Type	Peak Hour	Near-Term without Project		Near-Term + Phase 1 Project		Δ	Deficiency
			Delay[a]	LOS[b]	Delay	LOS		
1. Jamacha Road / Willow Glen Drive	Signal	AM	35.2	D	35.4	D	0.2	No
		PM	40.8	D	41.2	D	0.4	No
2. Willow Glen Drive / Muirfield Drive	TWSC[d]	AM	78.1	**F**	80.4	**F**	2.3	No
		PM	44.2	**E**	45.5	**E**	1.3	No
3. Willow Glen Drive / Steele Canyon Road	Signal	AM	37.2	D	37.3	D	0.1	No
		PM	44.6	D	44.9	D	0.3	No
4. Willow Glen Drive / Project Drwy (West)	TWSC[d]	AM	22.2	C	8.8	A	(13.4)[e]	No
		PM	26.1	D	8.7	A	(17.4)[e]	No
5. Willow Glen Drive / Project Drwy (East)	TWSC[d]	AM	22.6	C	22.5	C	(0.1)[e]	No
		PM	15.4	C	24.0	C	8.6	No

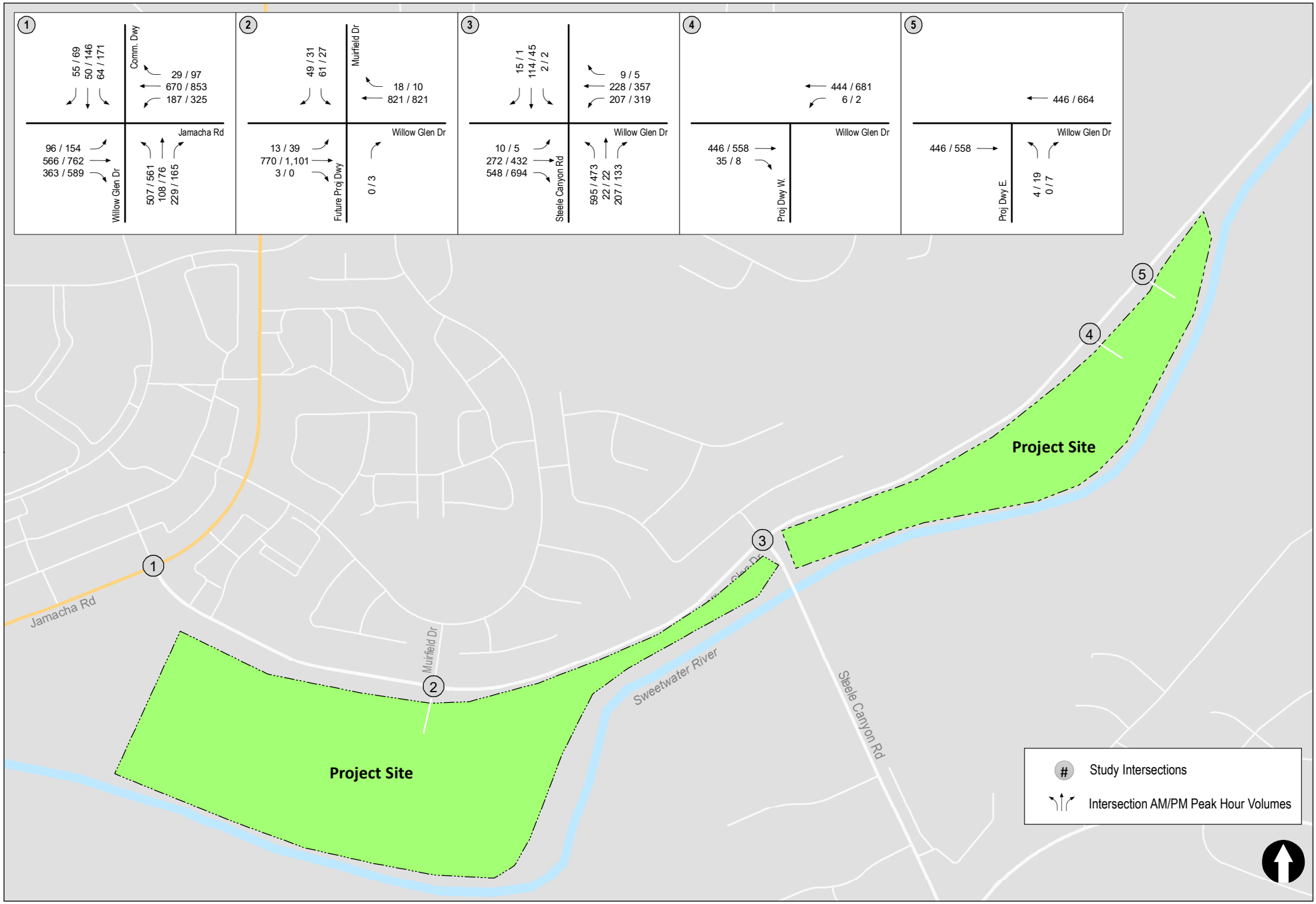
Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. "Δ" denotes the project-induced increase in delay.
d. TWSC – Two-Way Stop-Controlled intersection. Minor street left-turn delay is reported.
e. With the proposed project, access to the project site will be limited to inbound only at Project Driveway (West) and outbound only at Project Driveway (East).

General Notes:

1. **Bold** typeface indicates intersections operating at LOS E or worse.

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F



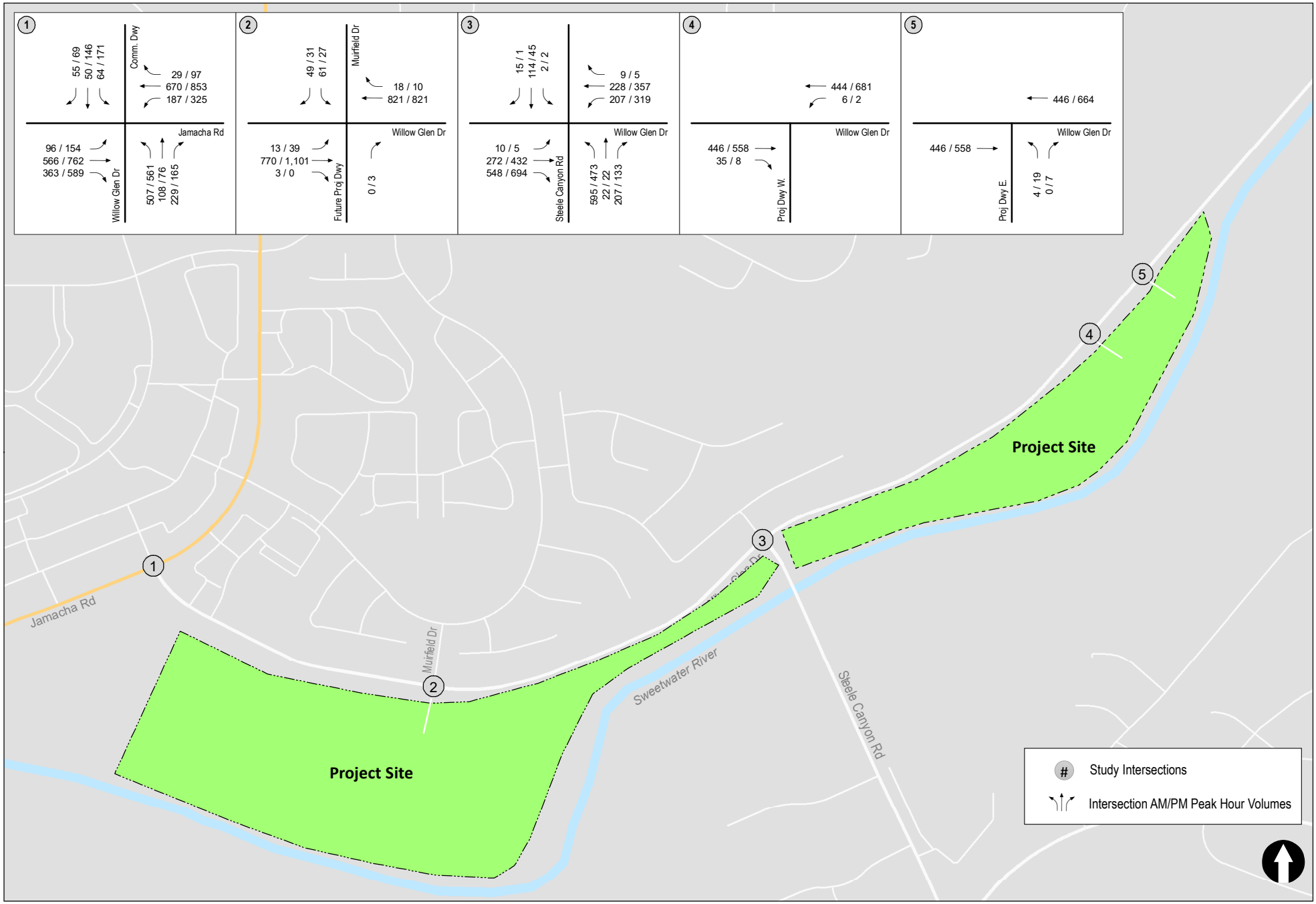
LINSCOTT LAW & GREENSPAN engineers

N:\2958\Figures
Date: 10/26/2020
Time: 11:39 AM

Figure 8-1

Near-Term Traffic Volumes

Cottonwood Sand Mine



LINSCOTT LAW & GREENSPAN engineers

N:\2958\Figures
Date: 10/26/2020
Time: 11:39 AM

Figure 8-2

Near-Term + Phase 1 Projects Traffic Volumes

Cottonwood Sand Mine

9.0 VEHICULAR MOBILITY IMPROVEMENTS

9.1 Vehicular Mobility Deficiencies

Per the criteria and the assessment methodology presented in this report, under the Existing and Near-Term conditions, project-related traffic would cause no deficiencies within the study area. Therefore, no off-site improvements are required. The following section identifies recommended frontage improvements.

9.2 Recommended Frontage Improvements

Based on discussions with the County staff, the following frontage improvements will be provided by the project.

- Willow Glen Drive – east of Steele Canyon Road:

  The project will restripe Willow Glen Drive between Steele Canyon Road and the project ingress driveway to provide Class II buffered bike lanes on both sides of the roadway. To facilitate deceleration of right-turning vehicles into the project ingress driveway, a dedicated right-turn lane will also be constructed. The project will also construct a two-way left-turn lane between the ingress and egress project driveways, which will serve as a refuge lane for trucks to complete their outbound maneuver. Willow Glen Drive between Steele Canyon Road and Hillsdale Road is classified in the Mobility Element as a 4.*1B: Major Road with Intermittent Turn lanes.* The project frontage along this stretch extends between Steele Canyon Road to approximately 1000' west of Hillsdale Road. In addition to the above improvements, the project proposes to provide an Irrevocable Offer of Dedication along the project frontage as needed to accommodate the ultimate roadway classification of Willow Glen Drive.

- Willow Glen Drive/ Steele Canyon Road Intersection – The project will also restripe the northbound approach of the Willow Glen Drive / Steele Canyon Road intersection to provide one dedicated left-turn lane and one shared left-through-right lane.

End of Report

LINSCOTT LAW & GREENSPAN engineers

LOCAL MOBILITY ANALYSIS
TECHNICAL APPENDICES
COTTONWOOD SAND MINE

County of San Diego, California
September 2021

LLG Ref. 3-18-2958

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APPENDICES

APPENDIX

A. Intersection Methodology and Assessment Sheets

B. Intersection Traffic Count Sheets

C. Intersection Peak Hour Assessment Worksheets (Existing)

D. Intersection Peak Hour Assessment Worksheets (Existing + Project)

E. SANDAG Series 13 Model Growth Summary

F. Intersection Peak Hour Assessment Worksheets (Near-Term without Project)

G. Intersection Peak Hour Assessment Worksheets (Near-Term + Project)

APPENDIX A

INTERSECTION METHODOLOGY AND ASSESSMENT SHEETS

SIGNALIZED INTERSECTIONS

For signalized intersections, level of service criteria are stated in terms of the average control delay per vehicle for a 15-minute analysis period. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. **Table 1** summarizes the delay thresholds for signalized intersections.

Level of service A describes operations with very low delay, (i.e. less than 10.0 seconds per vehicle). This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

Level of service B describes operations with delay in the range 10.1 seconds and 20.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.

TABLE 1

LEVEL OF SERVICE THRESHOLDS FOR SIGNALIZED INTERSECTIONS

AVERAGE CONTROL DELAY PER VEHICLE (SECONDS/VEHICLE)			LEVEL OF SERVICE
0.0	≤	10.0	A
10.1	to	20.0	B
21.1	to	35.0	C
35.1	to	55.0	D
55.1	to	80.0	E
	≥	80.0	F

Source: Highway Capacity Manual, 2000.

Level of service C describes operations with delay in the range 20.1 seconds and 35.0 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.

Level of service D describes operations with delay in the range 35.1 seconds and 55.0 seconds per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or higher v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are more frequent.

Level of service E describes operations with delay in the range of 55.1 seconds to 80.0 seconds per vehicle. This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.

Level of service F describes operations with delay in excess of over 80.0 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with over-saturation (i.e., when arrival flow rates exceed the capacity of the intersection). It may also occur at high v/c ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

UNSIGNALIZED INTERSECTIONS

For unsignalized intersections, level of service is determined by the computed or measured control delay and is defined for each minor movement. Level of service is not defined for the intersection as a whole. **Table 2** depicts the criteria, which are based on the average control delay for any particular minor movement.

TABLE 2

LEVEL OF SERVICE THRESHOLDS FOR UNSIGNALIZED INTERSECTIONS

AVERAGE CONTROL DELAY PER VEHICLE (SECONDS/VEHICLE)			LEVEL OF SERVICE	EXPECTED DELAY TO MINOR STREET TRAFFIC
0.0	≤	10.0	A	Little or no delay
10.1	to	15.0	B	Short traffic delays
15.1	to	25.0	C	Average traffic delays
25.1	to	35.0	D	Long traffic delays
35.1	to	50.0	E	Very long traffic delays
	≥	50.0	F	Severe congestion

Source: Highway Capacity Manual, 2000.

Level of Service F exists when there are insufficient gaps of suitable size to allow a side street demand to safely cross through a major street traffic stream. This level of service is generally evident from extremely long control delays experienced by side-street traffic and by queuing on the minor-street approaches. The method, however, is based on a constant critical gap size; that is, the critical gap remains constant no matter how long the side-street motorist waits. LOS F may also appear in the form of side-street vehicles selecting smaller-than-usual gaps. In such cases, safety may be a problem, and some disruption to the major traffic stream may result. It is important to note that LOS F may not always result in long queues but may result in adjustments to normal gap acceptance behavior, which are more difficult to observe in the field than queuing.

APPENDIX B

INTERSECTION TRAFFIC COUNT SHEETS

Intersection Turning Movement - Peak Hour Vehicle Count

LINSCOTT LAW & GREENSPAN engineers

Location:	#04	File Name:	ITM-18-123-04
Intersection:	Jamacha Road & Willow Glen Drive	Project:	LLG Ref. 3-18-2958
Date of Count:	Thursday, August 30, 2018		Cottonwood Sand Mine

AM	Jamacha Road Southbound			Willow Glen Drive Westbound			Jamacha Road Northbound			Willow Glen Drive Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
7:00	64	137	11	117	14	45	12	143	70	10	5	10	638
7:15	26	163	7	121	6	54	15	215	78	12	7	10	714
7:30	30	139	5	110	18	53	16	130	78	13	7	12	611
7:45	44	157	12	100	16	46	27	147	75	8	19	19	670
8:00	42	178	4	117	45	60	21	133	77	23	17	12	729
8:15	55	176	7	118	26	42	29	139	94	18	6	10	720
8:30	22	139	23	80	33	35	20	114	84	10	11	12	583
8:45	31	131	13	89	18	34	24	106	73	22	11	12	564
Total	314	1220	82	852	176	369	164	1127	629	116	83	97	5229
Approach%	19.4	75.5	5.1	61.0	12.6	26.4	8.5	58.7	32.8	39.2	28.0	32.8	
Total%	6.0	23.3	1.6	16.3	3.4	7.1	3.1	21.6	12.0	2.2	1.6	1.9	
AM Intersection Peak Hour:	07:30 to 08:30												
Volume	171	650	28	445	105	201	93	549	324	62	49	53	2,730
Approach%	20.1	76.6	3.3	59.3	14.0	26.8	9.6	56.8	33.5	37.8	29.9	32.3	
Total%	6.3	23.8	1.0	16.3	3.8	7.4	3.4	20.1	11.9	2.3	1.8	1.9	
PHF			0.89			0.85			0.92			0.79	0.94

PM	Jamacha Road Southbound			Willow Glen Drive Westbound			Jamacha Road Northbound			Willow Glen Drive Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
16:00	61	251	13	117	15	46	29	187	120	27	38	20	924
16:15	73	144	13	128	19	28	23	157	137	40	42	12	816
16:30	62	213	16	119	16	41	26	206	141	37	32	13	922
16:45	82	198	26	117	22	33	47	163	132	49	42	19	930
17:00	57	224	22	156	18	33	31	179	105	38	35	19	917
17:15	89	193	30	117	18	40	45	192	150	42	33	16	965
17:30	68	141	19	130	33	29	49	162	175	43	42	19	910
17:45	72	155	28	109	19	24	53	153	155	52	28	24	872
Total	564	1519	167	993	160	274	303	1399	1115	328	292	142	7256
Approach%	25.1	67.5	7.4	69.6	11.2	19.2	10.8	49.7	39.6	43.0	38.3	18.6	
Total%	7.8	20.9	2.3	13.7	2.2	3.8	4.2	19.3	15.4	4.5	4.0	2.0	
PM Intersection Peak Hour:	16:30 to 17:30												
Volume	290	828	94	509	74	147	149	740	528	166	142	67	3,734
Approach%	23.9	68.3	7.8	69.7	10.1	20.1	10.5	52.2	37.3	44.3	37.9	17.9	
Total%	7.8	22.2	2.5	13.6	2.0	3.9	4.0	19.8	14.1	4.4	3.8	1.8	
PHF			0.97			0.88			0.92			0.85	0.97

Intersection Turning Movement - Bicycle & Pedestrian Count

LINSCOTT LAW & GREENSPAN engineers

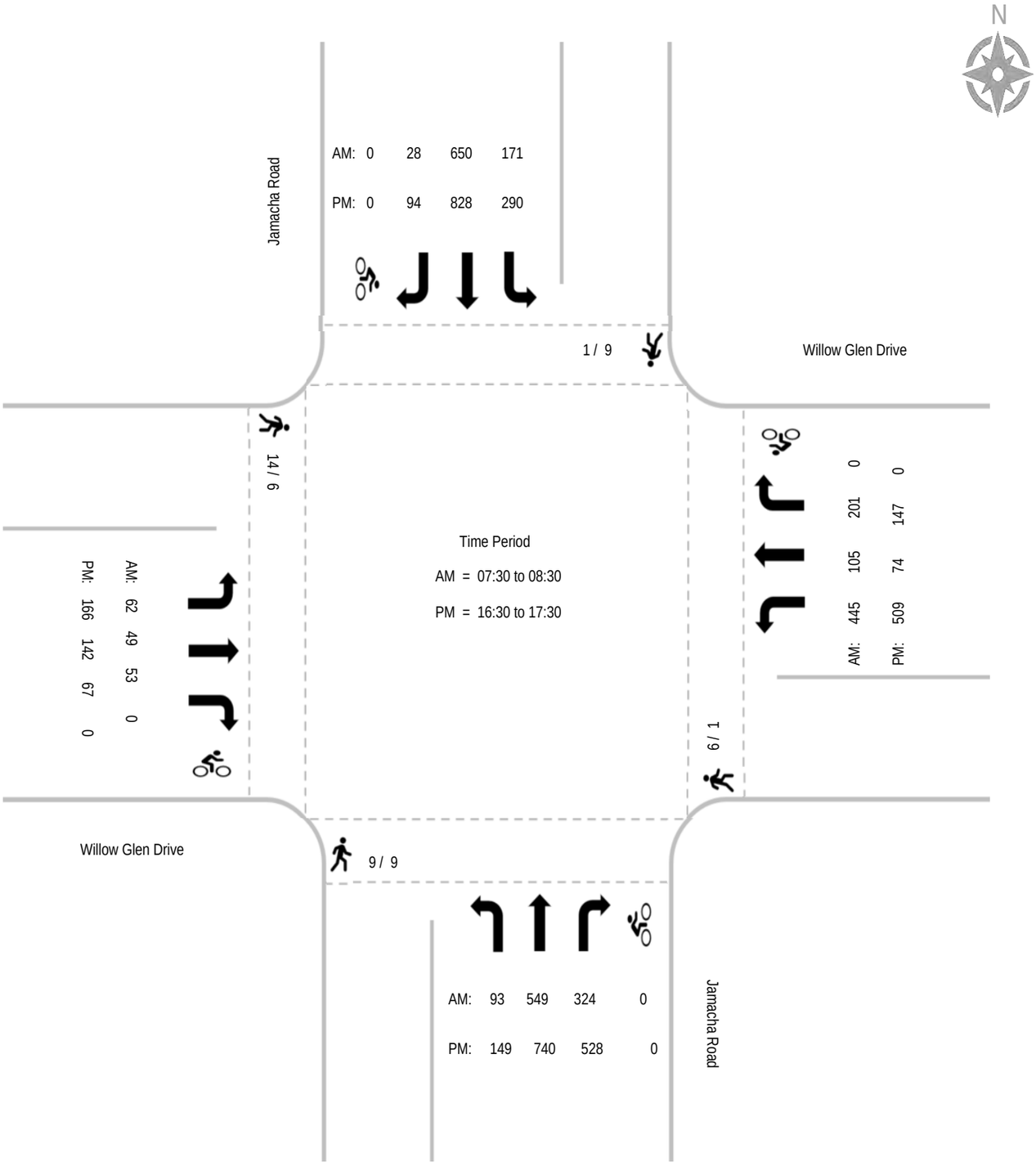
Location:	#04	File Name:	ITM-18-123-04
Intersection:	Jamacha Road & Willow Glen Drive	Project:	LLG Ref. 3-18-2958
Date of Count:	Thursday, August 30, 2018		Cottonwood Sand Mine

AM	Jamacha Road Southbound				Willow Glen Drive Westbound				Jamacha Road Northbound				Willow Glen Drive Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
7:00	0	0	0	0	1	0	0	0	1	0	0	0	2	0	0	0	4	0
7:15	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
7:30	0	0	0	0	2	0	0	0	3	0	0	0	6	0	0	0	11	0
7:45	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	3	0
8:30	0	0	0	0	1	0	0	0	4	0	0	0	2	0	0	0	7	0
8:45	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0
Ped Total	1				6				9				14				30	
Bike Total		0	0	0		0	0	0		0	0	0		0	0	0		0

PM	Jamacha Road Southbound				Willow Glen Drive Westbound				Jamacha Road Northbound				Willow Glen Drive Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
16:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
16:15	2	0	0	0	0	0	0	0	5	0	0	0	5	0	0	0	12	0
16:30	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0
16:45	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0
17:00	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
17:30	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
17:45	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	3	0
Ped Total	9				1				9				6				25	
Bike Total		0	0	0		0	0	0		0	0	0		0	0	0		0

Intersection Turning Movement - Peak Hour Summary

Location:	#04	File Name:	ITM-18-123-04
Intersection:	Jamacha Road & Willow Glen Drive	Project:	LLG Ref. 3-18-2958
Date of Count:	Thursday, August 30, 2018		Cottonwood Sand Mine



Intersection Turning Movement - Peak Hour Vehicle Count

LINSCOTT LAW & GREENSPAN engineers

Location:	#06 R1	File Name:	ITM-18-123-06 R1
Intersection:	Willow Glen Drive & Muirfield Drive	Project:	LLG Ref. 3-18-2958
Date of Count:	Thursday, August 30, 2018		Cottonwood Sand Mine

AM	Muirfield Drive Southbound			Willow Glen Drive Westbound			- Northbound			Willow Glen Drive Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
7:00	30	0	17	0	149	3	0	0	0	2	163	0	364
7:15	4	0	11	0	154	4	0	0	0	3	147	0	323
7:30	12	0	12	0	189	6	0	0	0	4	142	0	365
7:45	13	0	8	0	176	4	0	0	0	4	149	0	354
8:00	6	0	18	0	150	12	0	0	0	2	108	0	296
8:15	5	0	9	0	163	9	0	0	0	6	135	0	327
8:30	1	0	12	0	182	3	0	0	0	7	138	0	343
8:45	1	0	17	0	158	3	0	0	0	6	135	0	320
Total	72	0	104	0	1321	44	0	0	0	34	1117	0	2692
Approach%	40.9	-	59.1	-	96.8	3.2	-	-	-	3.0	97.0	-	
Total%	2.7	-	3.9	-	49.1	1.6	-	-	-	1.3	41.5	-	

AM Intersection Peak Hour: **07:00 to 08:00**

Volume	59	-	48	-	668	17	-	-	-	13	601	-	1,406
Approach%	55.1	-	44.9	-	97.5	2.5	-	-	-	2.1	97.9	-	
Total%	4.2	-	3.4	-	47.5	1.2	-	-	-	0.9	42.7	-	
PHF			0.57			0.88			#DIV/0!			0.93	0.91

PM	Muirfield Drive Southbound			Willow Glen Drive Westbound			- Northbound			Willow Glen Drive Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
16:00	9	0	8	0	171	2	0	0	0	13	235	0	438
16:15	2	0	6	0	179	3	0	0	0	11	242	0	443
16:30	6	0	9	0	154	4	0	0	0	6	231	0	410
16:45	9	0	7	0	177	1	0	0	0	8	249	0	451
17:00	9	0	9	0	165	6	0	0	0	18	226	0	433
17:15	2	0	13	0	139	3	0	0	0	18	232	0	407
17:30	3	0	14	0	168	4	0	0	0	14	213	0	416
17:45	5	0	17	0	147	2	0	0	0	13	212	0	396
Total	45	0	83	0	1300	25	0	0	0	101	1840	0	3394
Approach%	35.2	-	64.8	-	98.1	1.9	-	-	-	5.2	94.8	-	
Total%	1.3	-	2.4	-	38.3	0.7	-	-	-	3.0	54.2	-	

PM Intersection Peak Hour: **16:00 to 17:00**

Volume	26	-	30	-	681	10	-	-	-	38	957	-	1,742
Approach%	46.4	-	53.6	-	98.6	1.4	-	-	-	3.8	96.2	-	
Total%	1.5	-	1.7	-	39.1	0.6	-	-	-	2.2	54.9	-	
PHF			0.82			0.95			#DIV/0!			0.97	0.98

Intersection Turning Movement - Bicycle & Pedestrian Count

LINSCOTT LAW & GREENSPAN engineers

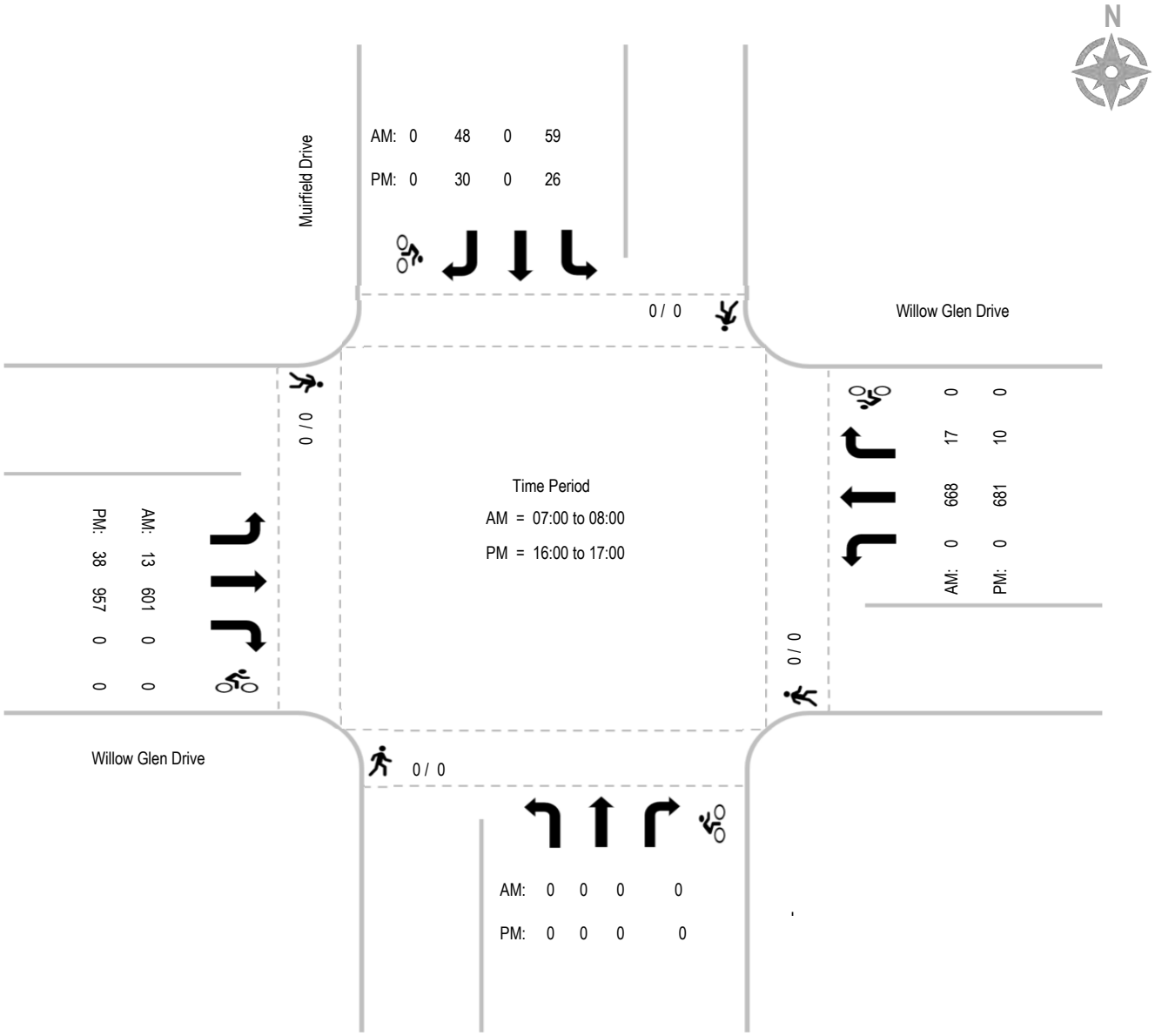
Location:	#06 R1	File Name:	ITM-18-123-06 R1
Intersection:	Willow Glen Drive & Muirfield Drive	Project:	LLG Ref. 3-18-2958
Date of Count:	Thursday, August 30, 2018		Cottonwood Sand Mine

AM	Muirfield Drive Southbound				Willow Glen Drive Westbound				- Northbound				Willow Glen Drive Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Total	0				0				0				0				0	
Bike Total		0	0	0		0	0	0		0	0	0		0	0	0		0

PM	Muirfield Drive Southbound				Willow Glen Drive Westbound				- Northbound				Willow Glen Drive Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Total	0				0				0				0				0	
Bike Total		0	0	0		0	0	0		0	0	0		0	0	0		0

Intersection Turning Movement - Peak Hour Summary

LINSCOTT LAW & GREENSPAN engineers	Location:	#06 R1	File Name: ITM-18-123-06 R1
	Intersection:	Willow Glen Drive & Muirfield Drive	Project: LLG Ref. 3-18-2958
	Date of Count:	Thursday, August 30, 2018	Cottonwood Sand Mine



Intersection Turning Movement - Peak Hour Vehicle Count

LINSCOTT LAW & GREENSPAN engineers

Location:	#07 R1	File Name:	ITM-18-123-07 R1
Intersection:	Willow Glen Drive & Steele Canyon Road	Project:	LLG Ref. 3-18-2958
Date of Count:	Thursday, August 30, 2018		Cottonwood Sand Mine

AM	Steele Canyon Road Southbound			Willow Glen Drive Westbound			Steele Canyon Road Northbound			Willow Glen Drive Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
7:00	0	24	1	57	46	4	123	5	56	3	41	141	501
7:15	1	8	8	45	39	2	130	4	54	2	40	124	457
7:30	0	28	4	35	61	0	134	7	44	3	54	120	490
7:45	1	51	2	59	74	3	123	5	35	2	51	122	528
8:00	1	8	5	28	71	1	101	11	46	0	47	67	386
8:15	0	4	5	38	72	3	108	17	48	0	54	103	452
8:30	0	9	0	19	68	0	124	8	42	0	69	91	430
8:45	1	5	6	26	60	1	113	4	36	2	59	63	376
Total	4	137	31	307	491	14	956	61	361	12	415	831	3620
Approach%	2.3	79.7	18.0	37.8	60.5	1.7	69.4	4.4	26.2	1.0	33.0	66.1	
Total%	0.1	3.8	0.9	8.5	13.6	0.4	26.4	1.7	10.0	0.3	11.5	23.0	

AM Intersection Peak Hour: **07:00 to 08:00**

Volume	2	111	15	196	220	9	510	21	189	10	186	507	1,976
Approach%	1.6	86.7	11.7	46.1	51.8	2.1	70.8	2.9	26.3	1.4	26.5	72.1	
Total%	0.1	5.6	0.8	9.9	11.1	0.5	25.8	1.1	9.6	0.5	9.4	25.7	
PHF			0.59			0.78			0.96			0.95	0.89

PM	Steele Canyon Road Southbound			Willow Glen Drive Westbound			Steele Canyon Road Northbound			Willow Glen Drive Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
16:00	0	12	1	66	88	1	101	10	40	3	97	161	580
16:15	0	14	0	79	87	0	122	1	21	0	119	135	578
16:30	2	13	0	89	78	0	93	3	29	1	99	149	556
16:45	0	5	0	61	81	4	106	7	33	1	99	162	559
17:00	2	17	5	66	80	4	97	5	31	0	100	146	553
17:15	1	9	2	56	74	1	65	3	44	3	101	133	492
17:30	2	13	1	38	87	3	70	6	34	0	88	125	467
17:45	2	10	3	33	83	0	84	4	43	0	83	140	485
Total	9	93	12	488	658	13	738	39	275	8	786	1151	4270
Approach%	7.9	81.6	10.5	42.1	56.8	1.1	70.2	3.7	26.1	0.4	40.4	59.2	
Total%	0.2	2.2	0.3	11.4	15.4	0.3	17.3	0.9	6.4	0.2	18.4	27.0	

PM Intersection Peak Hour: **16:00 to 17:00**

Volume	2	44	1	295	334	5	422	21	123	5	414	607	2,273
Approach%	4.3	93.6	2.1	46.5	52.7	0.8	74.6	3.7	21.7	0.5	40.4	59.2	
Total%	0.1	1.9	0.0	13.0	14.7	0.2	18.6	0.9	5.4	0.2	18.2	26.7	
PHF			0.78			0.95			0.94			0.98	0.88

Intersection Turning Movement - Bicycle & Pedestrian Count

LINSCOTT LAW & GREENSPAN engineers

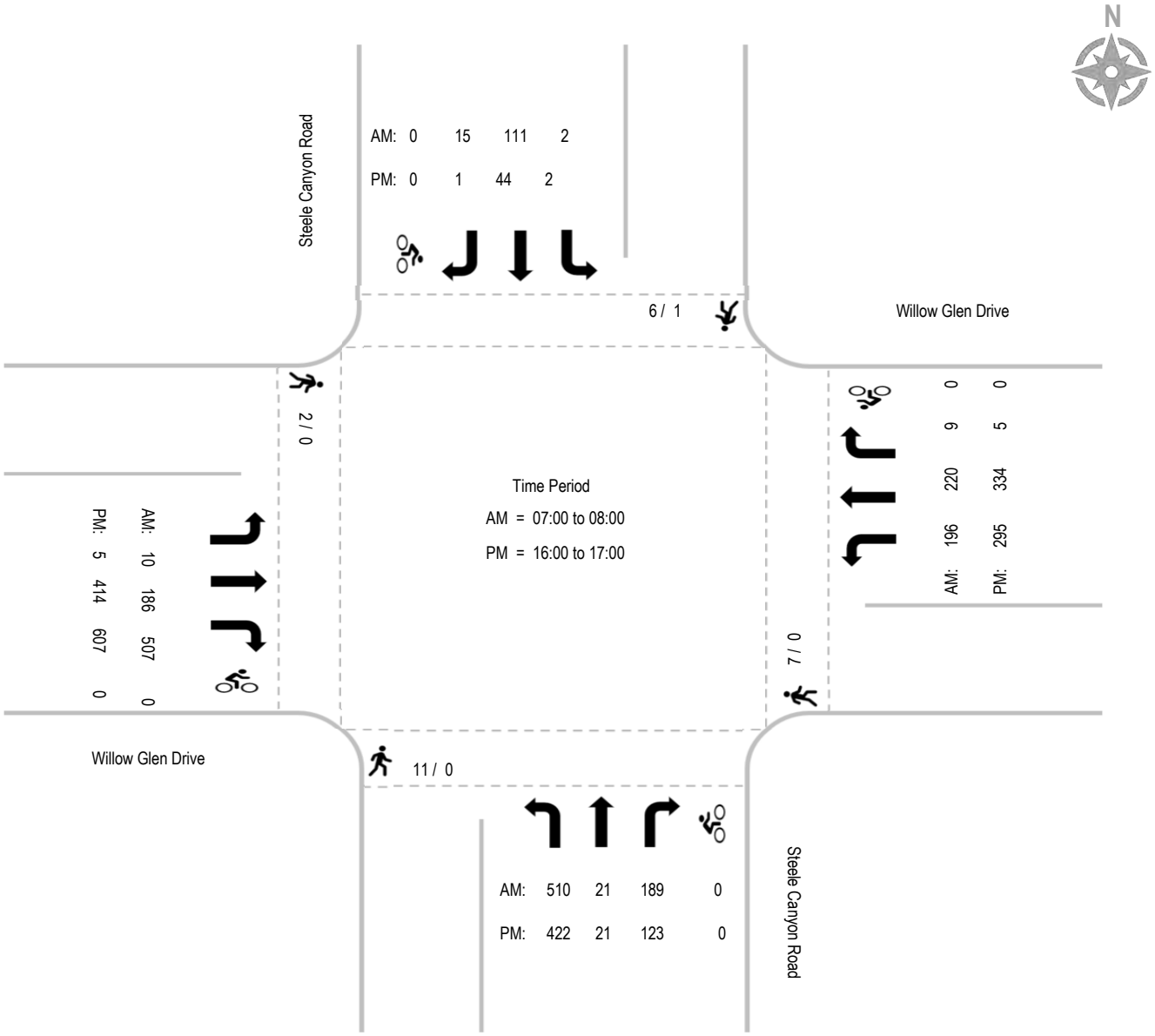
Location:	#07 R1	File Name:	ITM-18-123-07 R1
Intersection:	Willow Glen Drive & Steele Canyon Road	Project:	LLG Ref. 3-18-2958
Date of Count:	Thursday, August 30, 2018		Cottonwood Sand Mine

AM	Steele Canyon Road Southbound				Willow Glen Drive Westbound				Steele Canyon Road Northbound				Willow Glen Drive Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
7:00	1	0	0	0	6	0	0	0	4	0	0	0	0	0	0	0	11	0
7:15	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	3	0
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0
8:00	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	2	0
8:15	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	4	0
8:30	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0
8:45	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
Ped Total	6				7				11				2				26	
Bike Total		0	0	0		0	0	0		0	0	0		0	0	0		0

PM	Steele Canyon Road Southbound				Willow Glen Drive Westbound				Steele Canyon Road Northbound				Willow Glen Drive Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Total	1				0				0				0				1	
Bike Total		0	0	0		0	0	0		0	0	0		0	0	0		0

Intersection Turning Movement - Peak Hour Summary

LINSCOTT LAW & GREENSPAN engineers	Location:	#07 R1	File Name: ITM-18-123-07 R1
	Intersection:	Willow Glen Drive & Steele Canyon Road	Project: LLG Ref. 3-18-2958
	Date of Count:	Thursday, August 30, 2018	Cottonwood Sand Mine



Intersection Turning Movement - Peak Hour Vehicle Count

LINSCOTT LAW & GREENSPAN engineers

Location:	#08	File Name:	ITM-18-123-08
Intersection:	Willow Glen Drive & Project Driveway (West Side)	Project:	LLG Ref. 3-18-2958
Date of Count:	Thursday, August 30, 2018		Cottonwood Sand Mine

AM	Private Driveway Southbound			Willow Glen Drive Westbound			Project Drwy (West) Northbound			Willow Glen Drive Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
7:00	0	0	0	0	74	0	0	0	0	0	84	0	158
7:15	0	0	0	0	77	0	0	0	0	0	93	1	171
7:30	0	0	0	0	84	0	0	0	0	1	85	1	171
7:45	0	0	0	0	103	2	0	0	0	0	84	3	192
8:00	0	0	0	0	86	0	0	0	0	0	100	3	189
8:15	0	0	0	0	78	0	0	0	0	0	95	8	181
8:30	0	0	0	0	74	0	1	0	0	1	93	3	172
8:45	0	0	0	1	131	0	0	0	0	0	112	8	252
Total	0	0	0	1	707	2	1	0	0	2	746	27	1486
Approach%	-	-	-	0.1	99.6	0.3	100.0	-	-	0.3	96.3	3.5	
Total%	-	-	-	0.1	47.6	0.1	0.1	-	-	0.1	50.2	1.8	

AM Intersection Peak Hour: **08:00 to 09:00**

Volume	-	-	-	1	369	-	1	-	-	1	400	22	794
Approach%	-	-	-	0.3	99.7	-	100.0	-	-	0.2	94.6	5.2	
Total%	-	-	-	0.1	46.5	-	0.1	-	-	0.1	50.4	2.8	
PHF			#DIV/0!			0.70			0.25			0.88	0.79

PM	Private Driveway Southbound			Willow Glen Drive Westbound			Project Drwy (West) Northbound			Willow Glen Drive Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
16:00	0	0	0	0	114	0	1	0	0	0	126	2	243
16:15	0	0	0	0	131	0	2	0	0	0	133	1	267
16:30	0	0	0	0	132	0	1	0	0	0	132	0	265
16:45	0	0	0	0	131	0	0	0	0	0	124	0	255
17:00	0	0	0	0	104	0	3	0	0	0	103	0	210
17:15	0	0	0	0	100	0	1	0	0	0	114	1	216
17:30	0	0	0	0	123	0	1	0	0	0	121	1	246
17:45	0	0	0	0	104	0	0	0	0	0	120	0	224
Total	0	0	0	0	939	0	9	0	0	0	973	5	1926
Approach%	-	-	-	-	100.0	-	100.0	-	-	-	99.5	0.5	
Total%	-	-	-	-	48.8	-	0.5	-	-	-	50.5	0.3	

PM Intersection Peak Hour: **16:00 to 17:00**

Volume	-	-	-	-	508	-	4	-	-	-	515	3	1,030
Approach%	-	-	-	-	100.0	-	100.0	-	-	-	99.4	0.6	
Total%	-	-	-	-	49.3	-	0.4	-	-	-	50.0	0.3	
PHF			#DIV/0!			0.96			0.50			0.97	0.96

Intersection Turning Movement - Bicycle & Pedestrian Count

LINSCOTT LAW & GREENSPAN engineers

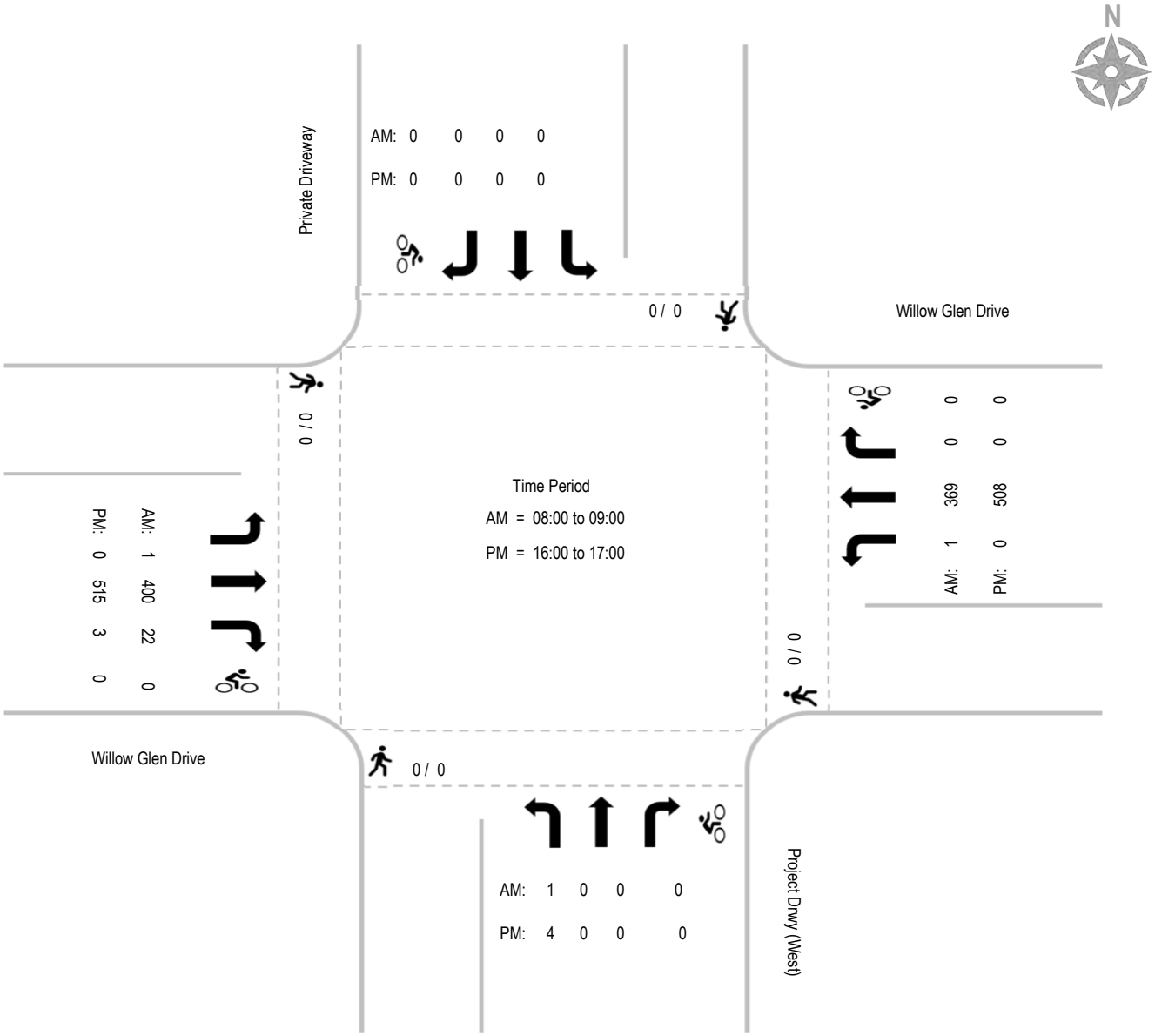
Location:	#08	File Name:	ITM-18-123-08
Intersection:	Willow Glen Drive & Project Driveway (West Side)	Project:	LLG Ref. 3-18-2958
Date of Count:	Thursday, August 30, 2018		Cottonwood Sand Mine

AM	Private Driveway Southbound				Willow Glen Drive Westbound				Project Drwy (West) Northbound				Willow Glen Drive Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Total	0				0				0				0				0	
Bike Total		0	0	0		0	0	0		0	0	0		0	0	0		0

PM	Private Driveway Southbound				Willow Glen Drive Westbound				Project Drwy (West) Northbound				Willow Glen Drive Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Total	0				0				0				0				0	
Bike Total		0	0	0		0	0	0		0	0	0		0	0	0		0

Intersection Turning Movement - Peak Hour Summary

Location:	#08	File Name:	ITM-18-123-08
Intersection:	Willow Glen Drive & Project Driveway (West Side)	Project:	LLG Ref. 3-18-2958
Date of Count:	Thursday, August 30, 2018		Cottonwood Sand Mine



Intersection Turning Movement - Peak Hour Vehicle Count

LINSCOTT LAW & GREENSPAN engineers

Location:	#09	File Name:	ITM-18-123-09
Intersection:	Willow Glen Drive & Project Driveway (East Side)	Project:	LLG Ref. 3-18-2958
Date of Count:	Thursday, August 30, 2018		Cottonwood Sand Mine

AM	- Southbound			Willow Glen Drive Westbound			Project Drwy (East) Northbound			Willow Glen Drive Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
7:00	0	0	0	2	72	0	0	0	1	0	84	0	159
7:15	0	0	0	0	77	0	0	0	0	0	94	0	171
7:30	0	0	0	0	84	0	0	0	1	0	86	0	171
7:45	0	0	0	0	103	0	0	0	0	0	87	0	190
8:00	0	0	0	3	83	0	0	0	0	0	103	0	189
8:15	0	0	0	1	77	0	0	0	0	0	103	0	181
8:30	0	0	0	1	73	0	1	0	0	0	96	0	171
8:45	0	0	0	0	132	0	1	0	0	0	119	1	253
Total	0	0	0	7	701	0	2	0	2	0	772	1	1485
Approach%	-	-	-	1.0	99.0	-	50.0	-	50.0	-	99.9	0.1	
Total%	-	-	-	0.5	47.2	-	0.1	-	0.1	-	52.0	0.1	

AM Intersection Peak Hour: **08:00 to 09:00**

Volume	-	-	-	5	365	-	2	-	-	-	421	1	794
Approach%	-	-	-	1.4	98.6	-	100.0	-	-	-	99.8	0.2	
Total%	-	-	-	0.6	46.0	-	0.3	-	-	-	53.0	0.1	
PHF			#DIV/0!			0.70			0.50			0.88	0.78

PM	- Southbound			Willow Glen Drive Westbound			Project Drwy (East) Northbound			Willow Glen Drive Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
16:00	0	0	0	0	114	0	1	0	3	0	128	0	246
16:15	0	0	0	2	129	0	0	0	3	0	134	0	268
16:30	0	0	0	0	132	0	0	0	0	0	132	0	264
16:45	0	0	0	0	131	0	1	0	1	0	124	0	257
17:00	0	0	0	0	104	0	1	0	1	0	103	0	209
17:15	0	0	0	0	100	0	1	0	3	0	115	0	219
17:30	0	0	0	1	122	4	1	0	1	0	122	0	251
17:45	0	0	0	0	104	0	0	0	1	0	120	0	225
Total	0	0	0	3	936	4	5	0	13	0	978	0	1939
Approach%	-	-	-	0.3	99.3	0.4	27.8	-	72.2	-	100.0	-	
Total%	-	-	-	0.2	48.3	0.2	0.3	-	0.7	-	50.4	-	

PM Intersection Peak Hour: **16:00 to 17:00**

Volume	-	-	-	2	506	-	2	-	7	-	518	-	1,035
Approach%	-	-	-	0.4	99.6	-	22.2	-	77.8	-	100.0	-	
Total%	-	-	-	0.2	48.9	-	0.2	-	0.7	-	50.0	-	
PHF			#DIV/0!			0.96			0.56			0.97	0.97

Intersection Turning Movement - Bicycle & Pedestrian Count

LINSCOTT LAW & GREENSPAN engineers

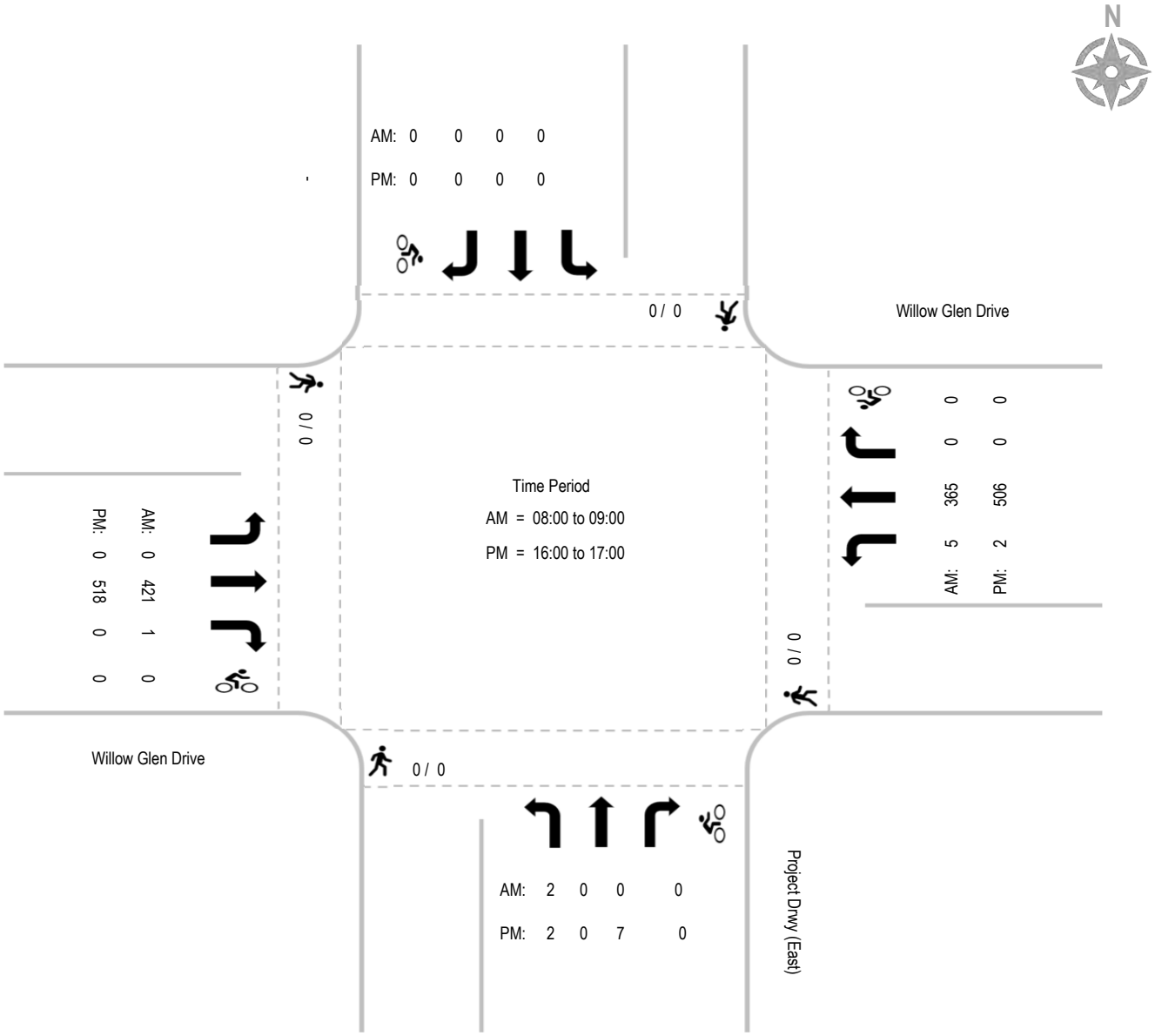
Location:	#09	File Name:	ITM-18-123-09
Intersection:	Willow Glen Drive & Project Driveway (East Side)	Project:	LLG Ref. 3-18-2958
Date of Count:	Thursday, August 30, 2018		Cottonwood Sand Mine

AM	- Southbound				Willow Glen Drive Westbound				Project Drwy (East) Northbound				Willow Glen Drive Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Total	0				0				0				0				0	
Bike Total		0	0	0		0	0	0		0	0	0		0	0	0		0

PM	- Southbound				Willow Glen Drive Westbound				Project Drwy (East) Northbound				Willow Glen Drive Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Total	0				0				0				0				0	
Bike Total		0	0	0		0	0	0		0	0	0		0	0	0		0

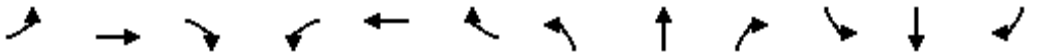
Intersection Turning Movement - Peak Hour Summary

LINSCOTT LAW & GREENSPAN engineers	Location:	#09	File Name: ITM-18-123-09
	Intersection:	Willow Glen Drive & Project Driveway (East Side)	Project: LLG Ref. 3-18-2958
	Date of Count:	Thursday, August 30, 2018	Cottonwood Sand Mine



APPENDIX C

INTERSECTION PEAK HOUR ANALYSIS WORKSHEETS (EXISTING)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	93	549	324	171	650	28	445	105	201	62	49	53
Future Volume (veh/h)	93	549	324	171	650	28	445	105	201	62	49	53
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.96
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	99	584	345	182	691	30	473	112	214	66	55	54
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	324	1383	669	344	1413	425	551	573	469	330	427	348
Arrive On Green	0.09	0.27	0.27	0.10	0.28	0.28	0.16	0.31	0.31	0.09	0.23	0.23
Sat Flow, veh/h	3456	5106	1536	3456	5106	1537	3456	1870	1533	3563	1870	1523
Grp Volume(v), veh/h	99	584	345	182	691	30	473	112	214	66	55	54
Grp Sat Flow(s),veh/h/ln	1728	1702	1536	1728	1702	1537	1728	1870	1533	1781	1870	1523
Q Serve(g_s), s	2.7	9.4	16.5	5.0	11.3	1.4	13.3	4.4	11.2	1.7	2.3	2.8
Cycle Q Clear(g_c), s	2.7	9.4	16.5	5.0	11.3	1.4	13.3	4.4	11.2	1.7	2.3	2.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	324	1383	669	344	1413	425	551	573	469	330	427	348
V/C Ratio(X)	0.31	0.42	0.52	0.53	0.49	0.07	0.86	0.20	0.46	0.20	0.13	0.16
Avail Cap(c_a), veh/h	347	1942	837	347	1942	584	752	1090	894	393	882	718
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.1	29.9	20.9	42.6	30.2	26.6	40.8	25.5	27.9	41.8	30.6	30.8
Incr Delay (d2), s/veh	0.2	0.2	0.6	0.7	0.3	0.1	5.8	0.2	0.7	0.3	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	3.8	5.8	2.2	4.6	0.5	6.0	2.0	4.1	0.8	1.1	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.3	30.1	21.5	43.4	30.4	26.7	46.6	25.7	28.6	42.1	30.7	31.0
LnGrp LOS	D	C	C	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h		1028			903			799			175	
Approach Delay, s/veh		28.4			32.9			38.8			35.1	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.1	33.3	22.2	29.1	14.6	33.9	14.4	36.8
Change Period (Y+Rc), s	* 5.2	6.3	6.3	* 6.3	* 5.2	6.3	* 5.2	6.3
Max Green Setting (Gmax), s	* 10	37.9	21.7	* 47	* 10	37.9	* 11	58.1
Max Q Clear Time (g_c+I1), s	7.0	18.5	15.3	4.8	4.7	13.3	3.7	13.2
Green Ext Time (p_c), s	0.1	5.3	0.6	0.5	0.1	5.2	0.1	1.5

Intersection Summary	
HCM 6th Ctrl Delay	33.1
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

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

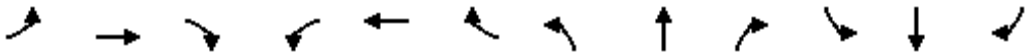
Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	711	0	0	728	17	0	0	0	59	0	48
Future Vol, veh/h	13	711	0	0	728	17	0	0	0	59	0	48
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	781	0	0	800	19	0	0	0	65	0	53

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	829	0	-	-	-	0	1219	1638	401	1249	1629	430
Stage 1	-	-	-	-	-	-	809	809	-	820	820	-
Stage 2	-	-	-	-	-	-	410	829	-	429	809	-
Critical Hdwy	4.14	-	-	-	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	-	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	798	-	0	0	-	-	136	100	599	129	101	573
Stage 1	-	-	0	0	-	-	340	392	-	335	387	-
Stage 2	-	-	0	0	-	-	589	383	-	574	392	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	790	-	-	-	-	-	120	97	593	125	98	562
Mov Cap-2 Maneuver	-	-	-	-	-	-	120	97	-	125	98	-
Stage 1	-	-	-	-	-	-	334	385	-	326	383	-
Stage 2	-	-	-	-	-	-	529	379	-	558	385	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	0	49.6
HCM LOS			A	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	790	-	-	-	192
HCM Lane V/C Ratio	-	0.018	-	-	-	0.612
HCM Control Delay (s)	0	9.6	-	-	-	49.6
HCM Lane LOS	A	A	-	-	-	E
HCM 95th %tile Q(veh)	-	0.1	-	-	-	3.5



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	253	507	196	220	9	510	21	189	2	111	15
Future Volume (veh/h)	10	253	507	196	220	9	510	21	189	2	111	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.96	1.00		0.94	1.00		0.95
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	11	284	570	220	247	10	573	24	212	2	125	17
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	23	590	831	252	1575	63	776	35	308	3	190	26
Arrive On Green	0.01	0.32	0.32	0.14	0.45	0.45	0.22	0.22	0.22	0.12	0.12	0.12
Sat Flow, veh/h	1781	1870	1508	1781	3475	140	3456	155	1369	25	1576	214
Grp Volume(v), veh/h	11	284	570	220	126	131	573	0	236	144	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1508	1781	1777	1838	1728	0	1524	1816	0	0
Q Serve(g_s), s	0.7	13.2	30.2	13.1	4.5	4.5	16.6	0.0	15.3	8.2	0.0	0.0
Cycle Q Clear(g_c), s	0.7	13.2	30.2	13.1	4.5	4.5	16.6	0.0	15.3	8.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.08	1.00		0.90	0.01		0.12
Lane Grp Cap(c), veh/h	23	590	831	252	805	833	776	0	342	218	0	0
V/C Ratio(X)	0.47	0.48	0.69	0.87	0.16	0.16	0.74	0.00	0.69	0.66	0.00	0.00
Avail Cap(c_a), veh/h	83	596	837	459	958	991	1261	0	556	454	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	52.9	29.8	18.4	45.4	17.4	17.4	38.9	0.0	38.4	45.4	0.0	0.0
Incr Delay (d2), s/veh	5.5	2.8	4.6	3.7	0.4	0.4	2.0	0.0	3.5	3.4	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	0.3	6.4	16.5	6.0	1.9	2.0	7.2	0.0	6.0	3.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.4	32.6	22.9	49.0	17.8	17.8	40.9	0.0	41.9	48.7	0.0	0.0
LnGrp LOS	E	C	C	D	B	B	D	A	D	D	A	A
Approach Vol, veh/h		865			477			809			144	
Approach Delay, s/veh		26.6			32.2			41.2			48.7	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	20.5	41.0		17.6	5.6	55.9		28.8				
Change Period (Y+Rc), s	* 5.2	7.0		4.6	* 4.2	7.0		4.6				
Max Green Setting (Gmax), s	* 28	34.4		27.0	* 5	58.2		39.4				
Max Q Clear Time (g_c+I1), s	15.1	32.2		10.2	2.7	6.5		18.6				
Green Ext Time (p_c), s	0.2	1.8		0.6	0.0	6.6		5.6				

Intersection Summary			
HCM 6th Ctrl Delay		34.3	
HCM 6th LOS		C	

Notes

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

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	422	22	1	424	1	0
Future Vol, veh/h	422	22	1	424	1	0
Conflicting Peds, #/hr	0	10	10	0	10	10
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	79	79	79	79	79	79
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	534	28	1	537	1	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	572	0	1107	568
Stage 1	-	-	-	-	558	-
Stage 2	-	-	-	-	549	-
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	-	-	1001	-	233	522
Stage 1	-	-	-	-	573	-
Stage 2	-	-	-	-	579	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	991	-	228	512
Mov Cap-2 Maneuver	-	-	-	-	228	-
Stage 1	-	-	-	-	567	-
Stage 2	-	-	-	-	573	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	20.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	228	-	-	991	-
HCM Lane V/C Ratio	0.006	-	-	0.001	-
HCM Control Delay (s)	20.9	-	-	8.6	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

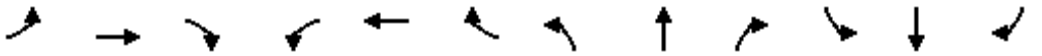
Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	421	1	5	423	2	0
Future Vol, veh/h	421	1	5	423	2	0
Conflicting Peds, #/hr	0	10	10	0	10	10
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	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	540	1	6	542	3	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	551	0	1115	561
Stage 1	-	-	-	-	551	-
Stage 2	-	-	-	-	564	-
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	-	-	1019	-	230	527
Stage 1	-	-	-	-	577	-
Stage 2	-	-	-	-	569	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1009	-	223	517
Mov Cap-2 Maneuver	-	-	-	-	223	-
Stage 1	-	-	-	-	571	-
Stage 2	-	-	-	-	559	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	21.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	223	-	-	1009	-
HCM Lane V/C Ratio	0.011	-	-	0.006	-
HCM Control Delay (s)	21.3	-	-	8.6	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	149	740	528	290	828	94	509	74	147	166	142	67
Future Volume (veh/h)	149	740	528	290	828	94	509	74	147	166	142	67
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.96
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	154	763	544	299	854	97	525	76	152	171	146	69
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	308	1655	768	357	1726	521	585	500	410	351	349	284
Arrive On Green	0.09	0.32	0.32	0.10	0.34	0.34	0.17	0.27	0.27	0.10	0.19	0.19
Sat Flow, veh/h	3456	5106	1541	3456	5106	1542	3456	1870	1536	3563	1870	1523
Grp Volume(v), veh/h	154	763	544	299	854	97	525	76	152	171	146	69
Grp Sat Flow(s),veh/h/ln	1728	1702	1541	1728	1702	1542	1728	1870	1536	1781	1870	1523
Q Serve(g_s), s	4.7	13.2	30.7	9.4	14.8	4.9	16.5	3.4	8.9	5.0	7.7	4.3
Cycle Q Clear(g_c), s	4.7	13.2	30.7	9.4	14.8	4.9	16.5	3.4	8.9	5.0	7.7	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	308	1655	768	357	1726	521	585	500	410	351	349	284
V/C Ratio(X)	0.50	0.46	0.71	0.84	0.49	0.19	0.90	0.15	0.37	0.49	0.42	0.24
Avail Cap(c_a), veh/h	351	1719	787	370	1746	527	631	933	766	394	791	644
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.2	29.8	22.0	48.9	29.2	26.0	45.2	31.1	33.1	47.4	39.9	38.5
Incr Delay (d2), s/veh	0.5	0.2	2.9	14.1	0.2	0.2	14.3	0.1	0.6	1.0	0.8	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	5.4	11.3	4.8	6.0	1.8	8.2	1.6	3.4	2.3	3.6	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.7	30.0	24.9	63.0	29.4	26.1	59.5	31.2	33.7	48.5	40.7	38.9
LnGrp LOS	D	C	C	E	C	C	E	C	C	D	D	D
Approach Vol, veh/h		1461			1250			753			386	
Approach Delay, s/veh		30.1			37.2			51.4			43.8	
Approach LOS		C			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.7	42.3	25.1	27.0	15.1	43.9	16.1	36.0
Change Period (Y+Rc), s	* 5.2	6.3	6.3	* 6.3	* 5.2	6.3	* 5.2	6.3
Max Green Setting (Gmax), s	* 12	37.4	20.3	* 47	* 11	38.0	* 12	55.4
Max Q Clear Time (g_c+I1), s	11.4	32.7	18.5	9.7	6.7	16.8	7.0	10.9
Green Ext Time (p_c), s	0.0	2.9	0.3	1.1	0.1	6.5	0.2	1.0

Intersection Summary	
HCM 6th Ctrl Delay	38.0
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

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

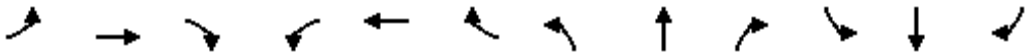
Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	38	1000	0	0	747	10	0	0	0	26	0	30
Future Vol, veh/h	38	1000	0	0	747	10	0	0	0	26	0	30
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	39	1020	0	0	762	10	0	0	0	27	0	31

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	782	0	-	-	-	0	1489	1880	520	1375	1875	406
Stage 1	-	-	-	-	-	-	1098	1098	-	777	777	-
Stage 2	-	-	-	-	-	-	391	782	-	598	1098	-
Critical Hdwy	4.14	-	-	-	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	-	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	832	-	0	0	-	-	86	70	501	104	71	594
Stage 1	-	-	0	0	-	-	227	287	-	356	405	-
Stage 2	-	-	0	0	-	-	605	403	-	456	287	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	824	-	-	-	-	-	78	66	496	98	67	583
Mov Cap-2 Maneuver	-	-	-	-	-	-	78	66	-	98	67	-
Stage 1	-	-	-	-	-	-	216	274	-	336	401	-
Stage 2	-	-	-	-	-	-	568	399	-	430	274	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	0	35.1
HCM LOS			A	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	824	-	-	-	176
HCM Lane V/C Ratio	-	0.047	-	-	-	0.326
HCM Control Delay (s)	0	9.6	-	-	-	35.1
HCM Lane LOS	A	A	-	-	-	E
HCM 95th %tile Q(veh)	-	0.1	-	-	-	1.3



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	414	607	295	334	5	422	21	123	2	44	1
Future Volume (veh/h)	5	414	607	295	334	5	422	21	123	2	44	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		0.93	1.00		0.91
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	6	470	690	335	380	6	480	24	140	2	50	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	14	674	832	364	2025	32	624	40	235	5	118	2
Arrive On Green	0.01	0.36	0.36	0.20	0.57	0.57	0.18	0.18	0.18	0.07	0.07	0.07
Sat Flow, veh/h	1781	1870	1516	1781	3578	56	3456	223	1302	70	1752	35
Grp Volume(v), veh/h	6	470	690	335	188	198	480	0	164	53	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1516	1781	1777	1858	1728	0	1525	1857	0	0
Q Serve(g_s), s	0.4	24.6	41.2	21.1	5.9	5.9	15.1	0.0	11.3	3.1	0.0	0.0
Cycle Q Clear(g_c), s	0.4	24.6	41.2	21.1	5.9	5.9	15.1	0.0	11.3	3.1	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.85	0.04		0.02
Lane Grp Cap(c), veh/h	14	674	832	364	1006	1051	624	0	276	125	0	0
V/C Ratio(X)	0.44	0.70	0.83	0.92	0.19	0.19	0.77	0.00	0.60	0.42	0.00	0.00
Avail Cap(c_a), veh/h	78	674	832	464	1041	1088	925	0	408	438	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	56.5	31.3	21.5	44.6	12.1	12.1	44.6	0.0	43.0	51.2	0.0	0.0
Incr Delay (d2), s/veh	8.3	5.9	9.4	18.3	0.4	0.4	3.1	0.0	2.9	2.3	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	0.2	12.0	22.1	11.1	2.4	2.5	6.7	0.0	4.5	1.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.8	37.2	30.9	62.9	12.5	12.5	47.7	0.0	45.9	53.4	0.0	0.0
LnGrp LOS	E	D	C	E	B	B	D	A	D	D	A	A
Approach Vol, veh/h		1166			721			644			53	
Approach Delay, s/veh		33.6			35.9			47.3			53.4	
Approach LOS		C			D			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	28.6	48.2		12.3	5.1	71.7		25.3				
Change Period (Y+Rc), s	* 5.2	7.0		4.6	* 4.2	7.0		4.6				
Max Green Setting (Gmax), s	* 30	41.2		27.0	* 5	67.0		30.6				
Max Q Clear Time (g_c+I1), s	23.1	43.2		5.1	2.4	7.9		17.1				
Green Ext Time (p_c), s	0.3	0.0		0.2	0.0	10.9		3.5				

Intersection Summary			
HCM 6th Ctrl Delay		38.0	
HCM 6th LOS		D	

Notes

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

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	536	3	0	630	4	0
Future Vol, veh/h	536	3	0	630	4	0
Conflicting Peds, #/hr	0	10	10	0	10	10
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	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	558	3	0	656	4	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	571	0	1236	580
Stage 1	-	-	-	-	570	-
Stage 2	-	-	-	-	666	-
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	-	-	1002	-	195	514
Stage 1	-	-	-	-	566	-
Stage 2	-	-	-	-	511	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	992	-	191	504
Mov Cap-2 Maneuver	-	-	-	-	191	-
Stage 1	-	-	-	-	560	-
Stage 2	-	-	-	-	506	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	24.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	191	-	-	992	-
HCM Lane V/C Ratio	0.022	-	-	-	-
HCM Control Delay (s)	24.3	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	536	0	2	628	2	7
Future Vol, veh/h	536	0	2	628	2	7
Conflicting Peds, #/hr	0	10	10	0	10	10
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	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	553	0	2	647	2	7

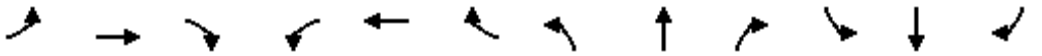
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	563	0	1224	573
Stage 1	-	-	-	-	563	-
Stage 2	-	-	-	-	661	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1008	-	198	519
Stage 1	-	-	-	-	570	-
Stage 2	-	-	-	-	514	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	998	-	193	509
Mov Cap-2 Maneuver	-	-	-	-	193	-
Stage 1	-	-	-	-	564	-
Stage 2	-	-	-	-	508	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	373	-	-	998	-
HCM Lane V/C Ratio	0.025	-	-	0.002	-
HCM Control Delay (s)	14.9	-	-	8.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

APPENDIX D

INTERSECTION PEAK HOUR ANALYSIS WORKSHEETS (EXISTING + PROJECT)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	93	549	336	173	650	28	446	105	201	62	49	53
Future Volume (veh/h)	93	549	336	173	650	28	446	105	201	62	49	53
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.96
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	99	584	357	184	691	30	474	112	214	66	55	54
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	322	1402	674	342	1431	431	551	571	468	328	425	346
Arrive On Green	0.09	0.27	0.27	0.10	0.28	0.28	0.16	0.31	0.31	0.09	0.23	0.23
Sat Flow, veh/h	3456	5106	1536	3456	5106	1537	3456	1870	1533	3563	1870	1522
Grp Volume(v), veh/h	99	584	357	184	691	30	474	112	214	66	55	54
Grp Sat Flow(s),veh/h/ln	1728	1702	1536	1728	1702	1537	1728	1870	1533	1781	1870	1522
Q Serve(g_s), s	2.7	9.4	17.2	5.1	11.3	1.4	13.4	4.4	11.3	1.7	2.4	2.9
Cycle Q Clear(g_c), s	2.7	9.4	17.2	5.1	11.3	1.4	13.4	4.4	11.3	1.7	2.4	2.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	322	1402	674	342	1431	431	551	571	468	328	425	346
V/C Ratio(X)	0.31	0.42	0.53	0.54	0.48	0.07	0.86	0.20	0.46	0.20	0.13	0.16
Avail Cap(c_a), veh/h	344	1926	832	344	1926	580	746	1082	887	390	875	712
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.5	29.9	21.0	43.1	30.1	26.5	41.1	25.8	28.2	42.2	30.9	31.1
Incr Delay (d2), s/veh	0.2	0.2	0.6	0.9	0.3	0.1	6.0	0.2	0.7	0.3	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	3.8	6.1	2.2	4.6	0.5	6.1	2.0	4.2	0.8	1.1	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.7	30.1	21.6	44.0	30.4	26.6	47.2	25.9	28.9	42.5	31.0	31.3
LnGrp LOS	D	C	C	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h		1040			905			800			175	
Approach Delay, s/veh		28.4			33.0			39.3			35.4	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.1	33.9	22.3	29.1	14.6	34.4	14.5	37.0
Change Period (Y+Rc), s	* 5.2	6.3	6.3	* 6.3	* 5.2	6.3	* 5.2	6.3
Max Green Setting (Gmax), s	* 10	37.9	21.7	* 47	* 10	37.9	* 11	58.1
Max Q Clear Time (g_c+I1), s	7.1	19.2	15.4	4.9	4.7	13.3	3.7	13.3
Green Ext Time (p_c), s	0.1	5.3	0.6	0.5	0.1	5.2	0.1	1.5

Intersection Summary	
HCM 6th Ctrl Delay	33.2
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

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

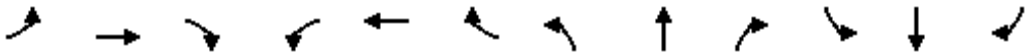
Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	722	3	0	729	17	0	0	0	59	0	48
Future Vol, veh/h	13	722	3	0	729	17	0	0	0	59	0	48
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	793	3	0	801	19	0	0	0	65	0	53

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	830	0	0	-	-	0	1244	1663	418	1256	1655	430
Stage 1	-	-	-	-	-	-	833	833	-	821	821	-
Stage 2	-	-	-	-	-	-	411	830	-	435	834	-
Critical Hdwy	4.14	-	-	-	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	-	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	798	-	-	0	-	-	131	96	584	128	97	573
Stage 1	-	-	-	0	-	-	329	382	-	335	387	-
Stage 2	-	-	-	0	-	-	589	383	-	570	381	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	790	-	-	-	-	-	115	92	573	124	93	562
Mov Cap-2 Maneuver	-	-	-	-	-	-	115	92	-	124	93	-
Stage 1	-	-	-	-	-	-	320	371	-	326	383	-
Stage 2	-	-	-	-	-	-	529	379	-	555	370	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	0	50.1
HCM LOS			A	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	-	790	-	-	-	-	191
HCM Lane V/C Ratio	-	0.018	-	-	-	-	0.616
HCM Control Delay (s)	0	9.6	-	-	-	-	50.1
HCM Lane LOS	A	A	-	-	-	-	F
HCM 95th %tile Q(veh)	-	0.1	-	-	-	-	3.5



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	264	507	196	221	9	510	21	189	2	111	15
Future Volume (veh/h)	10	264	507	196	221	9	510	21	189	2	111	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.96	1.00		0.94	1.00		0.95
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	11	297	570	220	248	10	573	24	212	2	125	17
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	23	597	836	252	1587	64	773	35	306	3	189	26
Arrive On Green	0.01	0.32	0.32	0.14	0.46	0.46	0.22	0.22	0.22	0.12	0.12	0.12
Sat Flow, veh/h	1781	1870	1509	1781	3476	139	3456	155	1369	25	1576	214
Grp Volume(v), veh/h	11	297	570	220	126	132	573	0	236	144	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1509	1781	1777	1838	1728	0	1524	1816	0	0
Q Serve(g_s), s	0.7	14.0	30.3	13.2	4.5	4.6	16.9	0.0	15.5	8.3	0.0	0.0
Cycle Q Clear(g_c), s	0.7	14.0	30.3	13.2	4.5	4.6	16.9	0.0	15.5	8.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.08	1.00		0.90	0.01		0.12
Lane Grp Cap(c), veh/h	23	597	836	252	811	840	773	0	341	218	0	0
V/C Ratio(X)	0.48	0.50	0.68	0.87	0.16	0.16	0.74	0.00	0.69	0.66	0.00	0.00
Avail Cap(c_a), veh/h	82	606	843	437	946	979	1246	0	550	449	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	53.6	30.1	18.3	46.0	17.4	17.4	39.5	0.0	39.0	46.0	0.0	0.0
Incr Delay (d2), s/veh	5.5	2.9	4.5	4.0	0.4	0.4	2.0	0.0	3.6	3.4	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	0.3	6.8	16.7	6.1	1.9	2.0	7.3	0.0	6.1	3.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.1	33.1	22.8	50.0	17.8	17.8	41.5	0.0	42.5	49.4	0.0	0.0
LnGrp LOS	E	C	C	D	B	B	D	A	D	D	A	A
Approach Vol, veh/h		878			478			809			144	
Approach Delay, s/veh		26.7			32.6			41.8			49.4	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	20.6	41.9		17.7	5.6	56.9		29.0				
Change Period (Y+Rc), s	* 5.2	7.0		4.6	* 4.2	7.0		4.6				
Max Green Setting (Gmax), s	* 27	35.4		27.0	* 5	58.2		39.4				
Max Q Clear Time (g_c+I1), s	15.2	32.3		10.3	2.7	6.6		18.9				
Green Ext Time (p_c), s	0.2	2.5		0.6	0.0	6.7		5.6				

Intersection Summary	
HCM 6th Ctrl Delay	34.6
HCM 6th LOS	C

Notes

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

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	421	34	6	426	0	0
Future Vol, veh/h	421	34	6	426	0	0
Conflicting Peds, #/hr	0	10	10	0	10	10
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	79	79	79	79	79	79
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	533	43	8	539	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	586	0	1130	575
Stage 1	-	-	-	-	565	-
Stage 2	-	-	-	-	565	-
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	-	-	989	-	225	518
Stage 1	-	-	-	-	569	-
Stage 2	-	-	-	-	569	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	980	-	218	508
Mov Cap-2 Maneuver	-	-	-	-	218	-
Stage 1	-	-	-	-	563	-
Stage 2	-	-	-	-	557	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	980	-
HCM Lane V/C Ratio	-	-	-	0.008	-
HCM Control Delay (s)	0	-	-	8.7	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

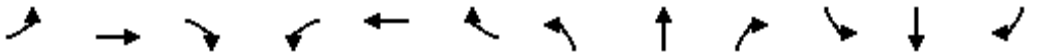
Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	421	0	0	428	4	0
Future Vol, veh/h	421	0	0	428	4	0
Conflicting Peds, #/hr	0	10	10	0	10	10
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	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	540	0	0	549	5	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	550	0	1109	560
Stage 1	-	-	-	-	550	-
Stage 2	-	-	-	-	559	-
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	-	-	1020	-	232	528
Stage 1	-	-	-	-	578	-
Stage 2	-	-	-	-	572	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1010	-	227	518
Mov Cap-2 Maneuver	-	-	-	-	227	-
Stage 1	-	-	-	-	572	-
Stage 2	-	-	-	-	566	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	21.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	227	-	-	1010	-
HCM Lane V/C Ratio	0.023	-	-	-	-
HCM Control Delay (s)	21.2	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	149	740	530	290	828	94	520	74	149	166	142	67
Future Volume (veh/h)	149	740	530	290	828	94	520	74	149	166	142	67
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.96
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	154	763	546	299	854	97	536	76	154	171	146	69
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	307	1650	770	356	1724	520	594	504	414	349	348	283
Arrive On Green	0.09	0.32	0.32	0.10	0.34	0.34	0.17	0.27	0.27	0.10	0.19	0.19
Sat Flow, veh/h	3456	5106	1541	3456	5106	1542	3456	1870	1536	3563	1870	1523
Grp Volume(v), veh/h	154	763	546	299	854	97	536	76	154	171	146	69
Grp Sat Flow(s),veh/h/ln	1728	1702	1541	1728	1702	1542	1728	1870	1536	1781	1870	1523
Q Serve(g_s), s	4.7	13.3	30.9	9.5	14.9	5.0	17.0	3.5	9.1	5.1	7.7	4.3
Cycle Q Clear(g_c), s	4.7	13.3	30.9	9.5	14.9	5.0	17.0	3.5	9.1	5.1	7.7	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	307	1650	770	356	1724	520	594	504	414	349	348	283
V/C Ratio(X)	0.50	0.46	0.71	0.84	0.50	0.19	0.90	0.15	0.37	0.49	0.42	0.24
Avail Cap(c_a), veh/h	350	1710	789	368	1738	525	628	928	762	392	787	641
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.5	30.1	22.0	49.2	29.4	26.1	45.3	31.0	33.1	47.7	40.1	38.7
Incr Delay (d2), s/veh	0.5	0.2	2.9	14.4	0.2	0.2	15.2	0.1	0.6	1.1	0.8	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	5.4	11.4	4.8	6.1	1.9	8.5	1.6	3.4	2.3	3.6	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.0	30.3	24.9	63.5	29.6	26.3	60.5	31.2	33.7	48.8	40.9	39.2
LnGrp LOS	D	C	C	E	C	C	E	C	C	D	D	D
Approach Vol, veh/h		1463			1250			766			386	
Approach Delay, s/veh		30.2			37.5			52.2			44.1	
Approach LOS		C			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.7	42.4	25.5	27.1	15.1	44.0	16.1	36.4
Change Period (Y+Rc), s	* 5.2	6.3	6.3	* 6.3	* 5.2	6.3	* 5.2	6.3
Max Green Setting (Gmax), s	* 12	37.4	20.3	* 47	* 11	38.0	* 12	55.4
Max Q Clear Time (g_c+I1), s	11.5	32.9	19.0	9.7	6.7	16.9	7.1	11.1
Green Ext Time (p_c), s	0.0	2.8	0.2	1.1	0.1	6.5	0.2	1.0

Intersection Summary	
HCM 6th Ctrl Delay	38.3
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

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

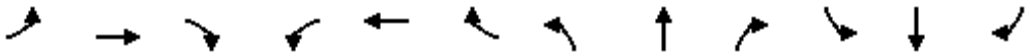
Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	38	1002	0	0	760	10	0	0	3	26	0	30
Future Vol, veh/h	38	1002	0	0	760	10	0	0	3	26	0	30
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	39	1022	0	0	776	10	0	0	3	27	0	31

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	796	0	-	-	-	0	1498	1896	521	1390	1891	413
Stage 1	-	-	-	-	-	-	1100	1100	-	791	791	-
Stage 2	-	-	-	-	-	-	398	796	-	599	1100	-
Critical Hdwy	4.14	-	-	-	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	-	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	822	-	0	0	-	-	85	69	500	102	69	588
Stage 1	-	-	0	0	-	-	226	286	-	349	399	-
Stage 2	-	-	0	0	-	-	599	397	-	455	286	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	814	-	-	-	-	-	77	65	495	96	65	577
Mov Cap-2 Maneuver	-	-	-	-	-	-	77	65	-	96	65	-
Stage 1	-	-	-	-	-	-	215	272	-	329	395	-
Stage 2	-	-	-	-	-	-	562	393	-	426	272	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	12.3	35.7
HCM LOS			B	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	495	814	-	-	-	173
HCM Lane V/C Ratio	0.006	0.048	-	-	-	0.33
HCM Control Delay (s)	12.3	9.6	-	-	-	35.7
HCM Lane LOS	B	A	-	-	-	E
HCM 95th %tile Q(veh)	0	0.1	-	-	-	1.4



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	419	607	295	347	5	422	21	123	2	44	1
Future Volume (veh/h)	5	419	607	295	347	5	422	21	123	2	44	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		0.93	1.00		0.91
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	6	476	690	335	394	6	480	24	140	2	50	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	13	681	837	363	2038	31	621	40	234	5	118	2
Arrive On Green	0.01	0.36	0.36	0.20	0.57	0.57	0.18	0.18	0.18	0.07	0.07	0.07
Sat Flow, veh/h	1781	1870	1516	1781	3581	54	3456	223	1302	70	1752	35
Grp Volume(v), veh/h	6	476	690	335	195	205	480	0	164	53	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1516	1781	1777	1858	1728	0	1525	1857	0	0
Q Serve(g_s), s	0.4	25.2	42.2	21.4	6.2	6.2	15.3	0.0	11.5	3.2	0.0	0.0
Cycle Q Clear(g_c), s	0.4	25.2	42.2	21.4	6.2	6.2	15.3	0.0	11.5	3.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.85	0.04		0.02
Lane Grp Cap(c), veh/h	13	681	837	363	1011	1058	621	0	274	125	0	0
V/C Ratio(X)	0.44	0.70	0.82	0.92	0.19	0.19	0.77	0.00	0.60	0.42	0.00	0.00
Avail Cap(c_a), veh/h	77	681	837	443	1027	1074	912	0	403	433	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	57.3	31.4	21.7	45.2	12.1	12.1	45.3	0.0	43.7	51.9	0.0	0.0
Incr Delay (d2), s/veh	8.3	5.9	9.1	20.4	0.4	0.4	3.3	0.0	3.0	2.3	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	0.2	12.4	22.3	11.4	2.5	2.7	6.8	0.0	4.5	1.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.6	37.3	30.7	65.6	12.5	12.5	48.5	0.0	46.6	54.1	0.0	0.0
LnGrp LOS	E	D	C	E	B	B	D	A	D	D	A	A
Approach Vol, veh/h		1172			735			644			53	
Approach Delay, s/veh		33.6			36.7			48.1			54.1	
Approach LOS		C			D			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	28.8	49.2		12.4	5.1	73.0		25.4				
Change Period (Y+Rc), s	* 5.2	7.0		4.6	* 4.2	7.0		4.6				
Max Green Setting (Gmax), s	* 29	42.2		27.0	* 5	67.0		30.6				
Max Q Clear Time (g_c+I1), s	23.4	44.2		5.2	2.4	8.2		17.3				
Green Ext Time (p_c), s	0.3	0.0		0.2	0.0	11.3		3.5				

Intersection Summary			
HCM 6th Ctrl Delay		38.5	
HCM 6th LOS		D	

Notes

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

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	536	8	2	647	0	0
Future Vol, veh/h	536	8	2	647	0	0
Conflicting Peds, #/hr	0	10	10	0	10	10
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	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	558	8	2	674	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	576	0	1260	582
Stage 1	-	-	-	-	572	-
Stage 2	-	-	-	-	688	-
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	-	-	997	-	188	513
Stage 1	-	-	-	-	565	-
Stage 2	-	-	-	-	499	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	988	-	184	503
Mov Cap-2 Maneuver	-	-	-	-	184	-
Stage 1	-	-	-	-	559	-
Stage 2	-	-	-	-	493	-

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)	-	-	-	988	-
HCM Lane V/C Ratio	-	-	-	0.002	-
HCM Control Delay (s)	0	-	-	8.7	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	536	0	0	630	19	7
Future Vol, veh/h	536	0	0	630	19	7
Conflicting Peds, #/hr	0	10	10	0	10	10
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	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	553	0	0	649	20	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	563	0	1222	573
Stage 1	-	-	-	-	563	-
Stage 2	-	-	-	-	659	-
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	-	-	1008	-	198	519
Stage 1	-	-	-	-	570	-
Stage 2	-	-	-	-	515	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	998	-	194	509
Mov Cap-2 Maneuver	-	-	-	-	194	-
Stage 1	-	-	-	-	564	-
Stage 2	-	-	-	-	510	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	22.4
HCM LOS			C

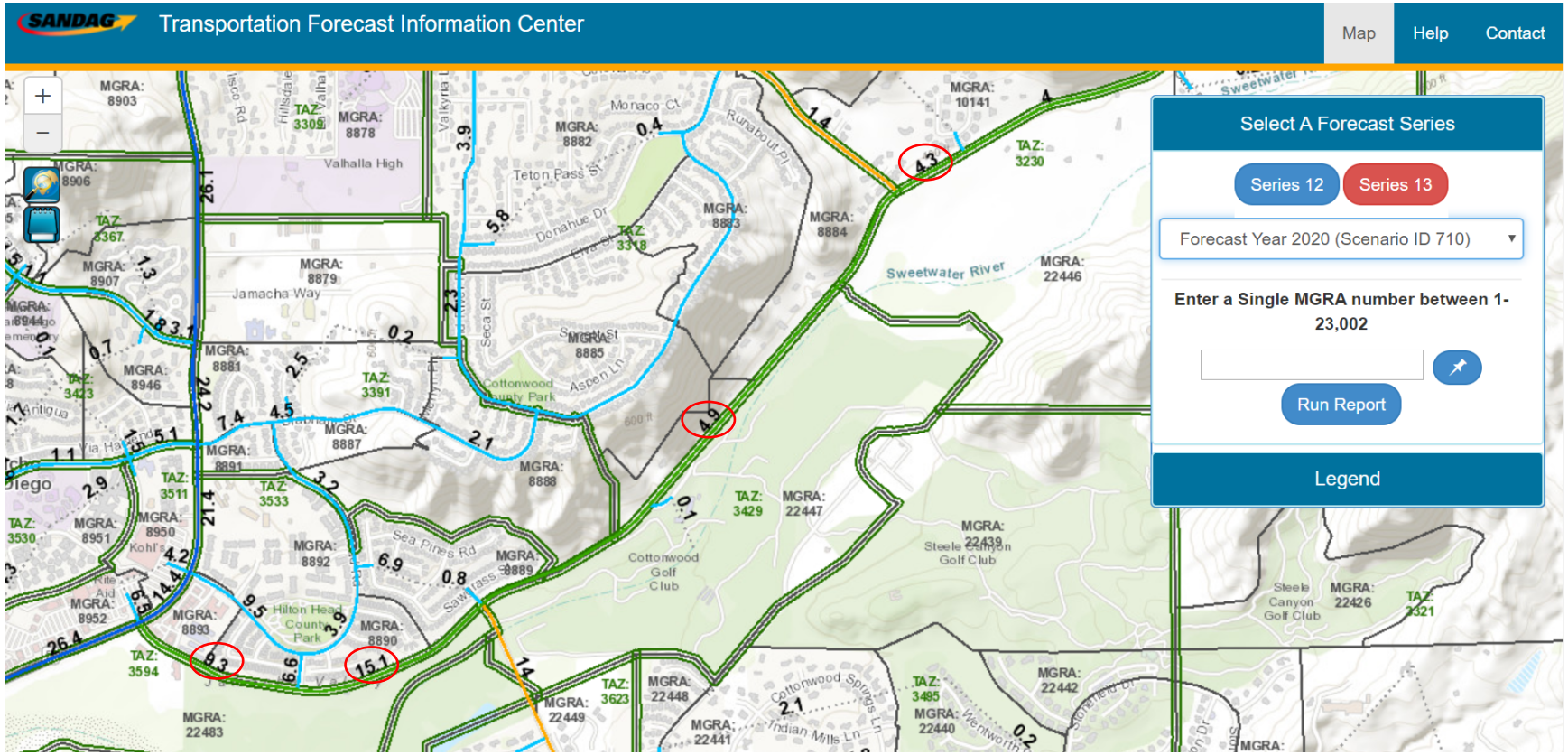
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	233	-	-	998	-
HCM Lane V/C Ratio	0.115	-	-	-	-
HCM Control Delay (s)	22.4	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0	-

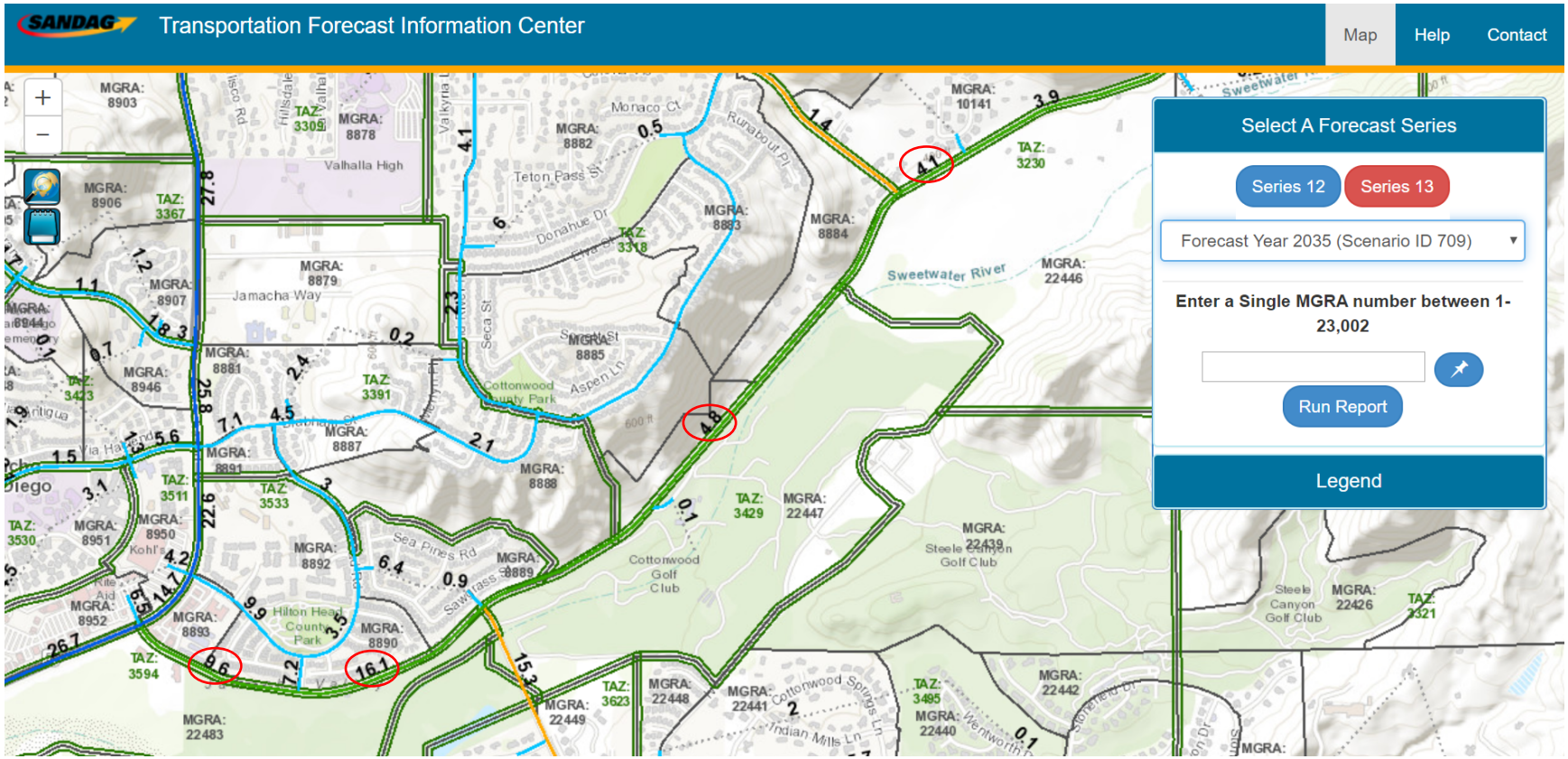
APPENDIX E

SANDAG SERIES 13 MODEL GROWTH SUMMARY

SANDAG Series 13 Model Growth Comparison

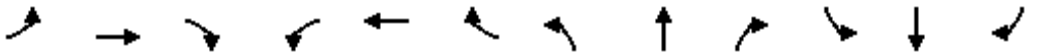
Corridor	Sgment	Year 2020	Year 2035	% Increase per Year
Willow Glen Drive	Jamacha Road to Muirfield Drive	9,300	9,600	0.22%
	Muirfield Drive to Steele Canyon Road	15,100	16,100	0.44%
	Steele Canyone Road to Hillsdale Road	4,900	4,800	-0.14%
	Hillsdale Road to Oak Drive	4,300	4,100	-0.31%


SANDAG
Transportation Forecast Information Center
Map
Help
Contact
Select A Forecast Series
Series 12
Series 13
Forecast Year 2020 (Scenario ID 710)
Enter a Single MGRA number between 1-23,002
Run Report
Legend
Sweetwater River
Cottonwood Golf Club
Steele Canyon Golf Club
Valhalla High
Jamacha Way
Teton Pass St
Monaco Ct
Donahue Dr
Aspen Ln
Sea Pines Rd
Hilton Head County Park
Cottonwood Springs Ln
Indian Mills Ln
Wentworth Dr


SANDAG
Transportation Forecast Information Center
Map
Help
Contact
Select A Forecast Series
Series 12
Series 13
Forecast Year 2035 (Scenario ID 709)
Enter a Single MGRA number between 1-23,002
Run Report
Legend
Valhalla High
Jamacha Way
Teton Pass St
Monaco Ct
Donahue Dr
Seca St
Aspen Ln
Cottonwood County Park
Sweetwater River
Sea Pines Rd
Hilton Head County Park
Cottonwood Golf Club
Steele Canyon Golf Club
Cottonwood Springs Ln
Indian Mills Ln
Kohl's

APPENDIX F

INTERSECTION PEAK HOUR ANALYSIS WORKSHEETS (NEAR-TERM)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	96	566	351	185	670	29	506	108	229	64	50	55
Future Volume (veh/h)	96	566	351	185	670	29	506	108	229	64	50	55
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.96
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	102	602	373	197	713	31	538	115	244	68	58	56
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	314	1401	700	331	1425	429	608	595	489	324	416	339
Arrive On Green	0.09	0.27	0.27	0.10	0.28	0.28	0.18	0.32	0.32	0.09	0.22	0.22
Sat Flow, veh/h	3456	5106	1536	3456	5106	1537	3456	1870	1535	3563	1870	1521
Grp Volume(v), veh/h	102	602	373	197	713	31	538	115	244	68	58	56
Grp Sat Flow(s),veh/h/ln	1728	1702	1536	1728	1702	1537	1728	1870	1535	1781	1870	1521
Q Serve(g_s), s	2.9	10.1	18.4	5.7	12.2	1.5	15.8	4.7	13.4	1.8	2.6	3.1
Cycle Q Clear(g_c), s	2.9	10.1	18.4	5.7	12.2	1.5	15.8	4.7	13.4	1.8	2.6	3.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	314	1401	700	331	1425	429	608	595	489	324	416	339
V/C Ratio(X)	0.32	0.43	0.53	0.60	0.50	0.07	0.88	0.19	0.50	0.21	0.14	0.17
Avail Cap(c_a), veh/h	332	1858	838	332	1858	559	720	1043	856	376	844	687
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.3	31.1	20.8	45.2	31.5	27.6	41.9	25.8	28.8	43.9	32.5	32.7
Incr Delay (d2), s/veh	0.2	0.2	0.6	2.0	0.3	0.1	10.1	0.2	0.8	0.3	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	4.1	6.5	2.5	5.0	0.6	7.5	2.1	5.0	0.8	1.2	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.6	31.3	21.4	47.2	31.7	27.7	52.0	25.9	29.6	44.2	32.6	32.9
LnGrp LOS	D	C	C	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h		1077			941			897			182	
Approach Delay, s/veh		29.1			34.8			42.6			37.0	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.2	34.9	24.6	29.5	14.7	35.4	14.7	39.5
Change Period (Y+Rc), s	* 5.2	6.3	6.3	* 6.3	* 5.2	6.3	* 5.2	6.3
Max Green Setting (Gmax), s	* 10	37.9	21.7	* 47	* 10	37.9	* 11	58.1
Max Q Clear Time (g_c+I1), s	7.7	20.4	17.8	5.1	4.9	14.2	3.8	15.4
Green Ext Time (p_c), s	0.1	5.3	0.5	0.5	0.1	5.3	0.1	1.6

Intersection Summary	
HCM 6th Ctrl Delay	35.2
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

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

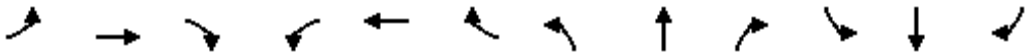
Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	759	0	0	820	18	0	0	0	61	0	49
Future Vol, veh/h	13	759	0	0	820	18	0	0	0	61	0	49
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	834	0	0	901	20	0	0	0	67	0	54

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	931	0	-	-	-	0	1323	1793	427	1376	1783	481
Stage 1	-	-	-	-	-	-	862	862	-	921	921	-
Stage 2	-	-	-	-	-	-	461	931	-	455	862	-
Critical Hdwy	4.14	-	-	-	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	-	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	731	-	0	0	-	-	114	80	576	104	81	531
Stage 1	-	-	0	0	-	-	316	370	-	291	347	-
Stage 2	-	-	0	0	-	-	550	344	-	554	370	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	724	-	-	-	-	-	100	78	571	101	79	521
Mov Cap-2 Maneuver	-	-	-	-	-	-	100	78	-	101	79	-
Stage 1	-	-	-	-	-	-	310	363	-	283	344	-
Stage 2	-	-	-	-	-	-	488	341	-	538	363	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	0	78.1
HCM LOS			A	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	724	-	-	-	158
HCM Lane V/C Ratio	-	0.02	-	-	-	0.765
HCM Control Delay (s)	0	10.1	-	-	-	78.1
HCM Lane LOS	A	B	-	-	-	F
HCM 95th %tile Q(veh)	-	0.1	-	-	-	4.8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	261	548	207	227	9	595	22	207	2	114	15
Future Volume (veh/h)	10	261	548	207	227	9	595	22	207	2	114	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.96	1.00		0.95	1.00		0.95
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	11	293	616	233	255	10	669	25	233	2	128	17
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	23	558	843	263	1537	60	860	37	343	3	189	25
Arrive On Green	0.01	0.30	0.30	0.15	0.44	0.44	0.25	0.25	0.25	0.12	0.12	0.12
Sat Flow, veh/h	1781	1870	1505	1781	3480	136	3456	148	1380	25	1582	210
Grp Volume(v), veh/h	11	293	616	233	130	135	669	0	258	147	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1505	1781	1777	1839	1728	0	1528	1817	0	0
Q Serve(g_s), s	0.7	15.0	34.4	14.8	5.1	5.1	20.8	0.0	17.6	8.9	0.0	0.0
Cycle Q Clear(g_c), s	0.7	15.0	34.4	14.8	5.1	5.1	20.8	0.0	17.6	8.9	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.07	1.00		0.90	0.01		0.12
Lane Grp Cap(c), veh/h	23	558	843	263	785	812	860	0	380	218	0	0
V/C Ratio(X)	0.48	0.53	0.73	0.89	0.17	0.17	0.78	0.00	0.68	0.68	0.00	0.00
Avail Cap(c_a), veh/h	77	558	843	429	897	928	1180	0	522	425	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	56.5	33.7	19.6	48.2	19.4	19.4	40.4	0.0	39.2	48.6	0.0	0.0
Incr Delay (d2), s/veh	5.7	3.5	5.5	7.4	0.5	0.4	2.9	0.0	3.0	3.6	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	0.4	7.4	19.2	7.1	2.2	2.3	9.1	0.0	6.9	4.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.2	37.2	25.2	55.6	19.8	19.8	43.2	0.0	42.2	52.2	0.0	0.0
LnGrp LOS	E	D	C	E	B	B	D	A	D	D	A	A
Approach Vol, veh/h		920			498			927			147	
Approach Delay, s/veh		29.4			36.5			42.9			52.2	
Approach LOS		C			D			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	22.2	41.4		18.4	5.7	58.0		33.3				
Change Period (Y+Rc), s	* 5.2	7.0		4.6	* 4.2	7.0		4.6				
Max Green Setting (Gmax), s	* 28	34.4		27.0	* 5	58.2		39.4				
Max Q Clear Time (g_c+I1), s	16.8	36.4		10.9	2.7	7.1		22.8				
Green Ext Time (p_c), s	0.3	0.0		0.6	0.0	6.9		5.9				

Intersection Summary			
HCM 6th Ctrl Delay		37.2	
HCM 6th LOS		D	

Notes

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

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	447	23	1	442	1	0
Future Vol, veh/h	447	23	1	442	1	0
Conflicting Peds, #/hr	0	10	10	0	10	10
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	79	79	79	79	79	79
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	566	29	1	559	1	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	605	0	1162	601
Stage 1	-	-	-	-	591	-
Stage 2	-	-	-	-	571	-
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	-	-	973	-	216	500
Stage 1	-	-	-	-	553	-
Stage 2	-	-	-	-	565	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	964	-	211	491
Mov Cap-2 Maneuver	-	-	-	-	211	-
Stage 1	-	-	-	-	547	-
Stage 2	-	-	-	-	558	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	22.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	211	-	-	964	-
HCM Lane V/C Ratio	0.006	-	-	0.001	-
HCM Control Delay (s)	22.2	-	-	8.7	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	446	1	5	441	2	0
Future Vol, veh/h	446	1	5	441	2	0
Conflicting Peds, #/hr	0	10	10	0	10	10
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	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	572	1	6	565	3	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	583	0	1170	593
Stage 1	-	-	-	-	583	-
Stage 2	-	-	-	-	587	-
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	-	-	991	-	213	506
Stage 1	-	-	-	-	558	-
Stage 2	-	-	-	-	556	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	982	-	207	496
Mov Cap-2 Maneuver	-	-	-	-	207	-
Stage 1	-	-	-	-	552	-
Stage 2	-	-	-	-	546	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	22.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	207	-	-	982	-
HCM Lane V/C Ratio	0.012	-	-	0.007	-
HCM Control Delay (s)	22.6	-	-	8.7	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	154	762	587	325	853	97	550	76	163	171	146	69
Future Volume (veh/h)	154	762	587	325	853	97	550	76	163	171	146	69
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.96
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	159	786	605	335	879	100	567	78	168	176	151	71
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	285	1654	785	393	1814	548	624	525	432	324	341	277
Arrive On Green	0.08	0.32	0.32	0.11	0.36	0.36	0.18	0.28	0.28	0.09	0.18	0.18
Sat Flow, veh/h	3456	5106	1541	3456	5106	1543	3456	1870	1537	3563	1870	1522
Grp Volume(v), veh/h	159	786	605	335	879	100	567	78	168	176	151	71
Grp Sat Flow(s),veh/h/ln	1728	1702	1541	1728	1702	1543	1728	1870	1537	1781	1870	1522
Q Serve(g_s), s	5.3	14.8	38.7	11.5	16.2	5.4	19.4	3.8	10.7	5.7	8.7	4.8
Cycle Q Clear(g_c), s	5.3	14.8	38.7	11.5	16.2	5.4	19.4	3.8	10.7	5.7	8.7	4.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	285	1654	785	393	1814	548	624	525	432	324	341	277
V/C Ratio(X)	0.56	0.48	0.77	0.85	0.48	0.18	0.91	0.15	0.39	0.54	0.44	0.26
Avail Cap(c_a), veh/h	335	1654	785	481	1870	565	679	903	742	378	728	593
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.3	32.6	24.4	52.5	30.3	26.8	48.5	32.6	35.0	52.5	43.9	42.3
Incr Delay (d2), s/veh	0.6	0.2	4.7	10.1	0.2	0.2	14.8	0.1	0.6	1.4	0.9	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	6.2	14.7	5.5	6.7	2.0	9.6	1.7	4.1	2.6	4.1	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.9	32.8	29.1	62.6	30.5	27.0	63.3	32.7	35.6	53.9	44.8	42.8
LnGrp LOS	D	C	C	E	C	C	E	C	D	D	D	D
Approach Vol, veh/h		1550			1314			813			398	
Approach Delay, s/veh		33.5			38.4			54.7			48.5	
Approach LOS		C			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.9	45.4	28.1	28.3	15.2	49.2	16.2	40.2
Change Period (Y+Rc), s	* 5.2	6.3	6.3	* 6.3	* 5.2	6.3	* 5.2	6.3
Max Green Setting (Gmax), s	* 17	39.1	23.7	* 47	* 12	44.2	* 13	58.3
Max Q Clear Time (g_c+I1), s	13.5	40.7	21.4	10.7	7.3	18.2	7.7	12.7
Green Ext Time (p_c), s	0.2	0.0	0.4	1.1	0.1	7.2	0.2	1.1

Intersection Summary	
HCM 6th Ctrl Delay	40.8
HCM 6th LOS	D

Notes

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

User approved volume balancing among the lanes for turning movement.

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

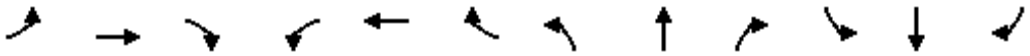
Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	39	1099	0	0	808	10	0	0	0	27	0	31
Future Vol, veh/h	39	1099	0	0	808	10	0	0	0	27	0	31
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	40	1121	0	0	824	10	0	0	0	28	0	32

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	844	0	-	-	-	0	1623	2045	571	1490	2040	437
Stage 1	-	-	-	-	-	-	1201	1201	-	839	839	-
Stage 2	-	-	-	-	-	-	422	844	-	651	1201	-
Critical Hdwy	4.14	-	-	-	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	-	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	788	-	0	0	-	-	68	55	464	86	56	567
Stage 1	-	-	0	0	-	-	196	256	-	326	379	-
Stage 2	-	-	0	0	-	-	580	377	-	424	256	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	780	-	-	-	-	-	61	52	460	81	53	556
Mov Cap-2 Maneuver	-	-	-	-	-	-	61	52	-	81	53	-
Stage 1	-	-	-	-	-	-	186	243	-	306	375	-
Stage 2	-	-	-	-	-	-	542	373	-	398	243	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0	0	44.2
HCM LOS			A	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	780	-	-	-	149
HCM Lane V/C Ratio	-	0.051	-	-	-	0.397
HCM Control Delay (s)	0	9.9	-	-	-	44.2
HCM Lane LOS	A	A	-	-	-	E
HCM 95th %tile Q(veh)	-	0.2	-	-	-	1.7



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	427	694	319	344	5	473	22	133	2	45	1
Future Volume (veh/h)	5	427	694	319	344	5	473	22	133	2	45	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.96	1.00		0.94	1.00		0.91
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	6	485	789	362	391	6	538	25	151	2	51	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	13	633	821	389	1998	31	674	42	256	5	119	2
Arrive On Green	0.01	0.34	0.34	0.22	0.56	0.56	0.19	0.19	0.19	0.07	0.07	0.07
Sat Flow, veh/h	1781	1870	1513	1781	3580	55	3456	217	1312	69	1754	34
Grp Volume(v), veh/h	6	485	789	362	194	203	538	0	176	54	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1513	1781	1777	1858	1728	0	1529	1857	0	0
Q Serve(g_s), s	0.4	27.5	40.2	23.7	6.4	6.4	17.6	0.0	12.4	3.3	0.0	0.0
Cycle Q Clear(g_c), s	0.4	27.5	40.2	23.7	6.4	6.4	17.6	0.0	12.4	3.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.86	0.04		0.02
Lane Grp Cap(c), veh/h	13	633	821	389	991	1037	674	0	298	126	0	0
V/C Ratio(X)	0.45	0.77	0.96	0.93	0.20	0.20	0.80	0.00	0.59	0.43	0.00	0.00
Avail Cap(c_a), veh/h	75	633	821	462	1002	1048	890	0	394	422	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	58.7	35.1	22.3	45.5	13.0	13.0	45.6	0.0	43.5	53.2	0.0	0.0
Incr Delay (d2), s/veh	8.3	8.6	23.2	21.8	0.4	0.4	4.6	0.0	2.6	2.3	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	0.2	13.9	29.0	12.8	2.7	2.8	8.0	0.0	4.9	1.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.0	43.7	45.5	67.3	13.5	13.5	50.2	0.0	46.1	55.5	0.0	0.0
LnGrp LOS	E	D	D	E	B	B	D	A	D	E	A	A
Approach Vol, veh/h		1280			759			714			54	
Approach Delay, s/veh		44.9			39.1			49.2			55.5	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	31.2	47.2		12.7	5.1	73.3		27.8				
Change Period (Y+Rc), s	* 5.2	7.0		4.6	* 4.2	7.0		4.6				
Max Green Setting (Gmax), s	* 31	40.2		27.0	* 5	67.0		30.6				
Max Q Clear Time (g_c+I1), s	25.7	42.2		5.3	2.4	8.4		19.6				
Green Ext Time (p_c), s	0.3	0.0		0.2	0.0	11.2		3.5				

Intersection Summary			
HCM 6th Ctrl Delay		44.6	
HCM 6th LOS		D	

Notes

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

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	558	3	0	664	4	0
Future Vol, veh/h	558	3	0	664	4	0
Conflicting Peds, #/hr	0	10	10	0	10	10
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	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	581	3	0	692	4	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	594	0	1295	603
Stage 1	-	-	-	-	593	-
Stage 2	-	-	-	-	702	-
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	-	-	982	-	179	499
Stage 1	-	-	-	-	552	-
Stage 2	-	-	-	-	491	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	973	-	175	490
Mov Cap-2 Maneuver	-	-	-	-	175	-
Stage 1	-	-	-	-	546	-
Stage 2	-	-	-	-	486	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	26.1
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	175	-	-	973	-
HCM Lane V/C Ratio	0.024	-	-	-	-
HCM Control Delay (s)	26.1	-	-	0	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	558	0	2	662	2	7
Future Vol, veh/h	558	0	2	662	2	7
Conflicting Peds, #/hr	0	10	10	0	10	10
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	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	575	0	2	682	2	7

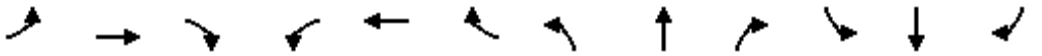
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	585	0	1281	595
Stage 1	-	-	-	-	585	-
Stage 2	-	-	-	-	696	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	990	-	183	504
Stage 1	-	-	-	-	557	-
Stage 2	-	-	-	-	495	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	981	-	179	494
Mov Cap-2 Maneuver	-	-	-	-	179	-
Stage 1	-	-	-	-	551	-
Stage 2	-	-	-	-	489	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	15.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	355	-	-	981	-
HCM Lane V/C Ratio	0.026	-	-	0.002	-
HCM Control Delay (s)	15.4	-	-	8.7	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

APPENDIX G

INTERSECTION PEAK HOUR ANALYSIS WORKSHEETS (NEAR-TERM + PROJECT)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	96	566	363	187	670	29	507	108	229	64	50	55
Future Volume (veh/h)	96	566	363	187	670	29	507	108	229	64	50	55
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.96
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	102	602	386	199	713	31	539	115	244	68	58	56
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	312	1420	706	328	1443	435	608	594	488	322	414	337
Arrive On Green	0.09	0.28	0.28	0.09	0.28	0.28	0.18	0.32	0.32	0.09	0.22	0.22
Sat Flow, veh/h	3456	5106	1537	3456	5106	1537	3456	1870	1535	3563	1870	1521
Grp Volume(v), veh/h	102	602	386	199	713	31	539	115	244	68	58	56
Grp Sat Flow(s),veh/h/ln	1728	1702	1537	1728	1702	1537	1728	1870	1535	1781	1870	1521
Q Serve(g_s), s	2.9	10.1	19.2	5.8	12.2	1.6	16.0	4.7	13.5	1.9	2.6	3.1
Cycle Q Clear(g_c), s	2.9	10.1	19.2	5.8	12.2	1.6	16.0	4.7	13.5	1.9	2.6	3.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	312	1420	706	328	1443	435	608	594	488	322	414	337
V/C Ratio(X)	0.33	0.42	0.55	0.61	0.49	0.07	0.89	0.19	0.50	0.21	0.14	0.17
Avail Cap(c_a), veh/h	329	1843	834	329	1843	555	714	1035	849	373	837	681
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.8	31.0	20.9	45.6	31.4	27.6	42.2	26.0	29.1	44.3	32.8	33.0
Incr Delay (d2), s/veh	0.2	0.2	0.7	2.3	0.3	0.1	10.5	0.2	0.8	0.3	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	4.2	6.8	2.6	5.0	0.6	7.6	2.1	5.0	0.8	1.2	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.0	31.2	21.6	47.9	31.7	27.6	52.7	26.2	29.9	44.6	33.0	33.3
LnGrp LOS	D	C	C	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h		1090			943			898			182	
Approach Delay, s/veh		29.1			35.0			43.1			37.4	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.2	35.5	24.8	29.6	14.7	36.0	14.7	39.7
Change Period (Y+Rc), s	* 5.2	6.3	6.3	* 6.3	* 5.2	6.3	* 5.2	6.3
Max Green Setting (Gmax), s	* 10	37.9	21.7	* 47	* 10	37.9	* 11	58.1
Max Q Clear Time (g_c+I1), s	7.8	21.2	18.0	5.1	4.9	14.2	3.9	15.5
Green Ext Time (p_c), s	0.1	5.3	0.5	0.5	0.1	5.3	0.1	1.6

Intersection Summary	
HCM 6th Ctrl Delay	35.4
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

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

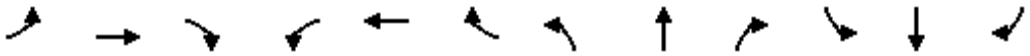
Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	770	3	0	821	18	0	0	0	61	0	49
Future Vol, veh/h	13	770	3	0	821	18	0	0	0	61	0	49
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	846	3	0	902	20	0	0	0	67	0	54

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	932	0	0	-	-	0	1347	1818	445	1383	1809	481
Stage 1	-	-	-	-	-	-	886	886	-	922	922	-
Stage 2	-	-	-	-	-	-	461	932	-	461	887	-
Critical Hdwy	4.14	-	-	-	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	-	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	730	-	-	0	-	-	110	77	561	103	78	531
Stage 1	-	-	-	0	-	-	306	361	-	291	347	-
Stage 2	-	-	-	0	-	-	550	343	-	550	360	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	723	-	-	-	-	-	95	74	550	100	75	521
Mov Cap-2 Maneuver	-	-	-	-	-	-	95	74	-	100	75	-
Stage 1	-	-	-	-	-	-	297	351	-	283	344	-
Stage 2	-	-	-	-	-	-	488	340	-	534	350	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	0	80.4
HCM LOS			A	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	-	723	-	-	-	-	156
HCM Lane V/C Ratio	-	0.02	-	-	-	-	0.775
HCM Control Delay (s)	0	10.1	-	-	-	-	80.4
HCM Lane LOS	A	B	-	-	-	-	F
HCM 95th %tile Q(veh)	-	0.1	-	-	-	-	4.9



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	272	548	207	228	9	595	22	207	2	114	15
Future Volume (veh/h)	10	272	548	207	228	9	595	22	207	2	114	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.96	1.00		0.95	1.00		0.95
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	11	306	616	233	256	10	669	25	233	2	128	17
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	23	558	843	263	1538	60	860	37	343	3	189	25
Arrive On Green	0.01	0.30	0.30	0.15	0.44	0.44	0.25	0.25	0.25	0.12	0.12	0.12
Sat Flow, veh/h	1781	1870	1505	1781	3481	135	3456	148	1380	25	1582	210
Grp Volume(v), veh/h	11	306	616	233	130	136	669	0	258	147	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1505	1781	1777	1839	1728	0	1528	1817	0	0
Q Serve(g_s), s	0.7	15.8	34.4	14.8	5.1	5.1	20.8	0.0	17.6	8.9	0.0	0.0
Cycle Q Clear(g_c), s	0.7	15.8	34.4	14.8	5.1	5.1	20.8	0.0	17.6	8.9	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.07	1.00		0.90	0.01		0.12
Lane Grp Cap(c), veh/h	23	558	843	263	785	812	860	0	380	218	0	0
V/C Ratio(X)	0.48	0.55	0.73	0.89	0.17	0.17	0.78	0.00	0.68	0.68	0.00	0.00
Avail Cap(c_a), veh/h	77	558	843	429	897	928	1180	0	522	425	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	56.5	34.0	19.6	48.2	19.4	19.4	40.4	0.0	39.2	48.6	0.0	0.0
Incr Delay (d2), s/veh	5.7	3.8	5.5	7.4	0.5	0.4	2.9	0.0	3.0	3.6	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	0.4	7.8	19.2	7.1	2.2	2.3	9.1	0.0	6.9	4.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.2	37.8	25.2	55.6	19.8	19.9	43.2	0.0	42.2	52.2	0.0	0.0
LnGrp LOS	E	D	C	E	B	B	D	A	D	D	A	A
Approach Vol, veh/h		933			499			927			147	
Approach Delay, s/veh		29.7			36.5			42.9			52.2	
Approach LOS		C			D			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	22.2	41.4		18.4	5.7	58.0		33.3				
Change Period (Y+Rc), s	* 5.2	7.0		4.6	* 4.2	7.0		4.6				
Max Green Setting (Gmax), s	* 28	34.4		27.0	* 5	58.2		39.4				
Max Q Clear Time (g_c+I1), s	16.8	36.4		10.9	2.7	7.1		22.8				
Green Ext Time (p_c), s	0.3	0.0		0.6	0.0	6.9		5.9				

Intersection Summary			
HCM 6th Ctrl Delay		37.3	
HCM 6th LOS		D	

Notes

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

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	446	35	6	444	0	0
Future Vol, veh/h	446	35	6	444	0	0
Conflicting Peds, #/hr	0	10	10	0	10	10
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	79	79	79	79	79	79
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	565	44	8	562	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	619	0	1185	607
Stage 1	-	-	-	-	597	-
Stage 2	-	-	-	-	588	-
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	-	-	961	-	209	496
Stage 1	-	-	-	-	550	-
Stage 2	-	-	-	-	555	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	952	-	202	487
Mov Cap-2 Maneuver	-	-	-	-	202	-
Stage 1	-	-	-	-	545	-
Stage 2	-	-	-	-	543	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	952	-
HCM Lane V/C Ratio	-	-	-	0.008	-
HCM Control Delay (s)	0	-	-	8.8	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

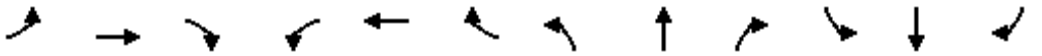
Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	446	0	0	446	4	0
Future Vol, veh/h	446	0	0	446	4	0
Conflicting Peds, #/hr	0	10	10	0	10	10
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	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	572	0	0	572	5	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	582	0	1164	592
Stage 1	-	-	-	-	582	-
Stage 2	-	-	-	-	582	-
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	-	-	992	-	215	506
Stage 1	-	-	-	-	559	-
Stage 2	-	-	-	-	559	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	983	-	211	496
Mov Cap-2 Maneuver	-	-	-	-	211	-
Stage 1	-	-	-	-	553	-
Stage 2	-	-	-	-	553	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	22.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	211	-	-	983	-
HCM Lane V/C Ratio	0.024	-	-	-	-
HCM Control Delay (s)	22.5	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	154	762	589	325	853	97	561	76	165	171	146	69
Future Volume (veh/h)	154	762	589	325	853	97	561	76	165	171	146	69
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.96
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	159	786	607	335	879	100	578	78	170	176	151	71
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	284	1647	787	393	1808	546	633	531	436	322	340	277
Arrive On Green	0.08	0.32	0.32	0.11	0.35	0.35	0.18	0.28	0.28	0.09	0.18	0.18
Sat Flow, veh/h	3456	5106	1541	3456	5106	1543	3456	1870	1537	3563	1870	1522
Grp Volume(v), veh/h	159	786	607	335	879	100	578	78	170	176	151	71
Grp Sat Flow(s),veh/h/ln	1728	1702	1541	1728	1702	1543	1728	1870	1537	1781	1870	1522
Q Serve(g_s), s	5.4	14.9	39.0	11.5	16.3	5.4	19.9	3.8	10.8	5.7	8.7	4.9
Cycle Q Clear(g_c), s	5.4	14.9	39.0	11.5	16.3	5.4	19.9	3.8	10.8	5.7	8.7	4.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	284	1647	787	393	1808	546	633	531	436	322	340	277
V/C Ratio(X)	0.56	0.48	0.77	0.85	0.49	0.18	0.91	0.15	0.39	0.55	0.44	0.26
Avail Cap(c_a), veh/h	333	1647	787	479	1862	563	676	899	739	376	725	590
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.5	32.9	24.4	52.7	30.6	27.0	48.6	32.5	35.0	52.8	44.1	42.5
Incr Delay (d2), s/veh	0.6	0.2	4.7	10.3	0.2	0.2	15.7	0.1	0.6	1.4	0.9	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	6.2	14.8	5.6	6.7	2.0	9.9	1.7	4.1	2.6	4.1	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.2	33.1	29.2	63.1	30.8	27.2	64.3	32.6	35.5	54.2	45.0	43.0
LnGrp LOS	D	C	C	E	C	C	E	C	D	D	D	D
Approach Vol, veh/h		1552			1314			826			398	
Approach Delay, s/veh		33.7			38.7			55.4			48.7	
Approach LOS		C			D			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.0	45.4	28.5	28.4	15.2	49.2	16.2	40.7
Change Period (Y+Rc), s	* 5.2	6.3	6.3	* 6.3	* 5.2	6.3	* 5.2	6.3
Max Green Setting (Gmax), s	* 17	39.1	23.7	* 47	* 12	44.2	* 13	58.3
Max Q Clear Time (g_c+I1), s	13.5	41.0	21.9	10.7	7.4	18.3	7.7	12.8
Green Ext Time (p_c), s	0.2	0.0	0.3	1.1	0.1	7.2	0.2	1.1

Intersection Summary	
HCM 6th Ctrl Delay	41.2
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

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

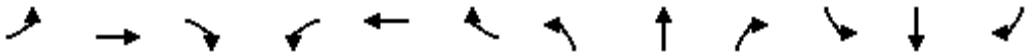
Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	39	1101	0	0	821	10	0	0	3	27	0	31
Future Vol, veh/h	39	1101	0	0	821	10	0	0	3	27	0	31
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	40	1123	0	0	838	10	0	0	3	28	0	32

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	858	0	-	-	-	0	1632	2061	572	1505	2056	444
Stage 1	-	-	-	-	-	-	1203	1203	-	853	853	-
Stage 2	-	-	-	-	-	-	429	858	-	652	1203	-
Critical Hdwy	4.14	-	-	-	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	-	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	779	-	0	0	-	-	67	54	463	84	55	561
Stage 1	-	-	0	0	-	-	196	256	-	320	374	-
Stage 2	-	-	0	0	-	-	574	372	-	423	256	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	772	-	-	-	-	-	60	51	459	79	52	550
Mov Cap-2 Maneuver	-	-	-	-	-	-	60	51	-	79	52	-
Stage 1	-	-	-	-	-	-	186	243	-	300	370	-
Stage 2	-	-	-	-	-	-	536	368	-	395	243	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0	12.9	45.5
HCM LOS			B	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	459	772	-	-	-	146
HCM Lane V/C Ratio	0.007	0.052	-	-	-	0.405
HCM Control Delay (s)	12.9	9.9	-	-	-	45.5
HCM Lane LOS	B	A	-	-	-	E
HCM 95th %tile Q(veh)	0	0.2	-	-	-	1.8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	432	694	319	357	5	473	22	133	2	45	1
Future Volume (veh/h)	5	432	694	319	357	5	473	22	133	2	45	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		0.94	1.00		0.91
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	6	491	789	362	406	6	538	25	151	2	51	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	13	640	826	388	2010	30	671	42	255	5	119	2
Arrive On Green	0.01	0.34	0.34	0.22	0.56	0.56	0.19	0.19	0.19	0.07	0.07	0.07
Sat Flow, veh/h	1781	1870	1514	1781	3583	53	3456	217	1312	69	1754	34
Grp Volume(v), veh/h	6	491	789	362	201	211	538	0	176	54	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1514	1781	1777	1859	1728	0	1529	1857	0	0
Q Serve(g_s), s	0.4	28.2	41.2	24.0	6.7	6.8	17.9	0.0	12.6	3.4	0.0	0.0
Cycle Q Clear(g_c), s	0.4	28.2	41.2	24.0	6.7	6.8	17.9	0.0	12.6	3.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.86	0.04		0.02
Lane Grp Cap(c), veh/h	13	640	826	388	997	1043	671	0	297	126	0	0
V/C Ratio(X)	0.45	0.77	0.96	0.93	0.20	0.20	0.80	0.00	0.59	0.43	0.00	0.00
Avail Cap(c_a), veh/h	74	640	826	441	997	1043	879	0	389	417	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	59.5	35.3	22.5	46.2	13.1	13.1	46.3	0.0	44.2	53.9	0.0	0.0
Incr Delay (d2), s/veh	8.4	8.5	22.2	23.9	0.5	0.4	4.8	0.0	2.7	2.3	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	0.2	14.2	29.2	13.1	2.8	2.9	8.1	0.0	5.0	1.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.8	43.8	44.7	70.1	13.5	13.5	51.1	0.0	46.9	56.2	0.0	0.0
LnGrp LOS	E	D	D	E	B	B	D	A	D	E	A	A
Approach Vol, veh/h		1286			774			714			54	
Approach Delay, s/veh		44.4			40.0			50.0			56.2	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	31.4	48.2		12.7	5.1	74.5		28.0				
Change Period (Y+Rc), s	* 5.2	7.0		4.6	* 4.2	7.0		4.6				
Max Green Setting (Gmax), s	* 30	41.2		27.0	* 5	67.0		30.6				
Max Q Clear Time (g_c+I1), s	26.0	43.2		5.4	2.4	8.8		19.9				
Green Ext Time (p_c), s	0.2	0.0		0.2	0.0	11.7		3.5				

Intersection Summary			
HCM 6th Ctrl Delay		44.9	
HCM 6th LOS		D	

Notes

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

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	558	8	2	681	0	0
Future Vol, veh/h	558	8	2	681	0	0
Conflicting Peds, #/hr	0	10	10	0	10	10
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	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	581	8	2	709	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	599	0	1318	605
Stage 1	-	-	-	-	595	-
Stage 2	-	-	-	-	723	-
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	-	-	978	-	173	498
Stage 1	-	-	-	-	551	-
Stage 2	-	-	-	-	481	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	969	-	169	489
Mov Cap-2 Maneuver	-	-	-	-	169	-
Stage 1	-	-	-	-	545	-
Stage 2	-	-	-	-	475	-

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)	-	-	-	969	-
HCM Lane V/C Ratio	-	-	-	0.002	-
HCM Control Delay (s)	0	-	-	8.7	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	558	0	0	664	19	7
Future Vol, veh/h	558	0	0	664	19	7
Conflicting Peds, #/hr	0	10	10	0	10	10
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	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	575	0	0	685	20	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	585	0	1280	595
Stage 1	-	-	-	-	585	-
Stage 2	-	-	-	-	695	-
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	-	-	990	-	183	504
Stage 1	-	-	-	-	557	-
Stage 2	-	-	-	-	495	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	981	-	179	494
Mov Cap-2 Maneuver	-	-	-	-	179	-
Stage 1	-	-	-	-	551	-
Stage 2	-	-	-	-	490	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	24
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	216	-	-	981	-
HCM Lane V/C Ratio	0.124	-	-	-	-
HCM Control Delay (s)	24	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0	-