

APPENDIX L – TRANSPORTATION

**Transportation Impact Analysis, Westside Canal Battery
Storage Complex Project**

TRANSPORTATION IMPACT ANALYSIS
WESTSIDE CANAL BATTERY STORAGE
COMPLEX PROJECT
Imperial County, California
July 22, 2019

LLG Ref. 3-18-2960

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1.0 INTRODUCTION

Linscott, Law & Greenspan Engineers (LLG) has been retained to assess the traffic impacts associated with the proposed Westside Canal Battery Storage Complex Project (Project). Development of the project will provide a utility-scale energy storage complex incorporating lithium ion battery systems and/or flow battery technologies throughout the site.

Included in this traffic report are the following.

- Project Description
- Existing Conditions Discussion
- Analysis Approach and Methodology
- Significance Criteria
- Existing Conditions Analysis
- Near-Term without Project Analysis
- Trip Generation/Distribution/Assignment
- Near-Term with Project Analysis
- Summary and Conclusions

2.0 PROJECT LOCATION AND DESCRIPTION

2.1 Project Location

The project will be located in the unincorporated Mount Signal area of the County, approximately 8.0 miles southwest of the city of El Centro and approximately 5.3 miles north of the U.S.-Mexico border. The project site is comprised of two parcels, Assessor Parcel Number (APN) 051-350-010 and APN 051-350-011, totaling approximately 148 acres. This land has limited access corridors for vehicular traffic and is less desirable for agricultural production, as reflected by the last 15 years without farming activity.

The project site is approximately one-third mile north of the Imperial Valley Substation (IV Substation) and directly south of the intersection of Liebert Road and the Imperial Irrigation District's (IID) Westside Main Canal. The project site is bounded by the Westside Main Canal to the north, Bureau of Land Management (BLM) lands to the south and west, and vacant private land to the east. The Campo Verde solar generation facility is located north of the project site, across the Westside Main Canal.

The two project parcels will be developed as the utility-scale energy storage complex. The project will also utilize portions of two parcels located north of the Westside Main Canal (APN 051-350-019 owned by IID and APN 051-350-018 owned by a private land owner) for site access and as a temporary construction staging area. The project will also access a small portion of APN 051-350-009 within an IID easement for connection to the existing IID Campo Verde Imperial Valley 230 kilovolt radial gen-tie line during the construction of a substation on the project site. The total proposed project development footprint, encompassing both temporary and permanent impacts, will be 163.32 acres.

Figure 2-1 shows the Project location.

2.2 Project Description

Development of the project will provide a utility-scale energy storage complex incorporating lithium ion battery systems and/or flow battery technologies throughout the site. The project will allow excess, intermittent renewable energy to be stored and later dispatched optimally back into the grid as firm, reliable generation when needed. The project complements solar and wind projects currently operating, and planned for development, in Imperial County (County), and supports the broader southern California bulk electric system by serving as a transmission asset.

The project is expected to be constructed in multiple phases, over multiple years, with each phase ranging from approximately 25 megawatts (MW) up to 350 MW per phase. Construction of the first phase includes roads, bridge and common facilities, and the first battery storage facility and is anticipated to begin in 2021 with completion expected in 2022. The project will store energy for up to a 12-hour duration based on grid and market conditions. The total nameplate capacity of the project at full build-out is approximately 2,025 MW.

On-site photovoltaic (PV) solar generation will serve as station auxiliary power and be deployed throughout the project site as rooftop solar on buildings, as well as ground-mounted solar, constructed during each phase. The timing and energy storage capacity of the project's phases will be dependent on commercial contracts for the energy/capacity to be stored/discharged in response to the need for energy storage to manage renewable energy growth throughout the greater southern California area. This energy storage complex would thus become a valuable tool for commercial customer(s) and system operators to better manage intermittent renewable generation by converting it into reliable, dispatchable generation. The date for project build-out is currently not known and would be dependent on the factors listed above.

The project is pursuing the following objectives:

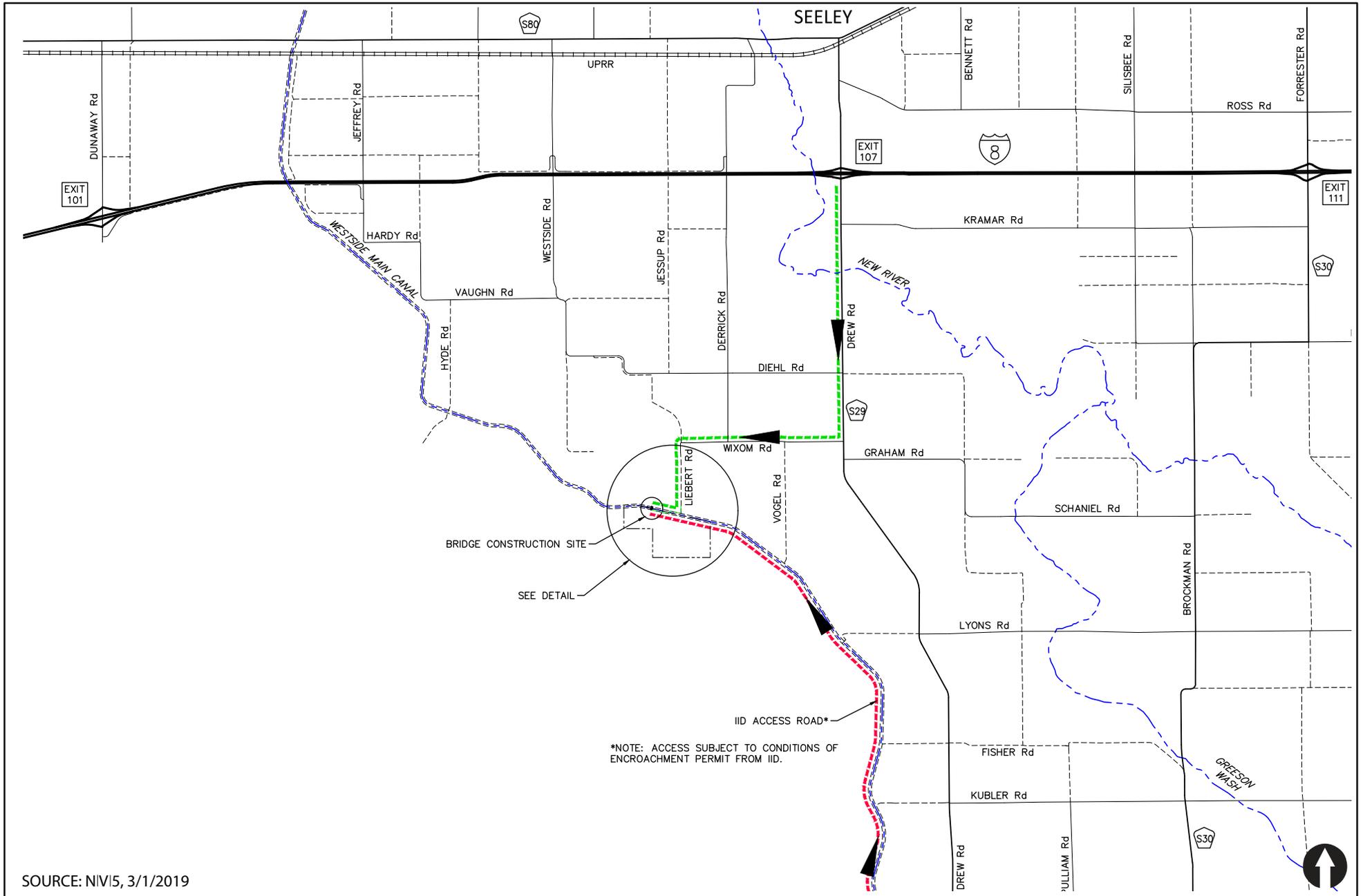
- To allow for the storage of power/renewable power to help meet the state energy needs.
- To be able to receive renewable generated electricity during times of excess generation or times of less desirable generation and store that power for release when the customer (i.e., a load-serving entity) deems it to be more valuable.
- To be a valuable tool in allowing the customer and system operators to manage and convert intermittent renewable generation into reliable, dispatchable generation.
- To build on available land that is a less desirable location for agricultural production due to 15-plus years of agricultural inactivity, but also due to limited access corridors for vehicular traffic to the remote property.

The project is surrounded by private land owners to the east, BLM land to the south and west, and IID maintenance roads and Westside Main Canal to the north. Due to the site having no direct vehicular access routes, the applicant is proposing to construct roads on both the north and south sides of the Westside Main Canal on private land, and a bridge over the Westside Main Canal. The project proposes a new clear-span Imperial County/California Department of Transportation (Caltrans) specified bridge to span the Westside Main Canal which would connect to a proposed access road easement on the north side of the Westside Main Canal. The north side proposed access road would ultimately connect the project to county road (CR) Liebert Road. The project also would dedicate to the County 60 feet of frontage along the north project fence line and south of the IID Westside Main Canal operation and maintenance road to be used for a south side proposed access road to the site and also for the public (principally the neighboring private landowners).

The major traffic effects of project development will occur during construction. The project may require up to 200 employees per day during the peak construction period. Construction activities would occur during daytime hours (up to eight hours per day).

Operation of the project would require routine maintenance and security. It is anticipated that the project would employ a plant manager and an operations and maintenance manager, as well as the addition of a facility manager once the complex deploys 500 MW of generation. The complex will

also employ staff technicians, with at least one additional technician for every approximately 250 MW of generation. It is estimated that the impacts of this operational traffic will be very small (up to 20 employees). As such, the focus of this transportation impact analysis will be on the peak construction period.



SOURCE: NIV5, 3/1/2019

Figure 2-1

Project Area Map

3.0 EXISTING CONDITIONS

The intersections and roadway segments included in the study area are listed below. These locations were chosen since they will carry the majority of Project traffic. The study area includes locations within the jurisdictions of Caltrans and Imperial County.

Intersections

1. I-8 WB Ramps / Drew Road (*Caltrans*)
2. I-8 EB Ramps / Drew Road (*Caltrans*)
3. Drew Road / Wixom Road (*Imperial County*)

Street Segments

- a. Drew Road: I-8 to Wixom Road (*Imperial County*)
- b. Wixom Road: Liebert Road to Drew Road (*Imperial County*)

3.1 Existing Transportation Conditions

The following is a description of the nearby roadway network:

Drew Road is classified as a Collector in the Imperial County Circulation Element Plan. It is currently constructed as a two-lane roadway in the study area. The posted speed limit is 55 mph. There are no bike lanes provided.

Wixom Road is an unclassified roadway in the Imperial County Circulation Element Plan. It is currently constructed as a two-lane roadway in the study area. There is no posted speed limit. There are no bike lanes provided.

Figure 3-1 depicts the existing traffic conditions of the study area intersections and street segments graphically.

3.2 Existing Traffic Volumes

Weekday AM/PM peak hour intersection turning movement and bi-directional daily traffic counts were conducted in March 2019. The peak hour counts were conducted between the hours of 7:00-9:00 AM and 4:00-6:00 PM. Minor adjustments were made to manually balance peak hour volumes between the freeway ramp intersections.

Daily street segment (ADT) counts were conducted in March 2019 and are shown on *Table 3-1*.

Appendix A contains the manual count sheets.

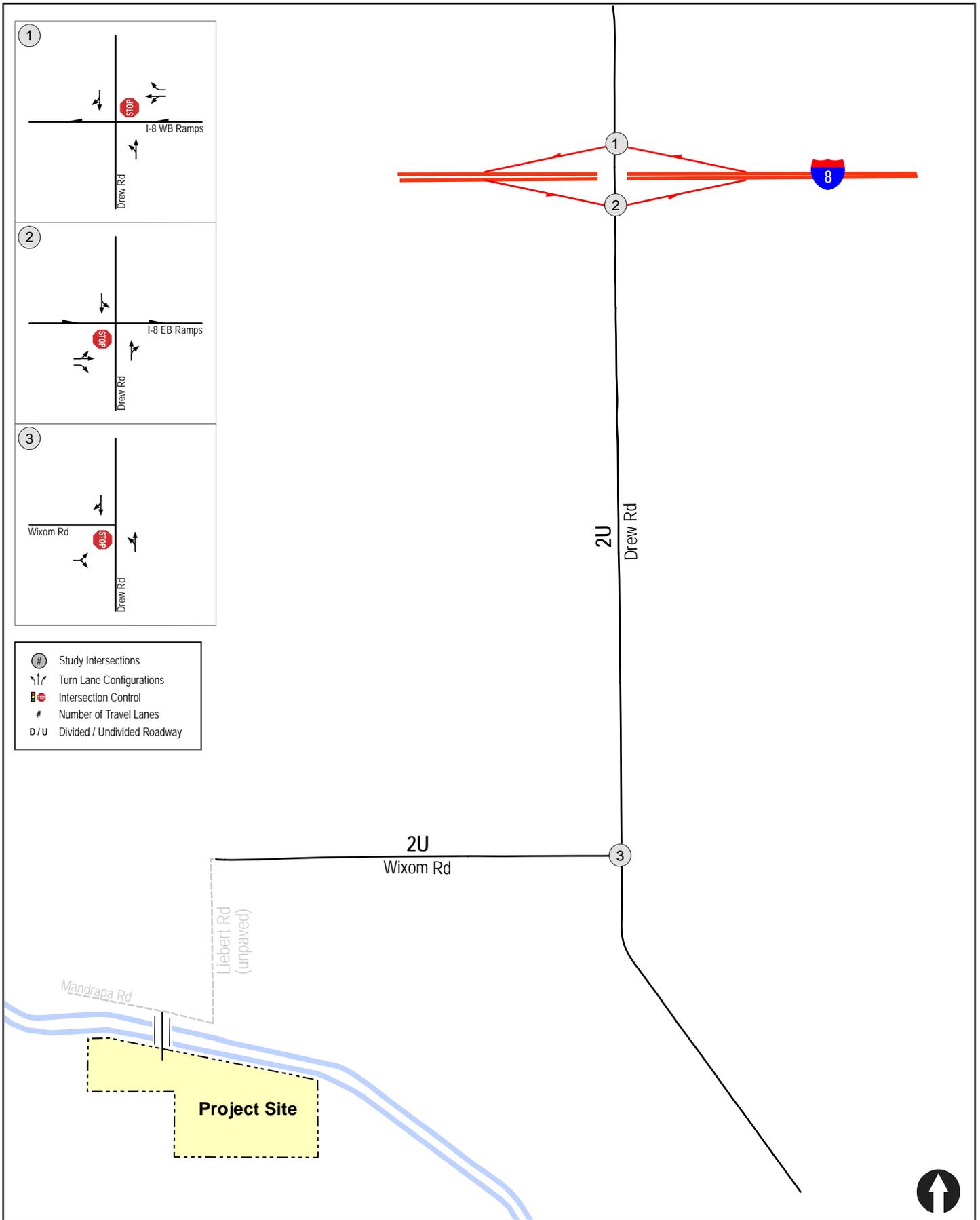
TABLE 3-1
EXISTING STREET SEGMENT TRAFFIC VOLUMES

Street Segment	ADT ^a	Date	Source
Drew Road I-8 to Wixom Road	541	2019	LLG Engineers
Wixom Road Liebert Road to Drew Road	89	2019	LLG Engineers

Footnotes:

- a. ADT = Average Daily Traffic volumes.

Figure 3-2 depicts the peak hour intersection turning movement and street segment volumes on study area facilities.



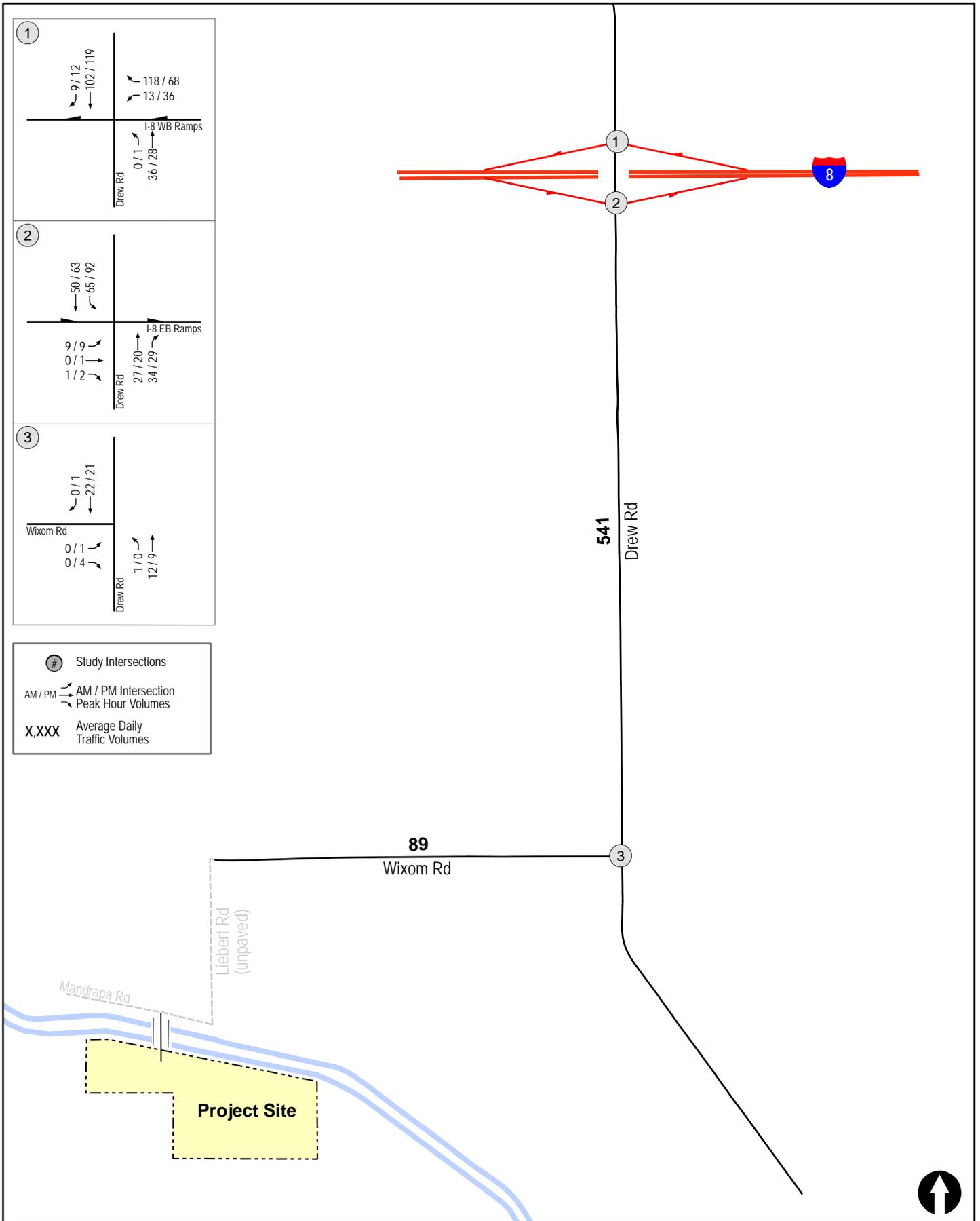


Figure 3-2

Existing Traffic Volumes

4.0 ANALYSIS APPROACH AND METHODOLOGY

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 analysis 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 designation is reported differently for intersections and roadway segments.

4.1 Intersections

All study area intersections are unsignalized. *Unsignalized intersections* were analyzed under AM and PM peak hour conditions. Average vehicle delay and Levels of Service (LOS) were determined based upon the procedures found in Chapter 20 and Chapter 21 of the *HCM 6* with the assistance of the *Synchro 10* computer software. A more detailed explanation of the methodology are attached in *Appendix B*.

4.2 Street Segments

Street segment analysis is based upon the comparison of daily traffic volumes (ADTs) to Imperial County's *Standard Street Classification Table*. This table provides segment capacities for different street classifications, based on traffic volumes and roadway characteristics. Imperial County's *Standard Street Classification Table* is attached in *Appendix C*.

5.0 SIGNIFICANCE CRITERIA

Street segments and intersections are located in both the County of Imperial's and Caltrans' jurisdictions. Therefore, the applicable significance criteria for each was utilized.

5.1 County of Imperial

The County of Imperial does not have published significance criteria. However, the County General Plan does state that the LOS goal for intersections and roadway segments is to operate at LOS C or better. Therefore, if an intersection or segment degrades from LOS C or better to LOS D or worse with the addition of Project traffic, the impact is considered significant. If the location operates at LOS D or worse with and without Project traffic, the impact is considered significant if the Project causes the intersection delta to increase by more than two (2) seconds, or the segment volume to capacity (V/C) ratio to increase by more than 0.02.

5.2 Caltrans

A project is considered to have a significant impact if the new project traffic decreases the operations of surrounding roadways by a defined threshold. The defined thresholds for roadway segments and intersections are defined in *Table 5-1* for this rural area. If the project exceeds the thresholds in *Table 5-1*, then the project may be considered to have a significant project impact. A feasible mitigation measure will need to be identified to return the impact within the thresholds (pre-project + allowable increase) or the impact will be considered significant and unmitigated.

**TABLE 5-1
TRAFFIC IMPACT SIGNIFICANT THRESHOLDS**

Level of Service with Project ^a	Allowable Increase Due to Project Impacts ^b					
	Freeways		Roadway Segments		Intersections	Ramp Metering
	V/C	Speed (mph)	V/C	Speed (mph)	Delay (sec.)	Delay (min.)
D, E & F (or ramp meter delays above 15 minutes)	0.01	1	0.02	1	2	2 ^c

Footnotes:

- a. All level of service measurements are based upon HCM procedures for peak-hour conditions. However, V/C ratios for Roadway Segments may be estimated on an ADT/24-hour traffic volume basis (using Table 4-3 or a similar LOS chart for each jurisdiction). The acceptable LOS for freeways, roadways, and intersections is generally "D" ("C" for undeveloped or not densely developed locations per jurisdiction definitions). For metered freeway ramps, LOS does not apply. However, ramp meter delays above 15 minutes are considered excessive.
- b. If a proposed project's traffic causes the values shown in the table to be exceeded, the impacts are deemed to be significant. These impact changes may be measured from appropriate computer programs or expanded manual spreadsheets. The project applicant shall then identify feasible mitigations (within the Traffic Impact Study [TIS] report) that will maintain the traffic facility at an acceptable LOS. If the LOS with the proposed project becomes unacceptable (see note a above), or if the project adds a significant amount of peak hour trips to cause any traffic queues to exceed on- or off-ramp storage capacities, the project applicant shall be responsible for mitigating significant impact changes.
- c. The allowable increase in delay at a ramp meter with more than 15 minutes of delay and freeway LOS E is 2 minutes and at LOS F is 1 minute.

General Notes:

1. V/C = Volume to Capacity Ratio.
2. Speed = Arterial speed measured in miles per hour.
3. Delay = Average stopped delay per vehicle measured in seconds for intersections, or minutes for ramp meters.
4. LOS = Level of Service.

6.0 ANALYSIS OF EXISTING CONDITIONS

6.1 Peak Hour Intersection Levels of Service

Table 6-1 summarizes the existing intersections' level of service. As seen in *Table 6-1*, all intersections are calculated to currently operate at LOS A.

Appendix D contains the Existing intersection analysis worksheets.

TABLE 6-1
EXISTING INTERSECTION OPERATIONS

Intersection	Jurisdiction	Control Type	Critical Movement	Peak Hour	Existing	
					Delay ^b	LOS ^c
1. Drew Road / I-8 WB Ramps	Caltrans	MSSC ^a	WB	AM	9.3	A
				PM	9.0	A
2. Drew Road / I-8 EB Ramps	Caltrans	MSSC	EB	AM	10.4	B
				PM	10.5	B
3. Drew Road / Wixom Road	Imperial County	MSSC	EB	AM	0.0	A
				PM	8.5	A

Footnotes:

- a. MSSC = Minor Street Stop-Control.
- b. Average delay expressed in seconds per vehicle.
- c. LOS = Level of Service.

UNSIGNALIZED

DELAY/LOS THRESHOLDS

Delay	LOS
0.0 ≤ 10.0	A
10.1 to 15.0	B
15.1 to 25.0	C
25.1 to 35.0	D
35.1 to 50.0	E
≥ 50.1	F

6.2 Daily Street Segment Levels of Service

Table 6–2 summarizes the existing daily street segment level of service. As seen in *Table 6–2*, both roadway segments are calculated to currently operate at LOS A.

TABLE 6–2
EXISTING STREET SEGMENT OPERATIONS

Street Segment	Classification	Capacity (LOS E) ^a	ADT ^b	LOS ^c
Drew Road I-8 to Wixom	Collector	8,100 ^d	541	A
Wixom Road Liebert Road to Drew Road	None	8,100 ^d	89	A

Footnotes:

- a. Capacities based on Imperial County Standard Street Classification table.
- b. ADT = Average Daily Traffic volumes.
- c. LOS = Level of Service.
- d. Both roadway segments are currently built as two-lane roads. Roadway capacities were conservatively assumed as half of the Local Collector capacities from the Imperial County Standard Street Classification table.

7.0 NEAR-TERM ANALYSIS

7.1 Growth Factor

Using current knowledge of local traffic patterns and engineering judgement, a growth factor of 2% was applied to the existing volumes for two (2) years to account for worst-case traffic volume at the time of construction.

Figure 7-1 shows the Near-Term without Project volumes based on the 4% growth factor over existing.

7.2 Analysis of Near-Term without Project

7.2.1 Peak Hour Intersection Levels of Service

Table 7-1 summarizes the Near-Term without Project intersections level of service. As seen in **Table 7-1**, all intersections are calculated to operate at acceptable LOS B or better in the near-term.

Appendix E contains the Near-Term without Project intersection analysis worksheets.

TABLE 7-1
NEAR-TERM WITHOUT PROJECT INTERSECTION OPERATIONS

Intersection	Juris.	Control Type	Critical Movement	Peak Hour	Existing		Near-Term without Project	
					Delay ^a	LOS ^b	Delay	LOS
1. Drew Road / I-8 WB Ramps	Caltrans	MSSC ^c	WB	AM	9.3	A	9.4	A
				PM	9.0	A	9.0	A
2. Drew Road / I-8 WB Ramps	Caltrans	MSSC	EB	AM	10.4	B	10.6	B
				PM	10.5	B	10.6	B
3. Drew Road / Wixom Road	Imperial County	MSSC	EB	AM	0.0	A	0.0	A
				PM	8.5	A	8.5	A

Footnotes:

- a. Average delay expressed in seconds per vehicle.
- b. LOS = Level of Service.
- c. MSSC = Minor Street Stop-Control.

UNSIGNALIZED DELAY/LOS THRESHOLDS	
Delay	LOS
0.0 ≤ 10.0	A
10.1 to 15.0	B
15.1 to 25.0	C
25.1 to 35.0	D
35.1 to 50.0	E
≥ 50.1	F

7.2.2 Daily Street Segment Levels of Service

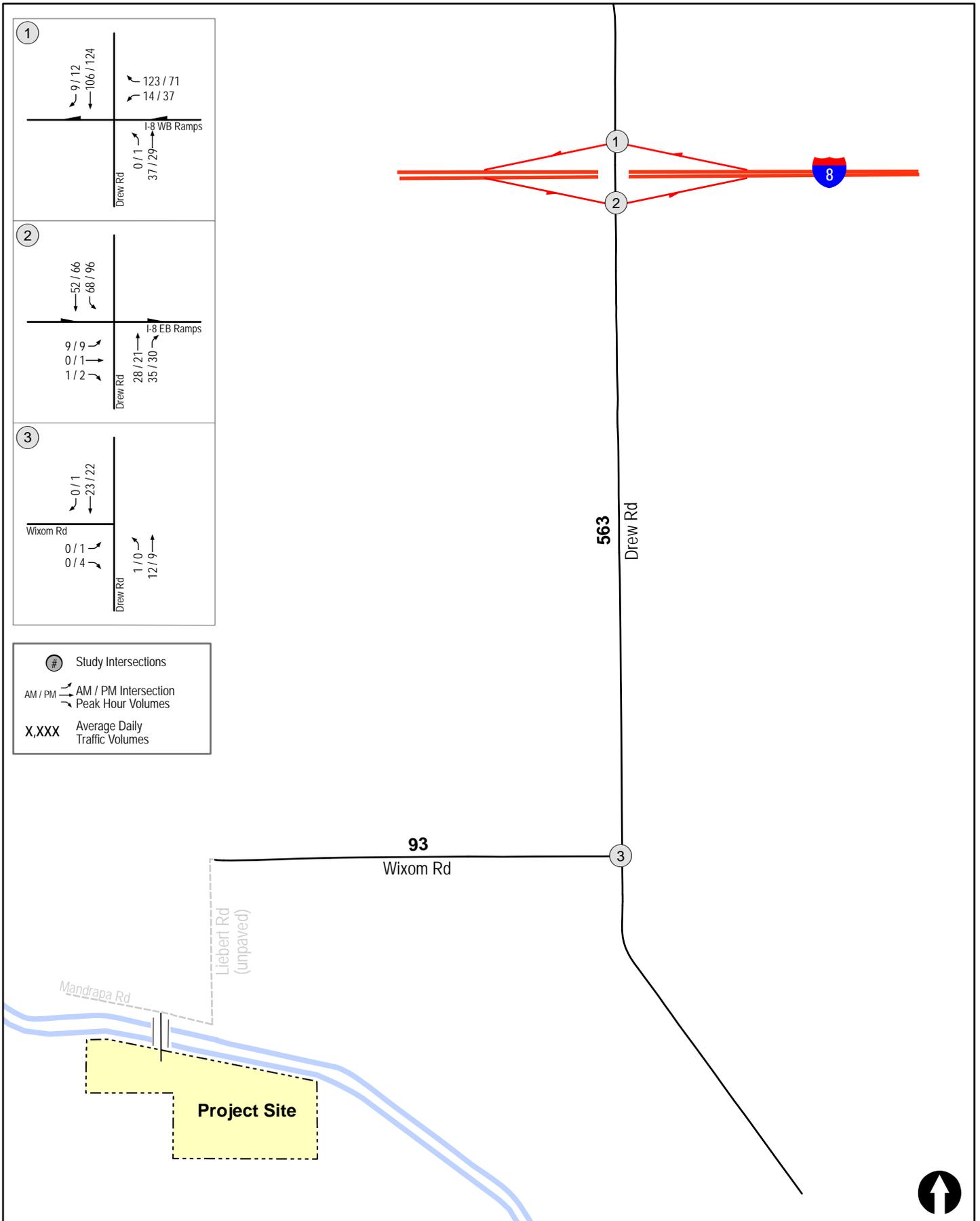
Table 7-2 summarizes the Near-Term without Project street segment level of service. As seen in Table 7-2, both segments are calculated to operate at LOS A.

TABLE 7-2
NEAR-TERM WITHOUT PROJECT STREET SEGMENT OPERATIONS

Street Segment	Classification	Capacity (LOS E) ^a	Existing			Near-Term without Project		
			ADT ^b	LOS ^c	V/C ^d	ADT	LOS	V/C
Drew Road I-8 to Wixom Road	Collector	8,100 ^e	541	A	0.067	563	A	0.070
Wixom Road Liebert Road to Drew Road	None	8,100 ^e	89	A	0.011	93	A	0.011

Footnotes:

- a. Capacities based on Imperial County Standard Street Classification Table.
- b. ADT = Average Daily Traffic Volumes.
- c. LOS = Level of Service.
- d. V/C = Volume to Capacity ratio.
- e. Both roadway segments are currently built as two-lane roads. Roadway capacities were conservatively assumed as half of the Local Collector capacities from the Imperial County Standard Street Classification table.



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Figure 7-1

Near-Term without Project Traffic Volumes

8.0 PROJECT TRIP GENERATION, DISTRIBUTION, AND ASSIGNMENT

8.1 Project Trip Generation

The project will generate traffic in two distinct construction periods. The initial construction period would consist of the access road and bridge across the Westside Main Canal, which would require approximately 8 workers per day and would last for eight to nine months. Following completion of the access road and bridge over the Westside Main Canal, the project would grade the entire project site and begin construction of the utility-scale energy storage complex, lasting up to 32 months. This second construction period will have a maximum of 200 workers and 30 trucks per day. Since this second construction period would generate the greatest amount of trips on the roadway, it is the subject of this analysis.

Daily and peak hour trip generation rates and in/out splits were calculated for the peak construction period using detailed data developed for analysis of the Project's impacts. Construction activities would generally occur during an 8-hour-shift day. Generally, all employees would arrive prior to the morning peak commuter period (7:00 – 9:00 a.m.) and depart within the evening peak period (4:00 – 6:00 p.m.). Delivery truck trips are anticipated to be distributed generally evenly throughout the 8-hour-shift day. In order to provide a conservative analysis, all employees were assumed to arrive and depart during peak commute periods. In addition, no carpooling for construction employees was assumed.

A passenger-car-equivalent (PCE) factor of 2.5 was applied to heavy vehicles (per the Highway Capacity Manual or HCM) to account for their reduced performance characteristics in the traffic stream (e.g. starting, stopping, and maneuvering). This information was used in calculating the Project-generated average daily traffic (ADT).

Table 8-1 tabulates the total daily and peak hour Project traffic volumes. The Project trip generation is calculated to be 550 ADT with 200 inbound/ 20 outbound trips during the AM peak hour and 20 inbound/ 200 outbound trips during the PM peak hour. These values include the heavy-vehicle PCE-adjustment.

Post-construction, the facility will operate with up to 20 full-time employees on site. Therefore, an analysis of the post-construction scenario was not conducted.

TABLE 8-1
PHASE 2 CONSTRUCTION PROJECT TRIP GENERATION

Use	Size	PCE ^a	Daily Trips		AM Peak Hour		PM Peak Hour	
			Rate (In + Out)	Volume (ADT) ^b	Volume		Volume	
					In	Out	In	Out
Personnel	200	1.0	2.0 /personnel	400	190	10	10	190
Trucks	30	2.5	2.0 /truck	150	10	10	10	10
Subtotal	-	-	-	550	200	20	20	200

Footnotes:

- a. PCE = Passenger Car Equivalent.
- b. ADT = Average Daily Traffic.

General Notes:

1. To estimate the employee traffic, it is conservatively assumed that 100% of the employee traffic would access the work area during the normal commuter peak hours (7:00 – 9:00 a.m. & 4:00 – 6:00 p.m.).
2. The In/Out splits assumed are 95:5 during AM peak hour and 5:95 during the PM peak hour.
3. Truck trips are estimated to occur relatively evenly throughout an 8-hour construction hours proposed for the Project. For 30 trucks with an equivalent of 150 ADT, this calculates to approximately 20 trucks/hour.

8.2 Project Trip Distribution and Assignment

Based on the information provided by the applicant, the personnel and construction truck trips will come from both east and west of the Project site via I-8.

A trip distribution and assignment were prepared for truck and employee trips to represent the distribution of Project traffic. The construction route is assumed to be I-8 to Drew Road to Wixom Road to Liebert Road.

Figure 8-1 depicts the Project Traffic Distribution, while **Figure 8-2** depicts the Project Traffic Volumes.

Figure 8-3 shows the Near-Term with Project Construction Traffic Volumes.

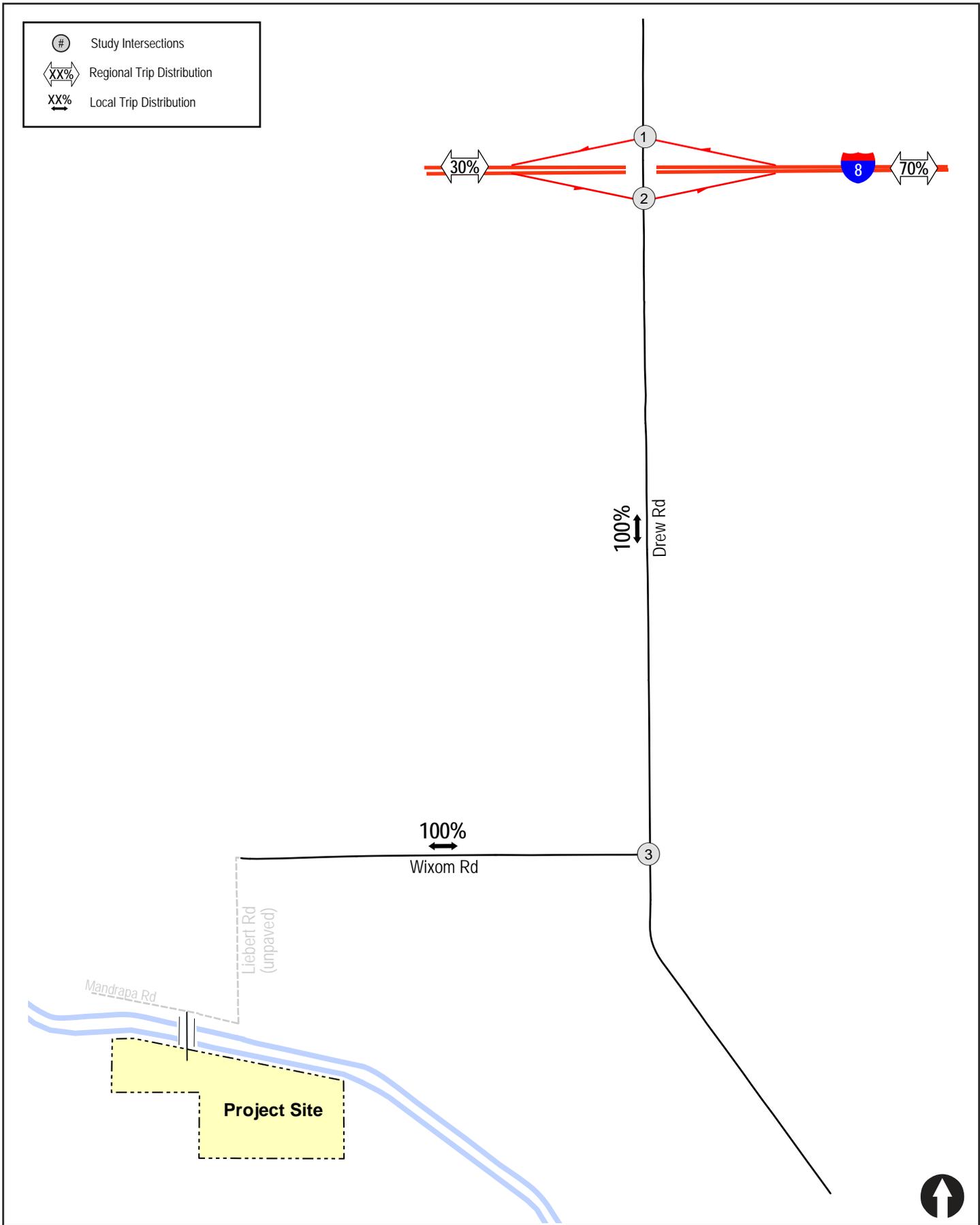


Figure 8-1

Project Traffic Distribution

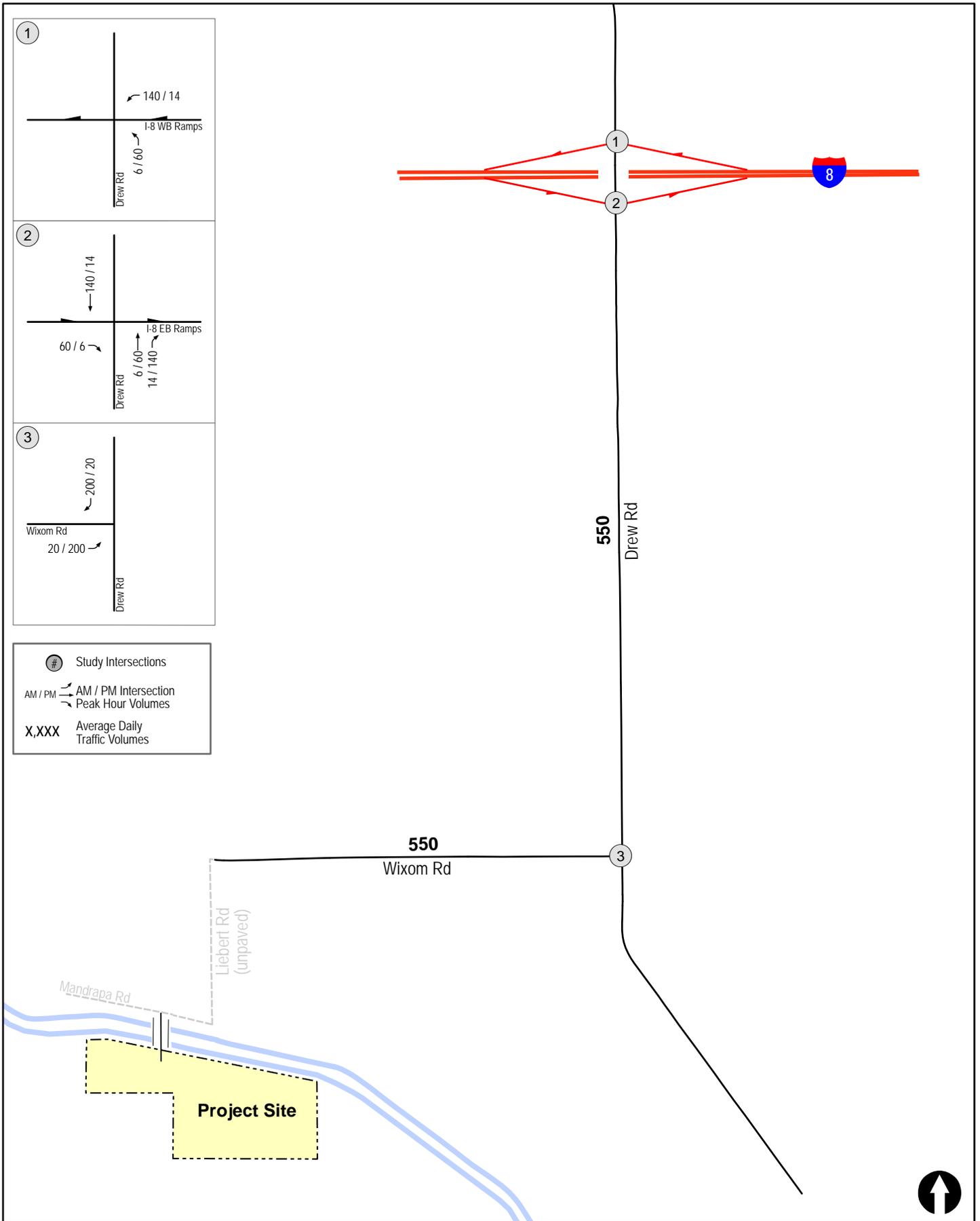
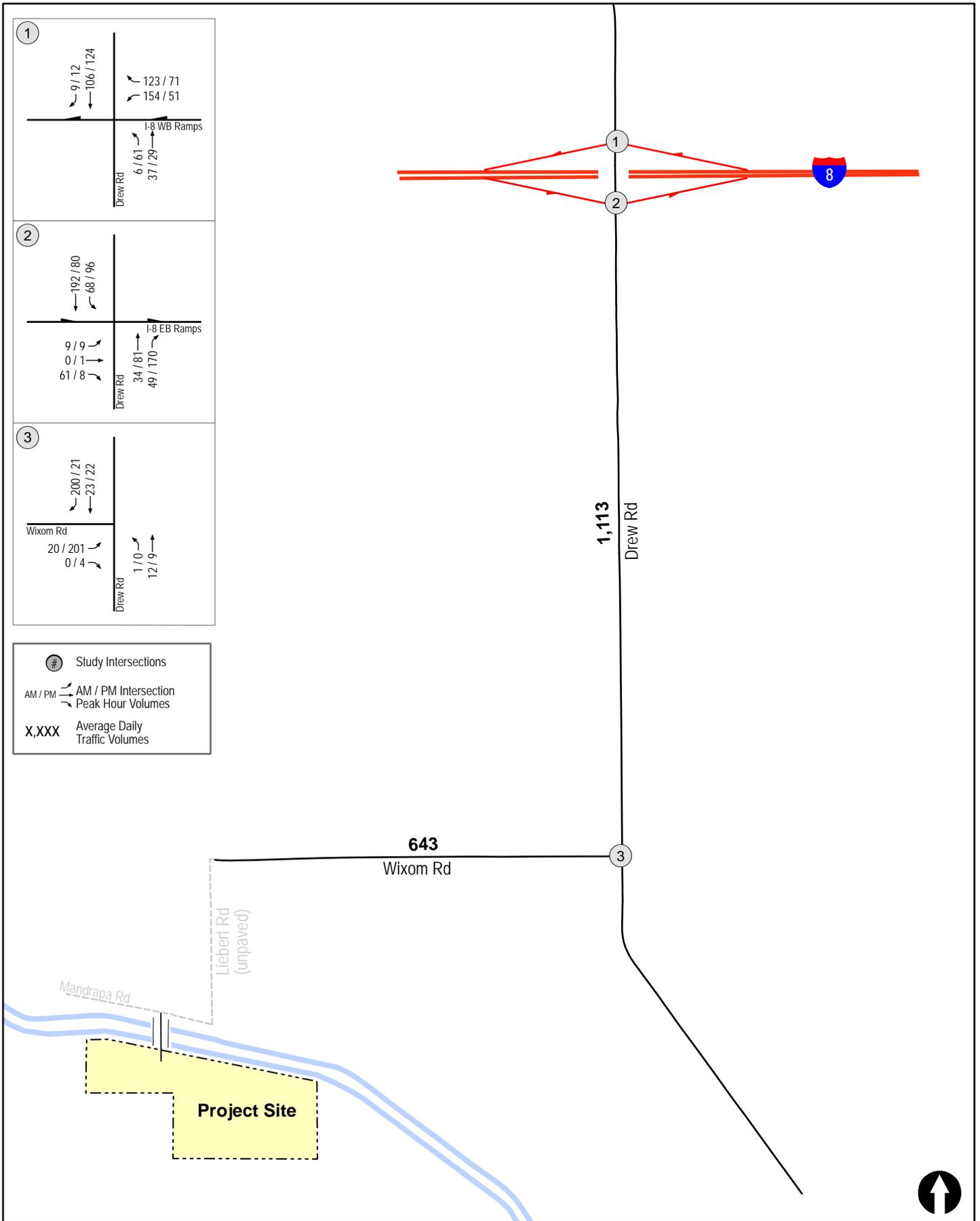


Fig 8-2

Project Traffic Volumes



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Fig 8-3

Near-Term with Project Traffic Volumes

9.0 ANALYSIS OF NEAR-TERM WITH PROJECT CONDITIONS

9.1 Peak Hour Intersection Levels of Service

Table 9-1 summarizes the Near-Term with Project intersections level of service. As seen in *Table 9-1*, with the addition of Project traffic, all intersections are calculated to operate at acceptable LOS B or better.

No significant Project impacts are calculated.

Appendix F contains the Near-Term with Project intersection analysis worksheets.

TABLE 9-1
NEAR-TERM INTERSECTION OPERATIONS

Intersection	Jurisdiction	Control Type	Critical Movement	Peak Hour	Existing		Near-Term without Project		Near-Term with Project			Impact Type
					Delay ^a	LOS ^b	Delay	LOS	Delay	LOS	Δ ^c	
1. Drew Road / I-8 WB Ramps	Caltrans	MSSC ^d	WB	AM	9.3	A	9.4	A	10.7	B	1.3	None
				PM	9.0	A	9.0	A	9.7	A	0.7	None
2. Drew Road / I-8 WB Ramps	Caltrans	MSSC	EB	AM	10.4	B	10.6	B	10.6	B	0.0	None
				PM	10.5	B	10.6	B	11.0	B	0.4	None
3. Drew Road / Wixom Road	Imperial County	MSSC	EB	AM	0.0	A	0.0	A	10.3	B	10.3	None
				PM	8.5	A	8.5	A	10.5	B	2.0	None

Footnotes:

- a. Average delay expressed in seconds per vehicle.
- b. LOS = Level of Service.
- c. “ Δ ” denotes the increase in delay of the Critical Movement due to Project Traffic.
- d. MSSC = Minor Street Stop-Control.

UNSIGNALIZED

DELAY/LOS THRESHOLDS

Delay	LOS
0.0 ≤ 10.0	A
10.1 to 15.0	B
15.1 to 25.0	C
25.1 to 35.0	D
35.1 to 50.0	E
≥ 50.1	F

9.2 Daily Street Segment Levels of Service

Table 9-2 summarizes the Near-Term with Project street segment level of service. As seen in *Table 9-2*, with the addition of Project traffic, both roadway segments are calculated to operate at LOS B or better.

No significant Project impacts are calculated.

**TABLE 9-2
NEAR-TERM WITH PROJECT STREET SEGMENT OPERATIONS**

Street Segment	Classification	Capacity (LOS E) ^a	Existing			Near-Term without Project			Near-Term with Project				Impact Type
			ADT ^b	LOS ^c	V/C ^d	ADT	LOS	V/C	ADT	LOS	V/C	Δ ^e	
Drew Road I-8 to Wixom Road	Collector	8,100 ^f	541	A	0.067	563	A	0.070	1,113	B	0.137	0.067	None
Wixom Road Liebert Road to Drew Road	None	8,100 ^f	89	A	0.011	93	A	0.011	643	A	0.079	0.068	None

Footnotes:

- a. Capacities based on Imperial County Standard Street Classification Table.
- b. ADT = Average Daily Traffic Volumes.
- c. LOS = Level of Service.
- d. V/C = Volume to Capacity ratio.
- e. “ Δ ” denotes the increase in V/C ratio due to the addition of Project traffic.
- f. Both roadway segments are currently built as two-lane roads. Roadway capacities were conservatively assumed as half of the Local Collector capacities from the Imperial County Standard Street Classification table.

10.0 SUMMARY AND CONCLUSIONS

Per the established significance thresholds and the analysis methodology presented in this report, Project-related traffic is not calculated to cause any significant impacts within the study area. No mitigation measures are required or proposed.

TECHNICAL APPENDICES
WESTSIDE CANAL BATTERY STORAGE
COMPLEX PROJECT
Imperial County, California
July 22, 2019

LLG Ref. 3-18-2960

**Linscott, Law &
Greenspan, Engineers**

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APPENDIX A

INTERSECTION AND ROADWAY SEGMENT COUNT SHEETS

Intersection Turning Movement - Peak Hour Vehicle Count



Location:	#01	File Name:	ITM-19-028-01
Intersection:	Drew Road & I-8 Westbound Ramps	Project:	LLG Ref. 3-18-2960
Date of Count:	Wednesday, March 13, 2019		El Centro-Calexico

AM	Drew Road Southbound			I-8 Westbound Off Ramp Westbound			Drew Road Northbound			I-8 Westbound On Rmap Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00	0	16	2	6	0	16	0	6	0	0	0	0	46
7:15	0	20	2	2	0	24	0	7	0	0	0	0	55
7:30	0	24	1	0	0	30	0	6	0	0	0	0	61
7:45	0	30	4	3	0	48	0	9	0	0	0	0	94
8:00	0	15	1	4	0	19	0	6	0	0	0	0	45
8:15	0	19	3	7	0	17	0	10	0	0	0	0	56
8:30	0	32	3	9	0	7	0	8	0	0	0	0	59
8:45	0	28	3	9	0	8	0	10	0	0	0	0	58
Total	0	184	19	40	0	169	0	62	0	0	0	0	474
Approach%	-	90.6	9.4	19.1	-	80.9	-	100.0	-	-	-	-	
Total%	-	38.8	4.0	8.4	-	35.7	-	13.1	-	-	-	-	

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

Volume	-	90	9	11	-	118	-	28	-	-	-	-	256
Approach%	-	90.9	9.1	8.5	-	91.5	-	100.0	-	-	-	-	
Total%	-	35.2	3.5	4.3	-	46.1	-	10.9	-	-	-	-	
PHF			0.73			0.63		0.78			#DIV/0!		0.68

PM	Drew Road Southbound			I-8 Westbound Off Ramp Westbound			Drew Road Northbound			I-8 Westbound On Rmap Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16:00	0	39	4	5	0	15	0	9	0	0	0	0	72
16:15	0	28	2	7	0	22	0	5	0	0	0	0	64
16:30	0	30	5	12	0	12	1	6	0	0	0	0	66
16:45	0	20	1	11	0	19	0	8	0	0	0	0	59
17:00	0	24	1	7	0	8	0	6	0	0	0	0	46
17:15	0	19	1	17	0	24	1	8	0	0	0	0	70
17:30	0	16	1	9	0	23	1	5	0	0	0	0	55
17:45	0	21	1	8	0	24	0	5	0	0	0	0	59
Total	0	197	16	76	0	147	3	52	0	0	0	0	491
Approach%	-	92.5	7.5	34.1	-	65.9	5.5	94.5	-	-	-	-	
Total%	-	40.1	3.3	15.5	-	29.9	0.6	10.6	-	-	-	-	

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

Volume	-	117	12	35	-	68	1	28	-	-	-	-	261
Approach%	-	90.7	9.3	34.0	-	66.0	3.4	96.6	-	-	-	-	
Total%	-	44.8	4.6	13.4	-	26.1	0.4	10.7	-	-	-	-	
PHF			0.75			0.86		0.81			#DIV/0!		0.91

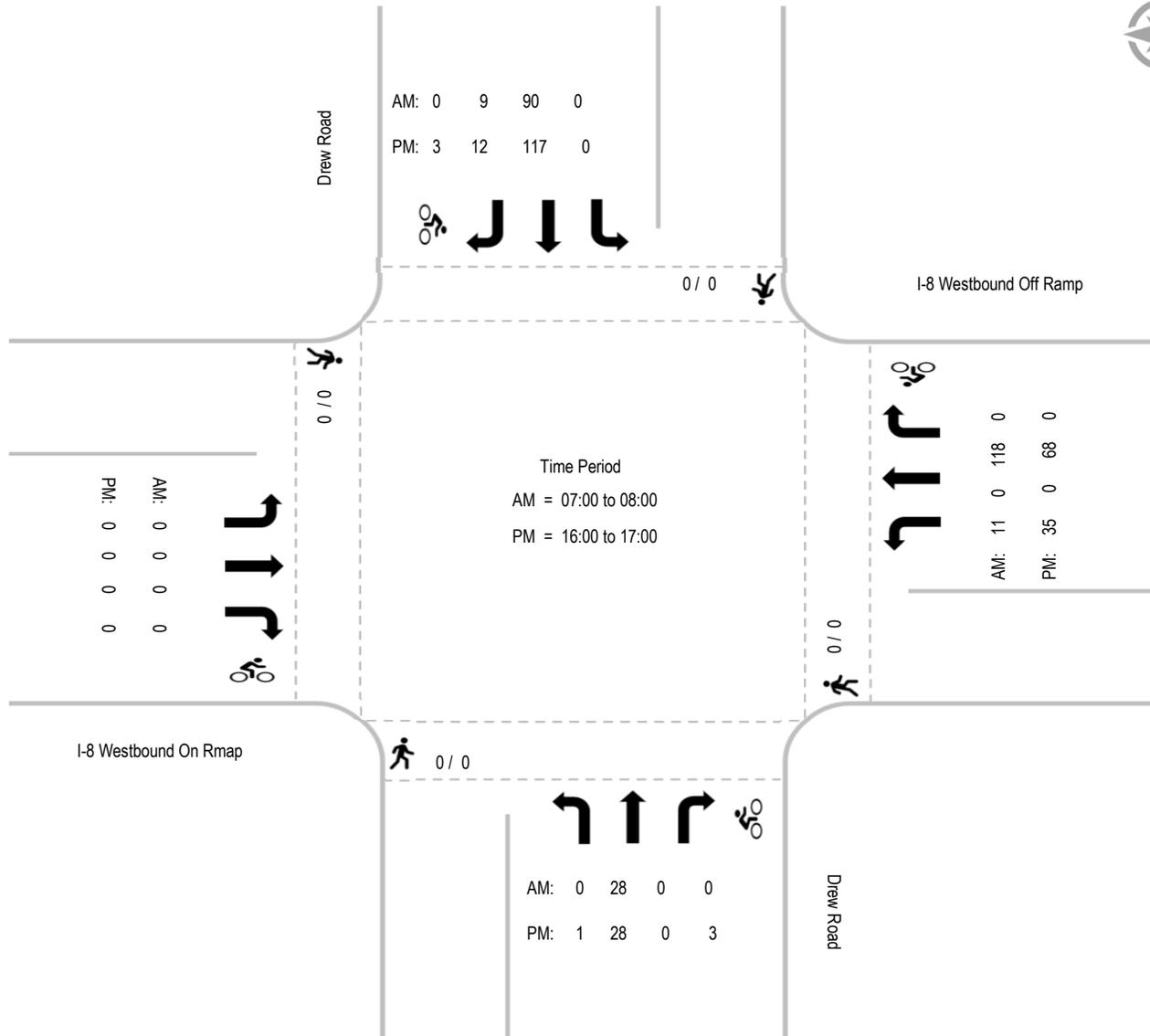
Intersection Turning Movement - Bicycle & Pedestrian Count

LINSCOTT LAW & GREENSPAN engineers	Location: #01	File Name: ITM-19-028-01
	Intersection: Drew Road & I-8 Westbound Ramps	Project: LLG Ref. 3-18-2960
	Date of Count: Wednesday, March 13, 2019	El Centro-Calexico

AM	Drew Road Southbound				I-8 Westbound Off Ramp Westbound				Drew Road Northbound				I-8 Westbound On Rmap 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	Drew Road Southbound				I-8 Westbound Off Ramp Westbound				Drew Road Northbound				I-8 Westbound On Rmap 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	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
17:00	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	3	0		0	0	0		0	3	0		0	0	0		6

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Intersection Turning Movement - Peak Hour Vehicle Count

LINSCOTT LAW & GREENSPAN <i>engineers</i>	Location: #02	File Name: ITM-19-028-02
	Intersection: Drew Road & I-8 Eastbound Ramps	Project: LLG Ref. 3-18-2960
	Date of Count: Wednesday, March 13, 2019	El Centro-Calexico

AM	Drew Road Southbound			I-8 Eastbound On Ramp Westbound			Drew Road Northbound			I-8 Eastbound Off Rmap Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00	12	10	0	0	0	0	0	5	5	2	0	0	34
7:15	12	2	0	0	0	0	0	5	12	0	0	0	31
7:30	21	4	0	0	0	0	0	6	5	0	0	0	36
7:45	23	10	0	0	0	0	0	6	8	2	0	0	49
8:00	13	6	0	0	0	0	0	5	7	2	0	0	33
8:15	13	12	0	0	0	0	0	8	6	3	0	0	42
8:30	16	22	0	0	0	0	0	8	13	2	0	1	62
8:45	21	15	0	0	0	0	0	5	2	5	0	0	48
Total	131	81	0	0	0	0	0	48	58	16	0	1	335
Approach%	61.8	38.2	-	-	-	-	-	45.3	54.7	94.1	-	5.9	
Total%	39.1	24.2	-	-	-	-	-	14.3	17.3	4.8	-	0.3	

AM Intersection Peak Hour: 07:45 to 08:45

Volume	65	50	-	-	-	-	-	27	34	9	-	1	186
Approach%	56.5	43.5	-	-	-	-	-	44.3	55.7	90.0	-	10.0	
Total%	34.9	26.9	-	-	-	-	-	14.5	18.3	4.8	-	0.5	
PHF			0.76			#DIV/0!			0.73			0.83	0.75

PM	Drew Road Southbound			I-8 Eastbound On Ramp Westbound			Drew Road Northbound			I-8 Eastbound Off Rmap Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16:00	34	10	0	0	0	0	0	7	7	2	0	0	60
16:15	17	20	0	0	0	0	0	2	5	3	1	0	48
16:30	24	18	0	0	0	0	0	5	12	2	0	1	62
16:45	17	15	0	0	0	0	0	5	5	2	0	1	45
17:00	15	13	0	0	0	0	0	5	8	2	0	0	43
17:15	17	18	0	0	0	0	0	5	4	2	0	1	47
17:30	9	16	0	0	0	0	0	6	10	0	0	1	42
17:45	17	14	0	0	0	0	0	1	2	3	0	1	38
Total	150	124	0	0	0	0	0	36	53	16	1	5	385
Approach%	54.7	45.3	-	-	-	-	-	40.4	59.6	72.7	4.5	22.7	
Total%	39.0	32.2	-	-	-	-	-	9.4	13.8	4.2	0.3	1.3	

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

Volume	92	63	-	-	-	-	-	19	29	9	1	2	215
Approach%	59.4	40.6	-	-	-	-	-	39.6	60.4	75.0	8.3	16.7	
Total%	42.8	29.3	-	-	-	-	-	8.8	13.5	4.2	0.5	0.9	
PHF			0.88			#DIV/0!			0.71			0.75	0.87

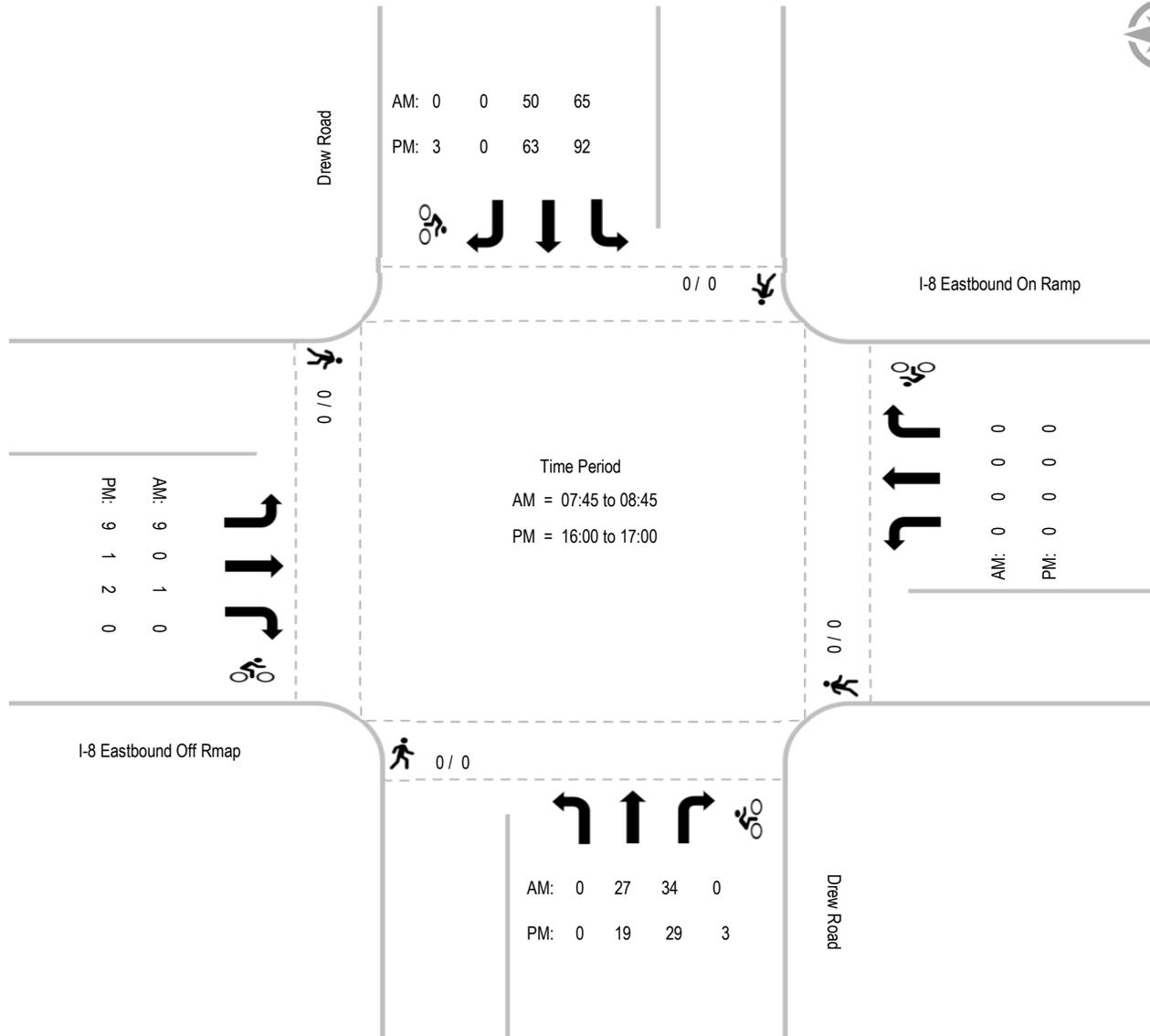
Intersection Turning Movement - Bicycle & Pedestrian Count

LINSCOTT LAW & GREENSPAN engineers	Location: #02	File Name: ITM-19-028-02
	Intersection: Drew Road & I-8 Eastbound Ramps	Project: LLG Ref. 3-18-2960
	Date of Count: Wednesday, March 13, 2019	El Centro-Calexico

AM	Drew Road Southbound				I-8 Eastbound On Ramp Westbound				Drew Road Northbound				I-8 Eastbound Off Rmap 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	
7:15	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	
7:45	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	
8:15	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	
8:45	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	Drew Road Southbound				I-8 Eastbound On Ramp Westbound				Drew Road Northbound				I-8 Eastbound Off Rmap 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	
16:15	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	
16:45	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
17:00	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
17:30	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	
Ped Total	0				0				0				0				0	
Bike Total		0	3	0		0	0	0		0	3	0		0	0	0		6

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Intersection Turning Movement - Peak Hour Vehicle Count

LINSCOTT LAW & GREENSPAN engineers	Location: #03	File Name: ITM-19-028-03
	Intersection: Drew Road & Wixom Road	Project: LLG Ref. 3-18-2960
	Date of Count: Wednesday, March 13, 2019	El Centro-Calexico

AM	Drew Road Southbound			- Westbound			Drew Road Northbound			Wixom Road Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00	0	3	1	0	0	0	0	5	0	0	0	0	9
7:15	0	2	0	0	0	0	0	5	0	1	0	0	8
7:30	0	1	0	0	0	0	1	4	0	0	0	0	6
7:45	0	2	0	0	0	0	0	1	0	0	0	0	3
8:00	0	2	0	0	0	0	0	5	0	0	0	0	7
8:15	0	2	0	0	0	0	0	5	0	0	0	0	7
8:30	0	15	0	0	0	0	1	1	0	0	0	0	17
8:45	0	3	0	0	0	0	0	1	0	0	0	0	4
Total	0	30	1	0	0	0	2	27	0	1	0	0	61
Approach%	-	96.8	3.2	-	-	-	6.9	93.1	-	100.0	-	-	
Total%	-	49.2	1.6	-	-	-	3.3	44.3	-	1.6	-	-	

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

Volume	-	22	-	-	-	-	1	12	-	-	-	-	35
Approach%	-	100.0	-	-	-	-	7.7	92.3	-	-	-	-	
Total%	-	62.9	-	-	-	-	2.9	34.3	-	-	-	-	
PHF			0.37			#DIV/0!			0.65			#DIV/0!	0.51

PM	Drew Road Southbound			- Westbound			Drew Road Northbound			Wixom Road Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16:00	0	0	0	0	0	0	0	4	0	0	0	1	5
16:15	0	10	0	0	0	0	0	1	0	1	0	1	13
16:30	0	7	0	0	0	0	0	1	0	0	0	2	10
16:45	0	4	1	0	0	0	0	3	0	0	0	0	8
17:00	0	3	1	0	0	0	0	1	0	0	0	0	5
17:15	0	3	0	0	0	0	0	2	0	0	0	0	5
17:30	0	5	0	0	0	0	0	5	0	1	0	0	11
17:45	0	7	1	0	0	0	0	2	0	0	0	0	10
Total	0	39	3	0	0	0	0	19	0	2	0	4	67
Approach%	-	92.9	7.1	-	-	-	-	100.0	-	33.3	-	66.7	
Total%	-	58.2	4.5	-	-	-	-	28.4	-	3.0	-	6.0	

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

Volume	-	21	1	-	-	-	-	9	-	1	-	4	36
Approach%	-	95.5	4.5	-	-	-	-	100.0	-	20.0	-	80.0	
Total%	-	58.3	2.8	-	-	-	-	25.0	-	2.8	-	11.1	
PHF			0.55			#DIV/0!			0.56			0.63	0.69

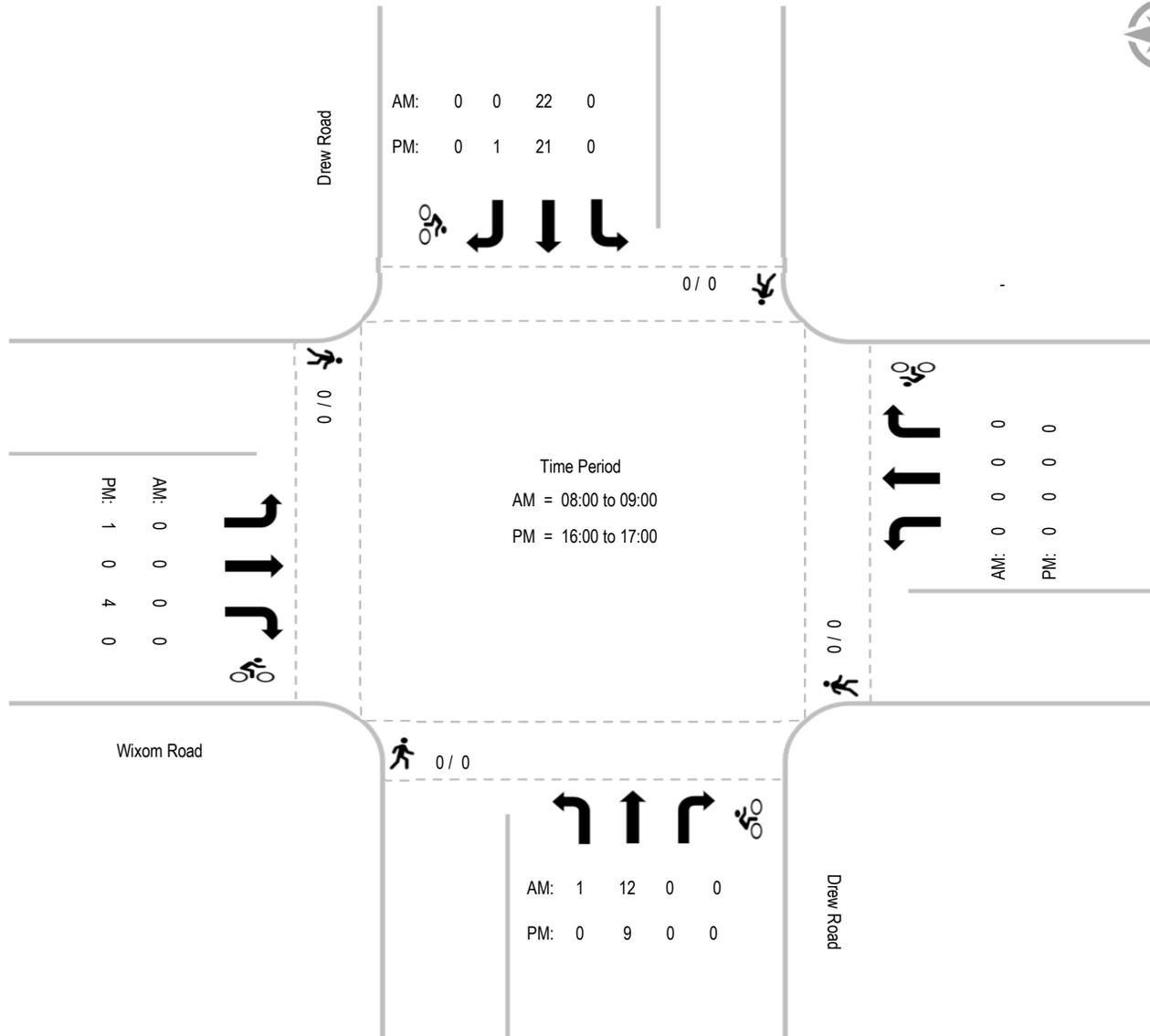
Intersection Turning Movement - Bicycle & Pedestrian Count

LINSCOTT LAW & GREENSPAN <i>engineers</i>	Location:	#03	File Name:	ITM-19-028-03
	Intersection:	Drew Road & Wixom Road	Project:	LLG Ref. 3-18-2960
	Date of Count:	Wednesday, March 13, 2019		El Centro-Calexico

AM	Drew Road Southbound				- Westbound				Drew Road Northbound				Wixom Road 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	
7:15	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	
7:45	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	
8:15	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	
8:45	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	Drew Road Southbound				- Westbound				Drew Road Northbound				Wixom Road 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	
16:15	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	
16:45	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	
17:15	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	
17:45	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

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Linscott, Law & Greenspan, Engineers

4542 Ruffner Street, Suite 100, San Diego, CA 92111

Average Daily Traffic

Location: **Drew Road, between I-8 Ramps and Diehl Road**

Date: Wednesday, March 13, 2019					Total Daily Volume: 541										Description: Total Volume								
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
4	1	4	4	4	19	44	33	47	25	40	25	28	41	40	41	38	34	26	16	12	3	8	4
2	1	1	2	1	2	13	8	11	3	9	7	3	9	10	18	7	6	8	6	1	1	2	0
0	0	0	0	1	4	7	10	9	6	15	6	7	11	13	9	13	9	8	5	6	1	0	2
2	0	3	2	1	4	17	9	24	10	9	4	8	9	7	8	12	11	6	1	3	0	3	1
0	0	0	0	1	9	7	6	3	6	7	8	10	12	10	6	6	8	4	4	2	1	3	1

Date: Wednesday, March 13, 2019					Total Daily Volume: 253										Description: Northbound Volume								
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
3	0	1	1	1	11	15	21	14	11	23	14	21	21	18	22	11	14	13	8	4	1	4	1
2	0	0	1	0	2	3	4	3	1	1	5	2	3	3	6	4	2	4	3	0	0	0	0
0	0	0	0	0	4	2	6	7	2	13	4	6	9	5	6	3	5	6	3	4	1	0	1
1	0	1	0	1	1	5	7	3	6	5	3	6	5	6	5	2	5	3	1	0	0	3	0
0	0	0	0	0	4	5	4	1	2	4	2	7	4	4	5	2	2	0	1	0	0	1	0

Date: Wednesday, March 13, 2019					Total Daily Volume: 288										Description: Southbound Volume								
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
1	1	3	3	3	8	29	12	33	14	17	11	7	20	22	19	27	20	13	8	8	2	4	3
0	1	1	1	1	0	10	4	8	2	8	2	1	6	7	12	3	4	4	3	1	1	2	0
0	0	0	0	1	0	5	4	2	4	2	2	1	2	8	3	10	4	2	2	2	0	0	1
1	0	2	2	0	3	12	2	21	4	4	1	2	4	1	3	10	6	3	0	3	0	0	1
0	0	0	0	1	5	2	2	2	4	3	6	3	8	6	1	4	6	4	3	2	1	2	1

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Linscott, Law & Greenspan, Engineers

4542 Ruffner Street, Suite 100, San Diego, CA 92111

Average Daily Traffic

Location: **Wixom Road, between Derrick Road and Drew Road**

Date: Wednesday, March 13, 2019		Total Daily Volume: 89											Description: Total Volume										
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
4	2	2	3	2	8	2	3	1	4	4	2	7	6	7	11	6	3	1	3	3	1	2	2
2	1	0	2	0	1	1	1	0	0	2	0	0	0	2	3	1	1	0	2	2	0	2	0
1	0	1	1	2	1	0	1	0	3	1	0	4	0	1	1	2	0	0	1	1	0	0	0
0	1	0	0	0	0	0	0	1	1	0	0	1	3	1	7	2	1	0	0	0	1	0	1
1	0	1	0	0	6	1	1	0	0	1	2	2	3	3	0	1	1	1	0	0	0	0	1

Date: Wednesday, March 13, 2019		Total Daily Volume: 47											Description: Eastbound Volume										
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
3	2	2	1	1	3	0	1	0	3	4	1	2	4	3	6	5	1	0	3	1	1	0	0
2	1	0	1	0	1	0	0	0	0	2	0	0	0	1	1	1	0	0	2	0	0	0	0
1	0	1	0	1	0	0	1	0	2	1	0	0	0	1	1	2	0	0	1	1	0	0	0
0	1	0	0	0	0	0	0	0	1	0	0	0	2	1	4	2	1	0	0	0	1	0	0
0	0	1	0	0	2	0	0	0	0	1	1	2	2	0	0	0	0	0	0	0	0	0	0

Date: Wednesday, March 13, 2019		Total Daily Volume: 42											Description: Westbound Volume										
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
1	0	0	2	1	5	2	2	1	1	0	1	5	2	4	5	1	2	1	0	2	0	2	2
0	0	0	1	0	0	1	1	0	0	0	0	0	0	1	2	0	1	0	0	2	0	2	0
0	0	0	1	1	1	0	0	0	1	0	0	4	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	3	0	0	0	0	0	0	0	1
1	0	0	0	0	4	1	1	0	0	0	1	0	1	3	0	1	1	1	0	0	0	0	1

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APPENDIX B

HCM INTERSECTION METHODOLOGY

HIGHWAY CAPACITY 6th EDITION MANUAL

LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

In the Highway Capacity Manual 6th Edition (HCM 6), Level of Service for unsignalized intersections 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. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. The criteria are given in the following table, and are based on the average control delay for any particular minor movement.

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

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 on 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.

In most cases at Two-Way Stop Controlled (TWSC) intersections, the critical movement is the minor-street left-turn movement. As such, the minor-street left-turn movement can generally be considered the primary factor affecting overall intersection performance. The lower threshold for LOS F is set at 50 seconds of delay per vehicle. There are many instances, particularly in urban areas, in which the delay equations will predict delays of 50 seconds (LOS F) or more for minor-street movements under very low volume conditions on the minor street (less than 25 vehicle/hour). Since the first term of the equation is a function only of the capacity, the LOS F threshold of 50 sec/vehicle is reached with a movement capacity of approximately 85 vehicle/hour or less.

This procedure assumes random arrivals on the major street. For a typical four-lane arterial with average daily traffic volumes in the range of 15,000 to 20,000 vehicles per day (peak hour, 1,500 to 2,000 vehicle/hour), the delay equation used in the TWSC capacity analysis procedure will predict 50 seconds of delay or more (LOS F) for many urban TWSC intersections that allow minor-street left-turn movements. **The LOS F threshold will be reached regardless of the volume of minor-street left-turn traffic.** Notwithstanding this fact, most low-volume minor-street approaches would not meet any of the volume or delay warrants for signalization of the *Manual on Uniform Traffic Control Devices* (MUTCD) since the warrants define an asymptote at 100 vehicle/hour on the minor approach. As a result, many public agencies that use the HCM 6 Level of Service thresholds to determine the design adequacy of TWSC intersections may be forced to eliminate the minor-street left-turn movement, even when the movement may not present any operational problem, such as the formation of long queues on the minor street or driveway approach.

APPENDIX C

IMPERIAL COUNTY STANDARD STREET CLASSIFICATION TABLE

**IMPERIAL COUNTY STANDARD STREET CLASSIFICATION
AVERAGE DAILY VEHICLE TRIPS**

ROAD		LEVEL OF SERVICE				
CLASS	X-SECTION	A	B	C	D	E
Expressway	128/210	30,000	42,000	60,000	70,000	80,000
Prime Arterial	106/136	22,200	37,000	44,600	50,000	57,000
Minor Arterial	82/102	14,800	24,700	29,600	33,400	37,000
Collector	64/84	13,700	22,800	27,400	30,800	34,200
Local Collector	40/70	1,900	4,100	7,100	10,900	16,200
Residential Street	40/60	*	*	<1,500	*	*
Residential Cul-de-Sac / Loop Street	40/60	*	*	< 200	*	*
Industrial Collector	76/96	5,000	10,000	14,000	17,000	20,000
Industrial Local Street	44/64	2,500	5,000	7,000	8,500	10,000

* Levels of service are not applied to residential streets since their primary purpose is to serve abutting lots, not carry through traffic. Levels of service normally apply to roads carrying through traffic between major trip generators and attractors.

APPENDIX D

EXISTING INTERSECTION ANALYSIS WORKSHEETS

HCM 6th TWSC
1: Drew Road & I-8 WB Ramps

Existing AM
04/08/2019

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↕		↕			↕	
Traffic Vol, veh/h	0	0	0	13	0	118	0	36	0	0	102	9
Future Vol, veh/h	0	0	0	13	0	118	0	36	0	0	102	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	-	-	40	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	68	68	68	68	68	68	68	68	68	68	68	68
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	19	0	174	0	53	0	0	150	13

Major/Minor	Minor1		Major1		Major2		
Conflicting Flow All	210	216	53	163	0	-	0
Stage 1	53	53	-	-	-	-	-
Stage 2	157	163	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	778	682	1014	1416	-	0	0
Stage 1	970	851	-	-	-	0	0
Stage 2	871	763	-	-	-	0	0
Platoon blocked, %					-	-	-
Mov Cap-1 Maneuver	778	0	1014	1416	-	-	-
Mov Cap-2 Maneuver	778	0	-	-	-	-	-
Stage 1	970	0	-	-	-	-	-
Stage 2	871	0	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.3	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBTWBLn1	WBLn2	SBT	SBR
Capacity (veh/h)	1416	-	778 1014	-	-
HCM Lane V/C Ratio	-	-	0.025 0.171	-	-
HCM Control Delay (s)	0	-	9.7 9.3	-	-
HCM Lane LOS	A	-	A A	-	-
HCM 95th %tile Q(veh)	0	-	0.1 0.6	-	-

HCM 6th TWSC
2: Drew Road & I-8 EB Ramps

Existing AM
04/08/2019

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶	↷					↶			↶	
Traffic Vol, veh/h	9	0	1	0	0	0	0	27	34	65	50	0
Future Vol, veh/h	9	0	1	0	0	0	0	27	34	65	50	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	40	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	0	1	0	0	0	0	36	45	87	67	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	300	322	67	-	0	0	81	0	0
Stage 1	241	241	-	-	-	-	-	-	-
Stage 2	59	81	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	691	595	997	0	-	-	1517	-	0
Stage 1	799	706	-	0	-	-	-	-	0
Stage 2	964	828	-	0	-	-	-	-	0
Platoon blocked, %									
Mov Cap-1 Maneuver	650	0	997	-	-	-	1517	-	-
Mov Cap-2 Maneuver	650	0	-	-	-	-	-	-	-
Stage 1	799	0	-	-	-	-	-	-	-
Stage 2	906	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.4	0	4.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	650	997	1517	-
HCM Lane V/C Ratio	-	-	0.018	0.001	0.057	-
HCM Control Delay (s)	-	-	10.6	8.6	7.5	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	0.2	-

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	1	12	22	0
Future Vol, veh/h	0	0	1	12	22	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	51	51	51	51	51	51
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	2	24	43	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	71	43	43	0	-	0
Stage 1	43	-	-	-	-	-
Stage 2	28	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	933	1027	1566	-	-	-
Stage 1	979	-	-	-	-	-
Stage 2	995	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	932	1027	1566	-	-	-
Mov Cap-2 Maneuver	932	-	-	-	-	-
Stage 1	978	-	-	-	-	-
Stage 2	995	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1566	-	-	-	-
HCM Lane V/C Ratio	0.001	-	-	-	-
HCM Control Delay (s)	7.3	0	0	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

HCM 6th TWSC
1: Drew Road & I-8 WB Ramps

Existing PM
04/08/2019

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↕		↕			↕	
Traffic Vol, veh/h	0	0	0	36	0	68	1	28	0	0	119	12
Future Vol, veh/h	0	0	0	36	0	68	1	28	0	0	119	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	-	-	40	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	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	0	0	0	40	0	75	1	31	0	0	131	13

Major/Minor	Minor1		Major1		Major2		
Conflicting Flow All	171	177	31	144	0	-	0
Stage 1	33	33	-	-	-	-	-
Stage 2	138	144	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	819	717	1043	1438	-	0	0
Stage 1	989	868	-	-	-	0	0
Stage 2	889	778	-	-	-	0	0
Platoon blocked, %	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	818	0	1043	1438	-	-	-
Mov Cap-2 Maneuver	818	0	-	-	-	-	-
Stage 1	988	0	-	-	-	-	-
Stage 2	889	0	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9	0.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBTWBLn1	WBLn2	SBT	SBR
Capacity (veh/h)	1438	-	818 1043	-	-
HCM Lane V/C Ratio	0.001	-	0.048 0.072	-	-
HCM Control Delay (s)	7.5	0	9.6 8.7	-	-
HCM Lane LOS	A	A	A A	-	-
HCM 95th %tile Q(veh)	0	-	0.2 0.2	-	-

HCM 6th TWSC
2: Drew Road & I-8 EB Ramps

Existing PM
04/08/2019

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗					↖			↖	
Traffic Vol, veh/h	9	1	2	0	0	0	0	20	29	92	63	0
Future Vol, veh/h	9	1	2	0	0	0	0	20	29	92	63	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	40	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	1	2	0	0	0	0	23	33	106	72	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	324	340	72	-	0	0	56	0	0
Stage 1	284	284	-	-	-	-	-	-	-
Stage 2	40	56	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	670	582	990	0	-	-	1549	-	0
Stage 1	764	676	-	0	-	-	-	-	0
Stage 2	982	848	-	0	-	-	-	-	0
Platoon blocked, %									
Mov Cap-1 Maneuver	622	0	990	-	-	-	1549	-	-
Mov Cap-2 Maneuver	622	0	-	-	-	-	-	-	-
Stage 1	764	0	-	-	-	-	-	-	-
Stage 2	912	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.5	0	4.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	622	990	1549	-
HCM Lane V/C Ratio	-	-	0.018	0.002	0.068	-
HCM Control Delay (s)	-	-	10.9	8.6	7.5	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	0.2	-

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	1	4	0	9	21	1
Future Vol, veh/h	1	4	0	9	21	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	69	69	69	69	69
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	6	0	13	30	1

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	44	31	31	0	0
Stage 1	31	-	-	-	-
Stage 2	13	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	967	1043	1582	-	-
Stage 1	992	-	-	-	-
Stage 2	1010	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	967	1043	1582	-	-
Mov Cap-2 Maneuver	967	-	-	-	-
Stage 1	992	-	-	-	-
Stage 2	1010	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.5	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1582	-	1027	-	-
HCM Lane V/C Ratio	-	-	0.007	-	-
HCM Control Delay (s)	0	-	8.5	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

APPENDIX E

NEAR-TERM WITHOUT PROJECT INTERSECTION ANALYSIS WORKSHEETS

HCM 6th TWSC
1: Drew Road & I-8 WB Ramps

Near-Term without Project AM
04/08/2019

Intersection												
Int Delay, s/veh	4.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↕		↕			↕	
Traffic Vol, veh/h	0	0	0	14	0	123	0	37	0	0	106	9
Future Vol, veh/h	0	0	0	14	0	123	0	37	0	0	106	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	-	-	40	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	68	68	68	68	68	68	68	68	68	68	68	68
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	21	0	181	0	54	0	0	156	13

Major/Minor	Minor1		Major1		Major2		
Conflicting Flow All	217	223	54	169	0	-	0
Stage 1	54	54	-	-	-	-	-
Stage 2	163	169	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	771	676	1013	1409	-	0	0
Stage 1	969	850	-	-	-	0	0
Stage 2	866	759	-	-	-	0	0
Platoon blocked, %					-	-	-
Mov Cap-1 Maneuver	771	0	1013	1409	-	-	-
Mov Cap-2 Maneuver	771	0	-	-	-	-	-
Stage 1	969	0	-	-	-	-	-
Stage 2	866	0	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.4	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBTWBLn1WBLn2	SBT	SBR
Capacity (veh/h)	1409	-	771	1013
HCM Lane V/C Ratio	-	-	0.027	0.179
HCM Control Delay (s)	0	-	9.8	9.3
HCM Lane LOS	A	-	A	A
HCM 95th %tile Q(veh)	0	-	0.1	0.6

HCM 6th TWSC
2: Drew Road & I-8 EB Ramps

Near-Term without Project AM
04/08/2019

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗					↖			↖	
Traffic Vol, veh/h	9	0	1	0	0	0	0	28	35	68	52	0
Future Vol, veh/h	9	0	1	0	0	0	0	28	35	68	52	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	40	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	0	1	0	0	0	0	37	47	91	69	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	312	335	69	-	0	0	84	0	0
Stage 1	251	251	-	-	-	-	-	-	-
Stage 2	61	84	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	681	585	994	0	-	-	1513	-	0
Stage 1	791	699	-	0	-	-	-	-	0
Stage 2	962	825	-	0	-	-	-	-	0
Platoon blocked, %									
Mov Cap-1 Maneuver	638	0	994	-	-	-	1513	-	-
Mov Cap-2 Maneuver	638	0	-	-	-	-	-	-	-
Stage 1	791	0	-	-	-	-	-	-	-
Stage 2	901	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.6	0	4.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	638	994	1513	-
HCM Lane V/C Ratio	-	-	0.019	0.001	0.06	-
HCM Control Delay (s)	-	-	10.8	8.6	7.5	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	0.2	-

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	0	0	1	12	23	0
Future Vol, veh/h	0	0	1	12	23	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	51	51	51	51	51	51
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	2	24	45	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	73	45	45	0	0
Stage 1	45	-	-	-	-
Stage 2	28	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	931	1025	1563	-	-
Stage 1	977	-	-	-	-
Stage 2	995	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	930	1025	1563	-	-
Mov Cap-2 Maneuver	930	-	-	-	-
Stage 1	976	-	-	-	-
Stage 2	995	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1563	-	-	-	-
HCM Lane V/C Ratio	0.001	-	-	-	-
HCM Control Delay (s)	7.3	0	0	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

HCM 6th TWSC
1: Drew Road & I-8 WB Ramps

Near-Term without Project PM
04/08/2019

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↕		↕			↕	
Traffic Vol, veh/h	0	0	0	37	0	71	1	29	0	0	124	12
Future Vol, veh/h	0	0	0	37	0	71	1	29	0	0	124	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	-	-	40	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	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	0	0	0	41	0	78	1	32	0	0	136	13

Major/Minor	Minor1		Major1		Major2		
Conflicting Flow All	177	183	32	149	0	-	0
Stage 1	34	34	-	-	-	-	-
Stage 2	143	149	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	813	711	1042	1432	-	0	0
Stage 1	988	867	-	-	-	0	0
Stage 2	884	774	-	-	-	0	0
Platoon blocked, %					-	-	-
Mov Cap-1 Maneuver	812	0	1042	1432	-	-	-
Mov Cap-2 Maneuver	812	0	-	-	-	-	-
Stage 1	987	0	-	-	-	-	-
Stage 2	884	0	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9	0.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBTWBLn1	WBLn2	SBT	SBR
Capacity (veh/h)	1432	-	812 1042	-	-
HCM Lane V/C Ratio	0.001	-	0.05 0.075	-	-
HCM Control Delay (s)	7.5	0	9.7 8.7	-	-
HCM Lane LOS	A	A	A A	-	-
HCM 95th %tile Q(veh)	0	-	0.2 0.2	-	-

HCM 6th TWSC
2: Drew Road & I-8 EB Ramps

Near-Term without Project PM
04/08/2019

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗					↖			↖	
Traffic Vol, veh/h	9	1	2	0	0	0	0	21	30	96	66	0
Future Vol, veh/h	9	1	2	0	0	0	0	21	30	96	66	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	40	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	1	2	0	0	0	0	24	34	110	76	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	337	354	76	-	0	0	58	0	0
Stage 1	296	296	-	-	-	-	-	-	-
Stage 2	41	58	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	658	571	985	0	-	-	1546	-	0
Stage 1	755	668	-	0	-	-	-	-	0
Stage 2	981	847	-	0	-	-	-	-	0
Platoon blocked, %									
Mov Cap-1 Maneuver	609	0	985	-	-	-	1546	-	-
Mov Cap-2 Maneuver	609	0	-	-	-	-	-	-	-
Stage 1	755	0	-	-	-	-	-	-	-
Stage 2	908	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.6	0	4.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	609	985	1546	-
HCM Lane V/C Ratio	-	-	0.019	0.002	0.071	-
HCM Control Delay (s)	-	-	11	8.7	7.5	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	0.2	-

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Vol, veh/h	1	4	0	9	22	1
Future Vol, veh/h	1	4	0	9	22	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	69	69	69	69	69
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	6	0	13	32	1

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	46	33	33	0	-	0
Stage 1	33	-	-	-	-	-
Stage 2	13	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	964	1041	1579	-	-	-
Stage 1	989	-	-	-	-	-
Stage 2	1010	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	964	1041	1579	-	-	-
Mov Cap-2 Maneuver	964	-	-	-	-	-
Stage 1	989	-	-	-	-	-
Stage 2	1010	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.5	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1579	-	1025	-	-
HCM Lane V/C Ratio	-	-	0.007	-	-
HCM Control Delay (s)	0	-	8.5	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

APPENDIX F
NEAR-TERM WITH PROJECT INTERSECTION ANALYSIS WORKSHEETS

HCM 6th TWSC
1: Drew Road & I-8 WB Ramps

Near-Term with Project AM
04/08/2019

Intersection												
Int Delay, s/veh	6.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↕		↕			↕	
Traffic Vol, veh/h	0	0	0	154	0	123	6	37	0	0	106	9
Future Vol, veh/h	0	0	0	154	0	123	6	37	0	0	106	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	-	-	40	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	68	68	68	68	68	68	68	68	68	68	68	68
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	226	0	181	9	54	0	0	156	13

Major/Minor	Minor1		Major1		Major2		
Conflicting Flow All	235	241	54	169	0	-	0
Stage 1	72	72	-	-	-	-	-
Stage 2	163	169	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	753	660	1013	1409	-	0	0
Stage 1	951	835	-	-	-	0	0
Stage 2	866	759	-	-	-	0	0
Platoon blocked, %					-	-	-
Mov Cap-1 Maneuver	748	0	1013	1409	-	-	-
Mov Cap-2 Maneuver	748	0	-	-	-	-	-
Stage 1	944	0	-	-	-	-	-
Stage 2	866	0	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.7	1.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBTWBLn1WBLn2	SBT	SBR
Capacity (veh/h)	1409	- 748 1013	-	-
HCM Lane V/C Ratio	0.006	- 0.303 0.179	-	-
HCM Control Delay (s)	7.6	0 11.9 9.3	-	-
HCM Lane LOS	A	A B A	-	-
HCM 95th %tile Q(veh)	0	- 1.3 0.6	-	-

HCM 6th TWSC
2: Drew Road & I-8 EB Ramps

Near-Term with Project AM
04/08/2019

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗					↖			↖	
Traffic Vol, veh/h	9	0	61	0	0	0	0	34	49	68	192	0
Future Vol, veh/h	9	0	61	0	0	0	0	34	49	68	192	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	40	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	0	81	0	0	0	0	45	65	91	256	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	516	548	256	-	0	0	110	0	0
Stage 1	438	438	-	-	-	-	-	-	-
Stage 2	78	110	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	519	444	783	0	-	-	1480	-	0
Stage 1	651	579	-	0	-	-	-	-	0
Stage 2	945	804	-	0	-	-	-	-	0
Platoon blocked, %									
Mov Cap-1 Maneuver	482	0	783	-	-	-	1480	-	-
Mov Cap-2 Maneuver	482	0	-	-	-	-	-	-	-
Stage 1	651	0	-	-	-	-	-	-	-
Stage 2	877	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.4	0	2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	482	783	1480	-
HCM Lane V/C Ratio	-	-	0.025	0.104	0.061	-
HCM Control Delay (s)	-	-	12.7	10.1	7.6	0
HCM Lane LOS	-	-	B	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.3	0.2	-

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	0	1	12	23	200
Future Vol, veh/h	20	0	1	12	23	200
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	51	51	51	51	51	51
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	39	0	2	24	45	392

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	269	241	437	0	-	0
Stage 1	241	-	-	-	-	-
Stage 2	28	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	720	798	1123	-	-	-
Stage 1	799	-	-	-	-	-
Stage 2	995	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	719	798	1123	-	-	-
Mov Cap-2 Maneuver	719	-	-	-	-	-
Stage 1	797	-	-	-	-	-
Stage 2	995	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.3	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1123	-	719	-	-
HCM Lane V/C Ratio	0.002	-	0.055	-	-
HCM Control Delay (s)	8.2	0	10.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

HCM 6th TWSC
1: Drew Road & I-8 WB Ramps

Near-Term with Project PM
04/08/2019

Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↕		↕			↕	
Traffic Vol, veh/h	0	0	0	51	0	71	61	29	0	0	124	12
Future Vol, veh/h	0	0	0	51	0	71	61	29	0	0	124	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	-	-	40	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	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	0	0	0	56	0	78	67	32	0	0	136	13

Major/Minor	Minor1		Major1		Major2		
Conflicting Flow All	309	315	32	149	0	-	0
Stage 1	166	166	-	-	-	-	-
Stage 2	143	149	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	683	601	1042	1432	-	0	0
Stage 1	863	761	-	-	-	0	0
Stage 2	884	774	-	-	-	0	0
Platoon blocked, %					-	-	-
Mov Cap-1 Maneuver	650	0	1042	1432	-	-	-
Mov Cap-2 Maneuver	650	0	-	-	-	-	-
Stage 1	822	0	-	-	-	-	-
Stage 2	884	0	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	5.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBTWBLn1WBLn2	SBT	SBR
Capacity (veh/h)	1432	- 650 1042	-	-
HCM Lane V/C Ratio	0.047	- 0.086 0.075	-	-
HCM Control Delay (s)	7.6	0 11.1 8.7	-	-
HCM Lane LOS	A	A B A	-	-
HCM 95th %tile Q(veh)	0.1	- 0.3 0.2	-	-

Intersection												
Int Delay, s/veh	2.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗					↖			↖	
Traffic Vol, veh/h	9	1	8	0	0	0	0	81	170	96	80	0
Future Vol, veh/h	9	1	8	0	0	0	0	81	170	96	80	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	40	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	1	9	0	0	0	0	93	195	110	92	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	503	600	92	-	0	0	288	0	0
Stage 1	312	312	-	-	-	-	-	-	-
Stage 2	191	288	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	528	415	965	0	-	-	1274	-	0
Stage 1	742	658	-	0	-	-	-	-	0
Stage 2	841	674	-	0	-	-	-	-	0
Platoon blocked, %									
Mov Cap-1 Maneuver	480	0	965	-	-	-	1274	-	-
Mov Cap-2 Maneuver	480	0	-	-	-	-	-	-	-
Stage 1	742	0	-	-	-	-	-	-	-
Stage 2	764	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11	0	4.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	480	965	1274	-
HCM Lane V/C Ratio	-	-	0.024	0.01	0.087	-
HCM Control Delay (s)	-	-	12.7	8.8	8.1	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	0.3	-

Intersection						
Int Delay, s/veh	8.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	201	4	0	9	22	21
Future Vol, veh/h	201	4	0	9	22	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	69	69	69	69	69
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	291	6	0	13	32	30

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	60	47	62	0	-
Stage 1	47	-	-	-	-
Stage 2	13	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	947	1022	1541	-	-
Stage 1	975	-	-	-	-
Stage 2	1010	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	947	1022	1541	-	-
Mov Cap-2 Maneuver	947	-	-	-	-
Stage 1	975	-	-	-	-
Stage 2	1010	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1541	-	948	-	-
HCM Lane V/C Ratio	-	-	0.313	-	-
HCM Control Delay (s)	0	-	10.5	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	1.3	-	-