

# Appendix D

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Trip Generation and Site Access Analysis

August 22, 2017

Mr. Joe Power  
Rincon Consultants, Inc.  
180 North Ashwood Avenue  
Ventura, California 93003

LLG Reference: 2.17.3798.1

Subject: **Trip Generation and Site Access Analysis for the Houghton  
Park Community Center Project**  
Long Beach, California

Dear Mr. Power,

Linscott, Law & Greenspan, Engineers (LLG) is pleased to submit the findings of the Trip Generation and Site Access Analysis prepared for the Houghton Park Community Center Project, herein after referred to as the Project. The Project is generally located north of E. Harding Street, south of Jordan High School, and west of Myrtle Avenue, at 6301 Myrtle Avenue, in the City of Long Beach. The Project is proposing to demolish 5,886 square-feet (SF) of the existing community center and replace it with 6,480 SF of new construction. Pursuant to our understanding, we understand that the preparation of this study is required as part of the entitlement process for the proposed Project and will be included in the environmental document (*Initial Study (IS)/Mitigated Negative Declaration (MND)*) to be prepared for this Project.

This analysis evaluates the trip generation potential of the proposed Project in comparison to the existing uses that will be demolished. This analysis also evaluates level of service for existing traffic conditions and the adequacy of site access and circulation for the proposed Project. Included in this evaluation is a weekday peak hour level of service calculations for the following four (4) study intersections:

1. Myrtle Avenue (South) at Artesia Boulevard (signalized)
2. Myrtle Avenue (North) at Artesia Boulevard (signalized)
3. Myrtle Avenue at E. 64<sup>th</sup> Street (one-way stop controlled)
4. Myrtle Avenue at E. Harding Street (all-way stop controlled)

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## PROJECT LOCATION AND DESCRIPTION

The Project site is generally located north of E. Harding Street, south of Jordan High School, and west of Myrtle Avenue, at 6301 Myrtle Avenue, in the City of Long Beach. The Project is proposing to demolish 5,886 SF of existing community center and replace it with 6,480 SF of new building area. **Figure 1**, located in the rear of this letter report, presents the existing site aerial of the Project.

As part of the Project, portions of the West Building of the existing community center, plus the park restrooms located south of the community center, and the storage facility that currently faces the parking lot will be demolished, thus resulting in a total of 5,886 SF of floor area that will be replaced by the proposed Project. On-site improvements also include modification of the existing parking lot to provide additional parking spaces. **Figures 2-1** and **2-2** presents the overall existing site plan and the existing community center floor plan for the Houghton Park Community Center, respectively, prepared by RA-DA Architects. **Figure 2-2** also illustrates the limits of work related to which existing buildings will be demolished.

The proposed Project includes construction of 6,480 SF of floor area consisting of a new lobby area, multipurpose rooms, a staff area, a storage facility, allocated park restrooms, and ancillary space/hallways. **Figure 2-3** presents the overall proposed site plan for the Houghton Park Community Center upon completion of the proposed Project, whereas **Figure 2-4** presents the proposed floor plan for the proposed Project, as prepared by RA-DA Architects.

A comparison of the existing community center and the proposed Project shows that floor area allocations/uses are similar but the proposed Project results in an overall increase of 594 SF of floor area. A trip generation comparison for the Project and level of service analysis for existing traffic conditions has been prepared, as discussed in the sections below, to illustrate that the increase in floor area will not have a negative impact on the existing traffic network.

### Site Access

Vehicular access to the community center is provided via two existing driveways (one inbound/one outbound) on Myrtle Avenue. With the proposed modification of the on-site parking lot, a new “exit only” driveway is proposed to be constructed on Myrtle Avenue. Pedestrian access is provided via existing sidewalks along Myrtle Avenue, whereas bicycle access is provided via existing bike trails within Houghton Park that links to bike lanes located on Atlantic Avenue, bordering the park.

## TRIP GENERATION COMPARISON

A trip generation comparison has been prepared for the proposed Project and the existing community center to determine the “net” trips generated by the Project. Traffic generation is expressed in vehicle trip ends, defined as one-way vehicular movements, either entering or exiting the generating land use. Generation equations and/or rates used in the traffic forecasting procedure are found in the 9<sup>th</sup> Edition of *Trip Generation*, published by the Institute of Transportation Engineers (ITE) [Washington D.C., 2012]. Specifically, trip rates for ITE Land Use 495: Recreational Community Center has been applied to the proposed Project and existing community center. **Table 1** presents the project traffic generation forecast.

As shown in the middle row of *Table 1*, the existing community center is forecast to generate approximately 199 weekday daily trips, of which 12 trips (8 in bound, 4 outbound) are expected to occur during the AM peak hour, and 16 trips (8 inbound, 8 outbound) are expected to occur during the PM peak hour.

As shown in the third row of *Table 1*, the proposed Project is forecast to generate approximately 219 weekday daily trips, of which 13 trips (9 in bound, 4 outbound) are expected to occur during the AM peak hour, and 18 trips (9 inbound, 9 outbound) are expected to occur during the PM peak hour.

As shown in the last row of *Table 1*, a comparison of the trips generated by the proposed Project to the trips generated by the existing community center shows that the proposed Project will result in 20 additional daily trips, 1 additional trip in the AM peak hour, and 2 additional trips in the PM peak hour when compared to the existing community center trip generation potential.

## EXISTING TRAFFIC CONDITIONS – LEVEL OF SERVICE ANALYSIS

Since the proposed Project generates approximately the same vehicle trips as the existing community center, it can be assumed that the peak hour level of service results with the Project would be similar to the level of service results of the existing traffic conditions. As such, existing (Year 2017) peak hour level of service calculations were completed to determine the existing operating conditions of nearby key intersections.

## Study Area and Existing Street System

The four (4) key intersections that provide local access to the Project site are listed below:

1. Myrtle Avenue (South) at Artesia Boulevard (signalized)
2. Myrtle Avenue (North) at Artesia Boulevard (signalized)
3. Myrtle Avenue at E. 64<sup>th</sup> Street (one-way stop controlled)
4. Myrtle Avenue at E. Harding Street (all-way stop controlled)

**Figure 3** presents a vicinity map, which illustrates the general location of the Project and depicts the study locations and surrounding street system.

**Myrtle Avenue** is a two-lane local street oriented in the north-south direction. Myrtle Avenue borders the project site to the east and provides access to the site via an entry only and an exit only driveway. Parking is generally permitted on either side of this roadway within the vicinity of the Project. The posted speed limit on Myrtle Avenue is 25 mph. Residential development borders the entire east side of Myrtle Avenue, between Artesia Boulevard and Harding Street.

**Figure 4** illustrates the existing physical characteristics of the key study intersections and streets, including intersection geometry and traffic control, number of travel lanes, posted speed limits, median types, and on-street parking.

## Existing Traffic Volumes

Existing traffic counts were conducted at four (4) key intersections during the AM and PM peak hours by National Data and Surveying Services (NDS) in March 2017. **Figures 5** and **6** illustrate the existing AM and PM peak hour traffic volumes at the key study intersections. **Appendix A** contains the detailed peak hour count sheets for the key intersections.

## Existing Intersection Conditions

Existing AM and PM peak hour operating conditions for the key signalized study intersections were evaluated using the *Intersection Capacity Utilization (ICU)* methodology for signalized intersections and the *Highway Capacity Manual (HCM)* for unsignalized intersections.

## *Intersection Capacity Utilization (ICU) Methodology*

In conformance with City of Long Beach and LA County CMP requirements, existing weekday peak hour operating conditions for the key signalized study intersections were evaluated using the Intersection Capacity Utilization (ICU) method. The ICU

technique is intended for signalized intersection analysis and estimates the volume to capacity (V/C) relationship for an intersection based on the individual V/C ratios for key conflicting traffic movements. The ICU numerical value represents the percent signal (green) time, and thus capacity, required by existing and/or future traffic. It should be noted that the ICU methodology assumes uniform traffic distribution per intersection approach lane and optimal signal timing.

Per LA County CMP requirements, the ICU calculations use a lane capacity of 1,600 vehicles per hour (vph) for left-turn, through, and right-turn lanes, and dual left turn capacity of 2,880 vph. A clearance interval of 10 seconds is also added to each Level of Service calculation.

The ICU value translates to a Level of Service (LOS) estimate, which is a relative measure of the intersection performance. The six qualitative categories of Level of Service have been defined along with the corresponding ICU value range and are shown in **Table 2**. The ICU value is the sum of the critical volume to capacity ratios at an intersection; it is not intended to be indicative of the LOS of each of the individual turning movements.

### ***Highway Capacity Manual (HCM) Methodology – Unsignalized Intersections***

The HCM unsignalized methodology for stop-controlled intersections was utilized for the analysis of the unsignalized intersections. This methodology estimates the average control delay for each of the subject movements and determines the level of service for each movement.

For all-way stop controlled intersections, the overall average control delay is measured in seconds per vehicle, and level of service is then calculated for the entire intersection. For one-way and two-way stop-controlled (minor street stop-controlled) intersections, this methodology estimates the worst delay among all intersection approaches posted with a stop sign, measured in seconds per vehicle, and determines the level of service for that approach.

The HCM control delay value translates to a Level of Service (LOS) estimate, which is a relative measure of intersection performance. The six qualitative categories of Level of Service for stop-control intersections along with the corresponding HCM control delay value range, are shown in **Table 3**.

According to the City of Long Beach, LOS D is the minimum acceptable condition that should be maintained during the peak commute hours, or the current LOS if the existing LOS is worse than LOS D (i.e. LOS E or F).

### ***Significant Traffic Impact Criteria***

Impacts to local and regional transportation systems are considered significant if:

- The project causes a study intersection to deteriorate from Level of Service (LOS) D to LOS E or F. The City of Long Beach considers LOS D (ICU = 0.801 - 0.900) to be the minimum acceptable LOS for all intersections; or
- The project increases traffic demand at the study intersection by 2% of capacity (ICU increase  $\geq 0.020$ ), causing or worsening LOS E or F (ICU  $> 0.901$ ) when an intersection is operating at LOS E or F in the baseline condition.

### **Peak Hour Intersection Capacity Analysis / Level of Service Calculations**

**Table 4** summarizes the peak hour service level calculations for the four (4) key study intersections based on the existing traffic volumes presented in *Figures 5* and *6*. As shown, all four (4) key intersections currently operate at LOS B or better during the AM and PM peak hours under existing traffic conditions.

Given the implementation of the proposed Project will result in a nominal amount of trips, it is concluded that the key study intersections would continue to operate at acceptable service levels upon completion and opening of the proposed Project.

**Appendix B** contains the LOS calculation worksheets for the key study intersections for the AM and PM peak hours for the Existing Traffic Conditions.

## **SITE ACCESS EVALUATION**

### **Site Access**

Vehicular access to the community center parking lot is provided via a connection to the Long Beach City Office parking lot. The Long Beach City Office has two existing driveways (one inbound/one outbound) on Myrtle Avenue which will remain unchanged. However, with the proposed modification of the existing on-site parking lot to provide additional parking spaces, a new “exit only” driveway will be constructed on Myrtle Avenue. Nevertheless, since the proposed Project is anticipated to have similar trip making characteristics to that of the existing facility, site access to/from the site is anticipated to remain acceptable.

## CONCLUSION

Based on the finding above the proposed Project would not impact the surrounding street network. In addition, the Project is anticipated to have similar traffic and site access characteristics to that from the existing community center.

\* \* \* \* \*

We appreciate the opportunity to prepare this traffic analysis. Should you have any questions regarding this analysis, please call us at (949) 825-6175.

Sincerely,

**Linscott, Law & Greenspan, Engineers**

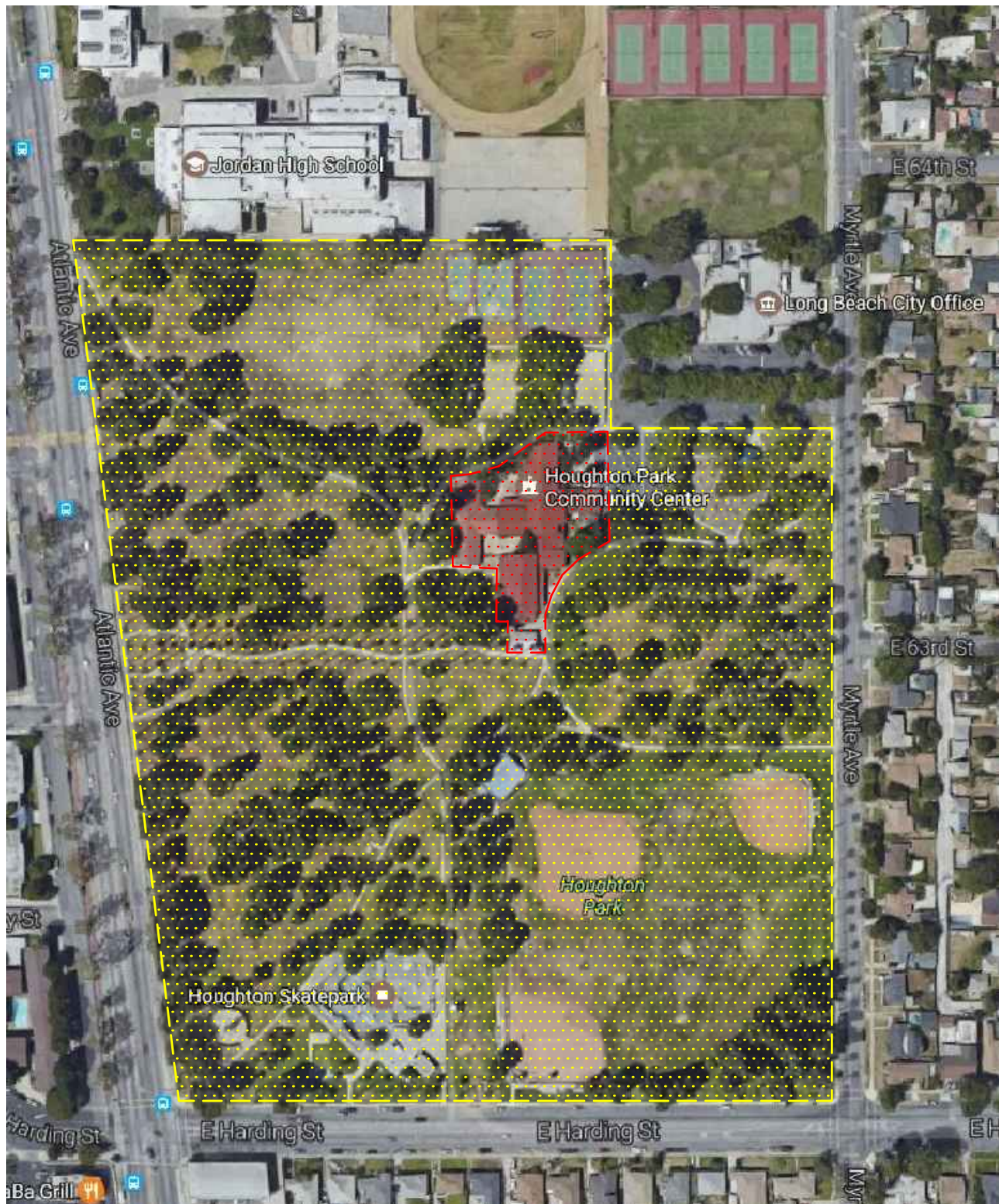


Richard E. Barretto, P.E.  
Principal

cc: Shane S. Green, P.E., Transportation Engineer III

Attachments





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SOURCE: GOOGLE  
KEY

-  = HOUGHTON PARK COMMUNITY CENTER
-  = HOUGHTON PARK

## FIGURE 1

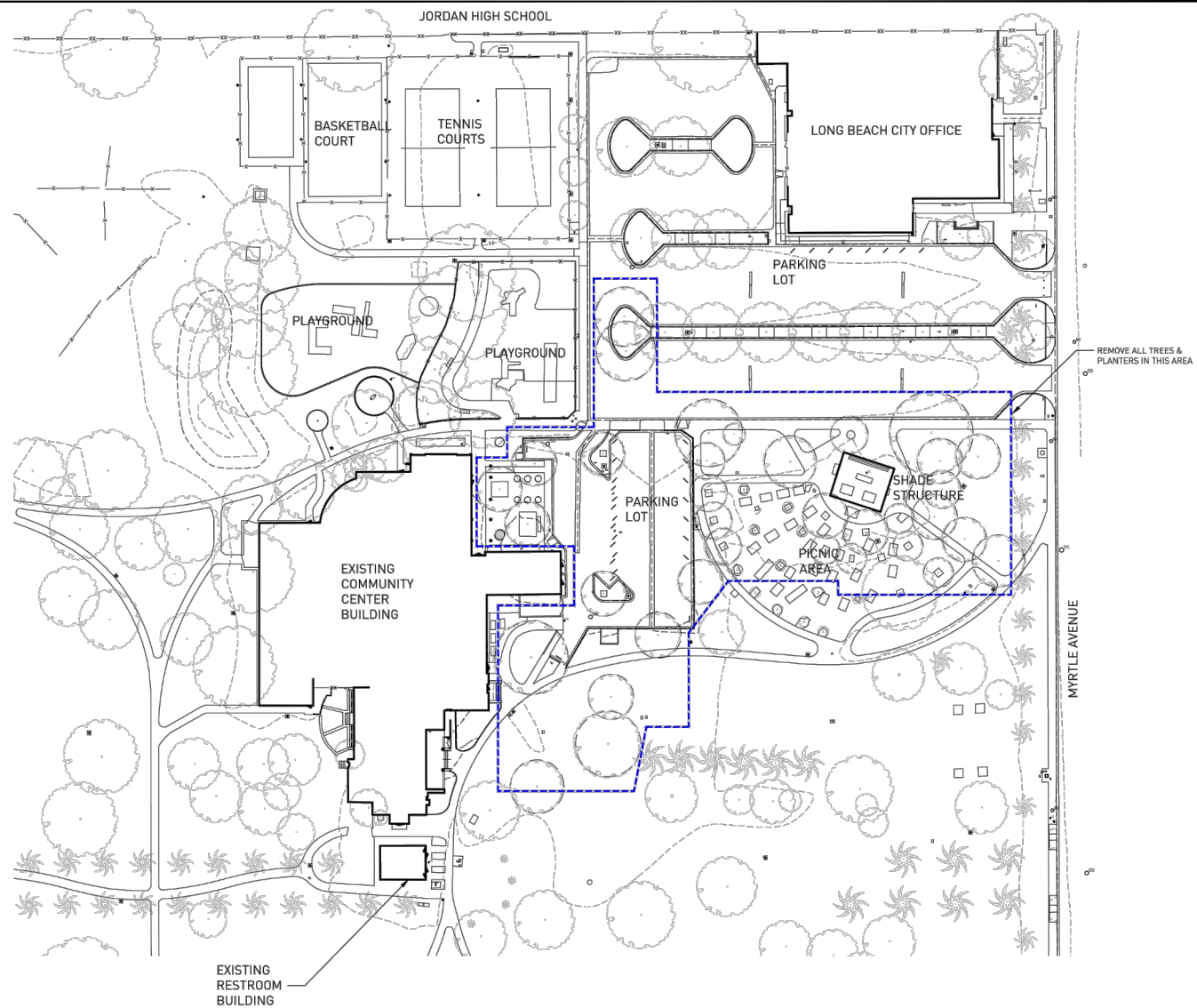
EXISTING SITE AERIAL

HOUGHTON PARK COMMUNITY CENTER, LONG BEACH

LINSCOTT  
LAW &  
GREENSPAN  
engineers



NO SCALE



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SOURCE: RA-DA ARCHITECTS

## FIGURE 2-1

### OVERALL EXISTING SITE PLAN

HOUGHTON PARK COMMUNITY CENTER, LONG BEACH

LINSCOTT  
LAW &  
GREENSPAN

engineers



NO SCALE





n:\3700\2173798 - houghton park community center expansion, long beach\dwg\3798 f 2-2.dwg LDP 09:33:04 08-22-2017 lrm

SOURCE: RA-DA ARCHITECTS

FIGURE 2-2

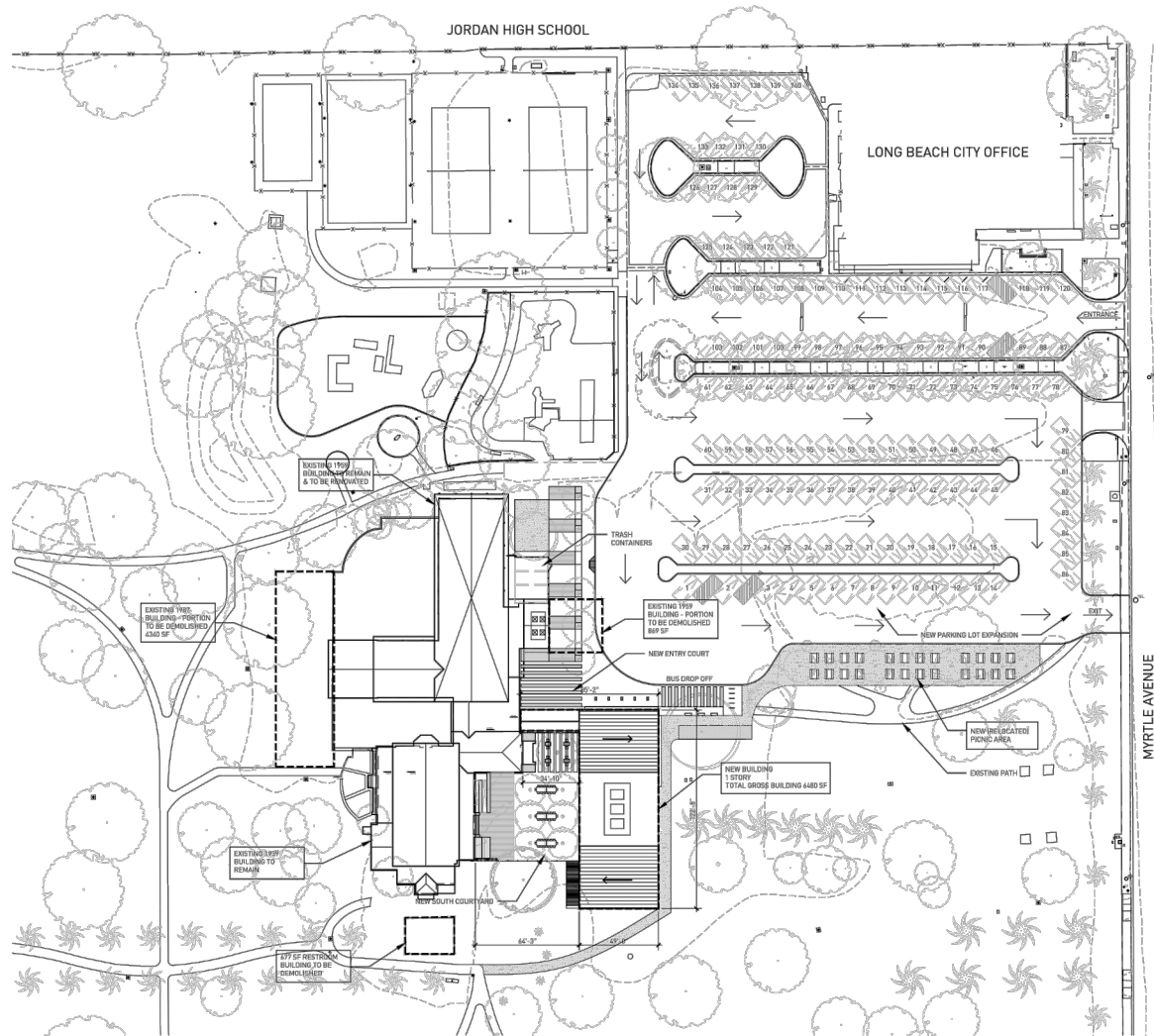
EXISTING COMMUNITY CENTER FLOOR PLAN  
HOUGHTON PARK COMMUNITY CENTER, LONG BEACH

LINSCOTT  
LAW &  
GREENSPAN

engineers



NO SCALE



n:\3700\2173798 - houghton park community center expansion, long beach\dwg\3798 f 2-3.dwg LDP 09:35:12 08-22-2017 lrm

SOURCE: RA-DA ARCHITECTS

FIGURE 2-3

OVERALL PROPOSED SITE PLAN

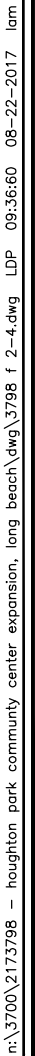
HOUGHTON PARK COMMUNITY CENTER, LONG BEACH

LINSCOTT  
LAW &  
GREENSPAN

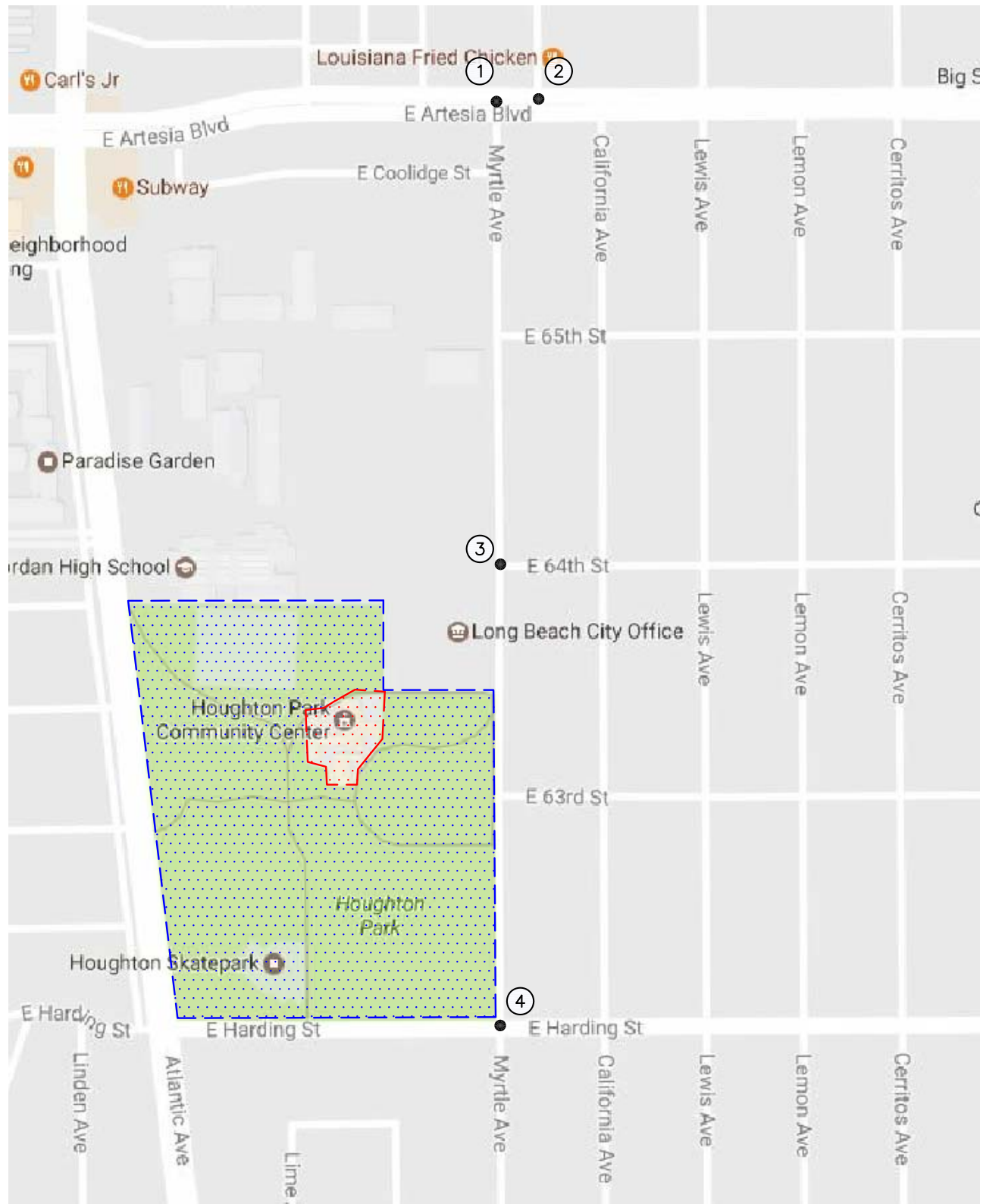
engineers



NO SCALE



**PROPOSED PROJECT FLOOR PLAN**  
HOUGHTON PARK COMMUNITY CENTER, LONG BEACH






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NO SCALE

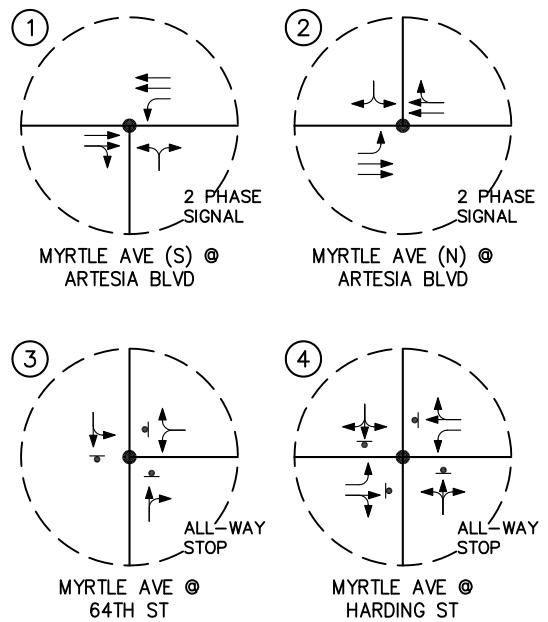
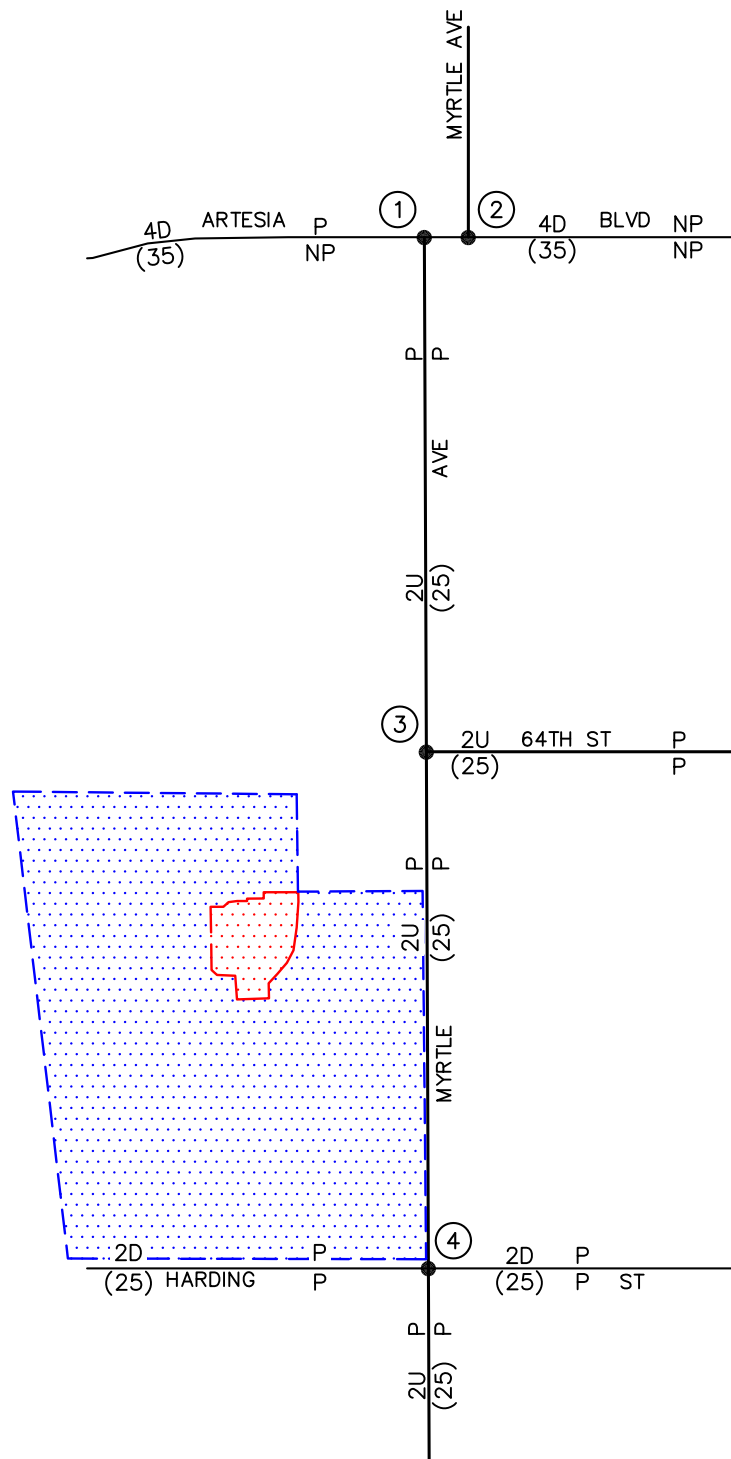
SOURCE: GOOGLE

KEY

-  = STUDY INTERSECTION
-  = HOUGHTON PARK COMMUNITY CENTER
-  = HOUGHTON PARK

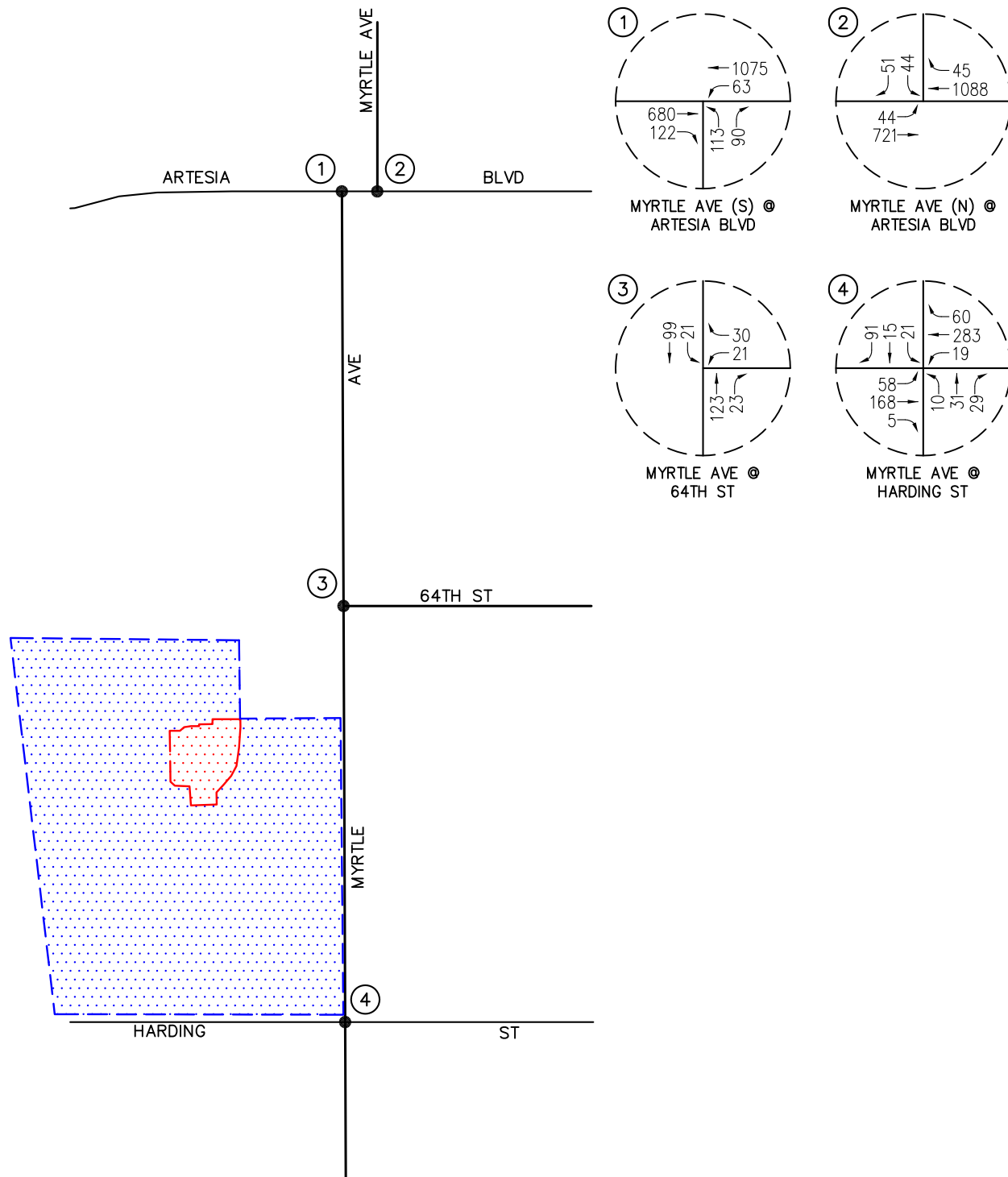
## FIGURE 3

VICINITY MAP  
HOUGHTON PARK COMMUNITY CENTER, LONG BEACH



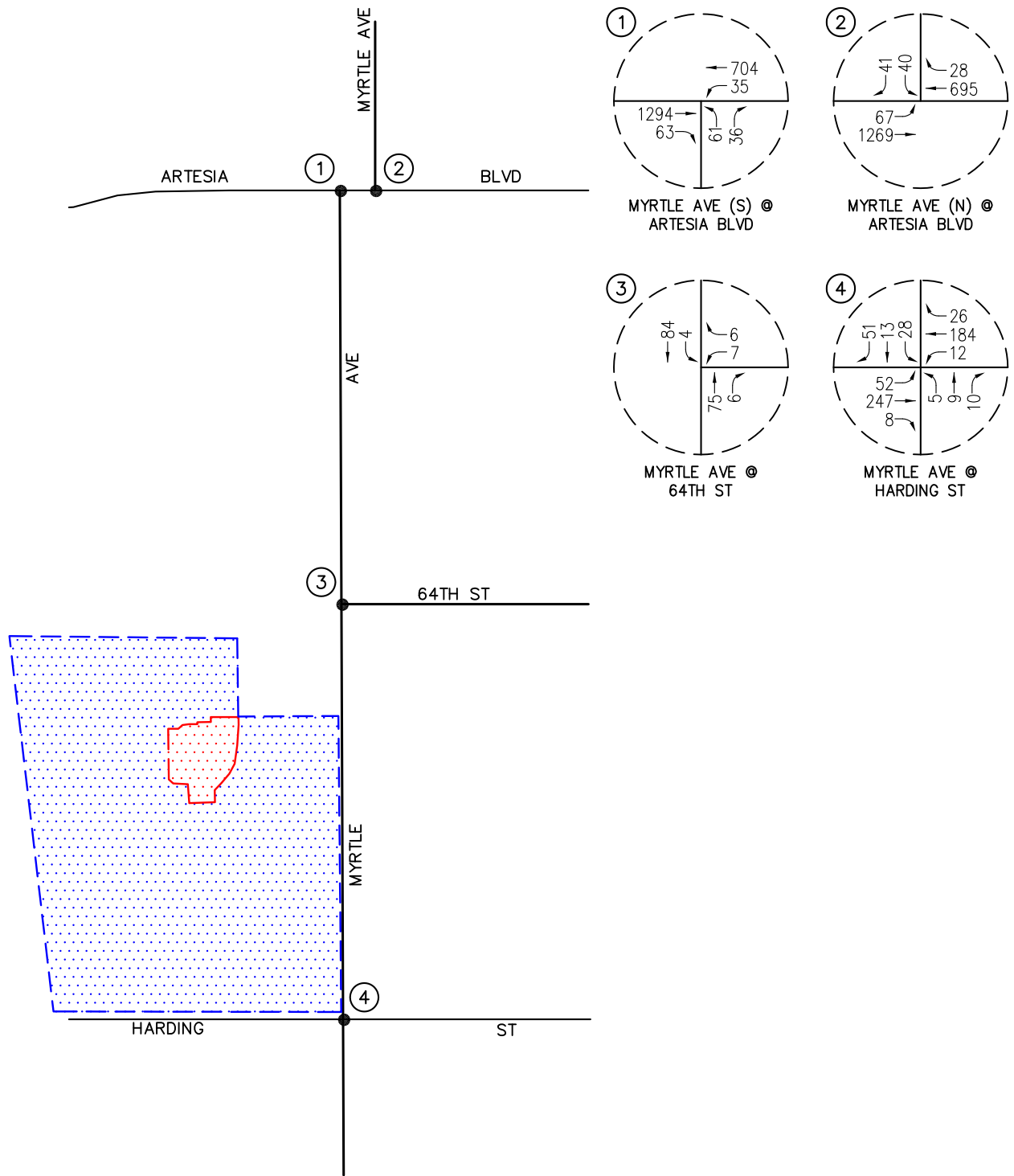
- KEY
- ← = APPROACH LANE ASSIGNMENT
  - = TRAFFIC SIGNAL, ▼ = STOP SIGN
  - P = PARKING, NP = NO PARKING
  - U = UNDIVIDED, D = DIVIDED
  - 2 = NUMBER OF TRAVEL LANES
  - (XX) = POSTED SPEED LIMIT (MPH)
  - [Red dotted box] = HOUGHTON PARK COMMUNITY CENTER
  - [Blue dotted box] = HOUGHTON PARK

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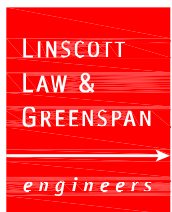


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NO SCALE

- KEY**
- # = STUDY INTERSECTION
  - [Red Dotted Box] = HOUGHTON PARK COMMUNITY CENTER
  - [Blue Dotted Box] = HOUGHTON PARK

# FIGURE 6

EXISTING PM PEAK HOUR  
TRAFFIC VOLUMES

HOUGHTON PARK COMMUNITY CENTER, LONG BEACH

TABLE 1  
PROJECT TRAFFIC GENERATION FORECAST<sup>2</sup>

ITE Land Use Code / Project Description	Daily 2-Way	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
<b>Generation Rates:</b>							
▪ 495: Recreational Community Center (TE/1,000 SF)	33.82	66%	34%	2.05	49%	51%	2.74
<b>Generation Forecasts:</b>							
<u>Existing Community Center</u>							
▪ Community Center (5,886 SF) [A]	199	8	4	12	8	8	16
<u>Proposed Community Center</u>							
▪ Community Center (6,480 SF) [B]	219	9	4	13	9	9	18
<b>Total Project Net Trip Generation ([B]-[A])</b>	<b>20</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>

Notes:

- TE/1,000 SF= Trip end per 1000 SF of development

<sup>2</sup> Source: *Trip Generation, 9th Edition*, Institute of Transportation Engineers, (ITE) [Washington, D.C. (2012)].

**TABLE 2**  
**LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS (ICU)<sup>3</sup>**

Level of Service (LOS)	Intersection Capacity Utilization Value (ICU)	Level of Service Description
A	$\leq 0.600$	<b>EXCELLENT.</b> No vehicle waits longer than one red light and no approach phase is fully used.
B	0.601 – 0.700	<b>VERY GOOD.</b> An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.
C	0.701 – 0.800	<b>GOOD.</b> Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	0.801 – 0.900	<b>FAIR.</b> Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.
E	0.901 – 1.000	<b>POOR.</b> Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.
F	$> 1.000$	<b>FAILURE.</b> Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Potentially very long delays with continuously increasing queue lengths.

<sup>3</sup> Source: Transportation Research Board Circular 212 - Interim Materials on Highway Capacity.

**TABLE 3**  
**LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS (HCM)<sup>4</sup>**

Level of Service (LOS)	Highway Capacity Manual Delay Value (sec/veh)	Level of Service Description
A	$\leq 10.0$	Little or no delay
B	$> 10.0$ and $\leq 15.0$	Short traffic delays
C	$> 15.0$ and $\leq 25.0$	Average traffic delays
D	$> 25.0$ and $\leq 35.0$	Long traffic delays
E	$> 35.0$ and $\leq 50.0$	Very long traffic delays
F	$> 50.0$	Severe congestion

<sup>4</sup> Source: *Highway Capacity Manual 6<sup>th</sup> Edition*, Chapter 21 (All-Way Stop Control).

**TABLE 4**  
**EXISTING PEAK HOUR INTERSECTION CAPACITY ANALYSIS**

Key Intersection	Control Type	Peak Hour	(1) Existing Traffic Conditions <sup>5</sup>	
			ICU/Delay	LOS
1. Myrtle Avenue (South) at Artesia Boulevard	2Ø Traffic Signal	AM	0.436	A
		PM	0.546	A
2. Myrtle Avenue (North) at Artesia Boulevard	2Ø Traffic Signal	AM	0.482	A
		PM	0.497	A
3. Myrtle Avenue at E. 64 <sup>th</sup> Street	All-Way Stop	AM	7.8 s/v	A
		PM	7.4 s/v	A
4. Myrtle Avenue at E. Harding Street	All-Way Stop	AM	11.0 s/v	B
		PM	9.7 s/v	A

**Notes:**

- ICU = Intersection Capacity Utilization
- s/v = seconds per vehicle (delay)
- LOS = Level of Service, please refer to *Table 2* and *Table 3* for the LOS definitions
- Ø = Phase

<sup>5</sup> Given the proposed Project will not result in nominal amount of AM peak hour and PM peak hour trips (See Table 1), the existing acceptable services levels as reported in this table are forecast to be maintained with the proposed Project.

## APPENDIX A

### EXISTING TRAFFIC COUNT DATA

# ITM Peak Hour Summary

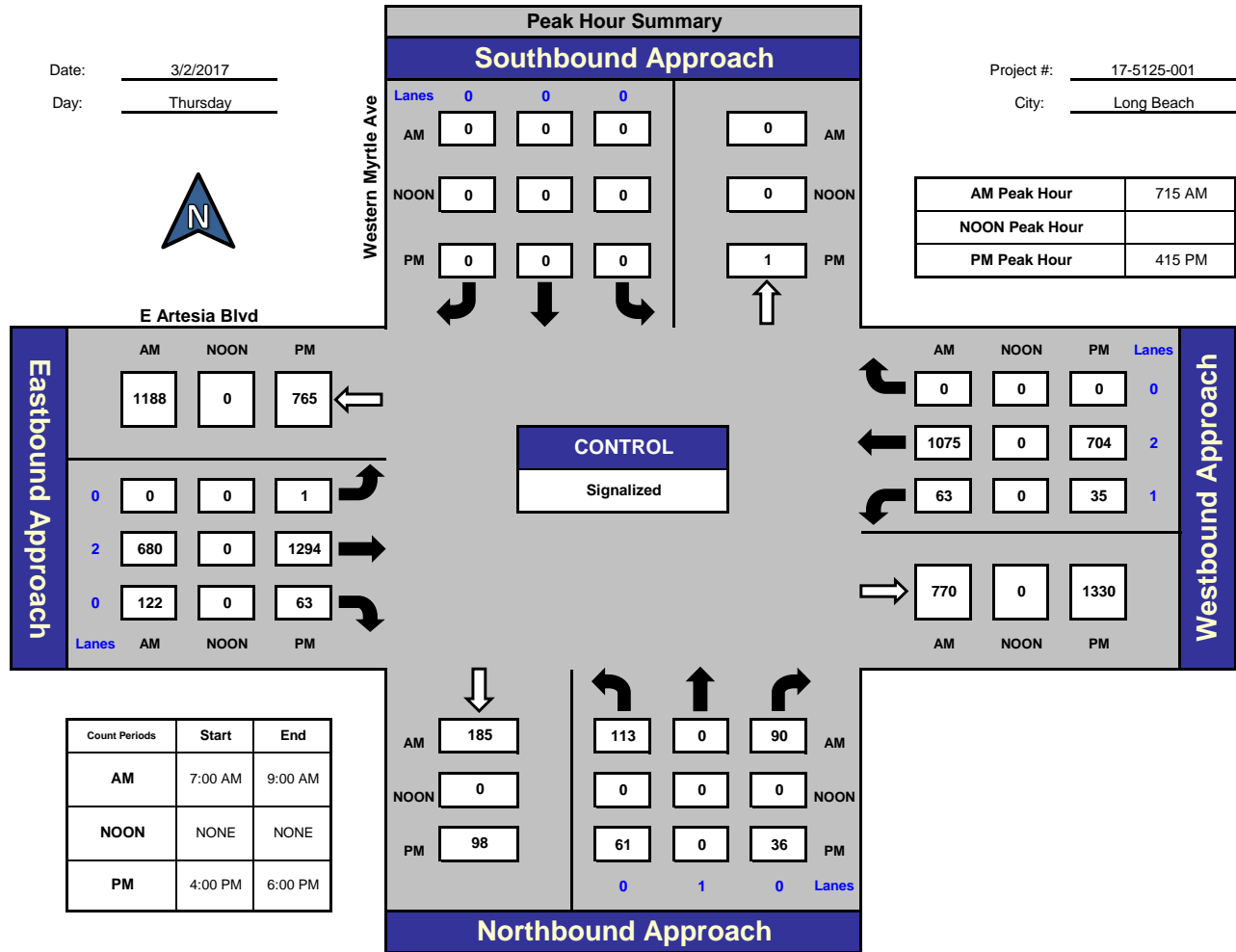
Prepared by:



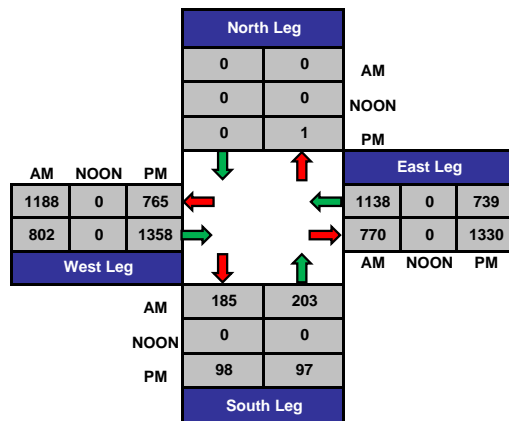
## Western Myrtle Ave and E Artesia Blvd, Long Beach

Date: 3/2/2017  
Day: Thursday

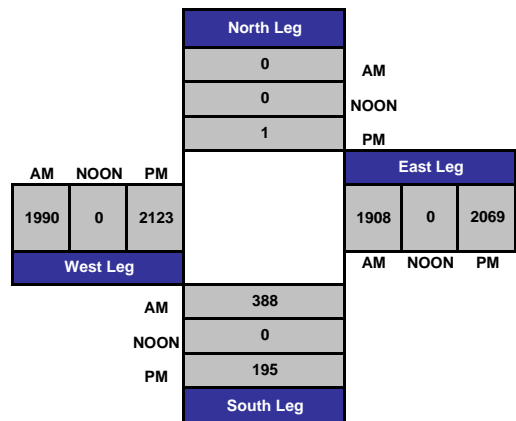
Project #: 17-5125-001  
City: Long Beach



### Total Ins & Outs



### Total Volume Per Leg



# Intersection Turning Movement

Prepared by:  
National Data & Surveying Services

Project ID: 17-5125-001

Day: Thursday

City: Long Beach

Date: 3/2/2017

AM													
NS/EW Streets:	Western Myrtle Ave			Western Myrtle Ave			E Artesia Blvd			E Artesia Blvd			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	1	0	0	0	0	0	2	0	1	2	0	
7:00 AM	27	0	7	0	0	0	0	97	13	13	259	0	416
7:15 AM	17	0	15	0	0	0	0	133	27	19	305	0	516
7:30 AM	35	0	40	0	0	0	0	195	64	21	259	0	614
7:45 AM	36	0	28	0	0	0	0	210	23	11	239	0	547
8:00 AM	25	0	7	0	0	0	0	142	8	12	272	0	466
8:15 AM	14	0	4	0	0	0	0	124	6	9	258	0	415
8:30 AM	11	0	4	0	0	0	0	129	14	4	267	0	429
8:45 AM	12	0	6	0	0	0	0	127	13	12	203	0	373
TOTAL VOLUMES :	177	0	111	0	0	0	0	1157	168	101	2062	0	3776
APPROACH %'s :	61.46%	0.00%	38.54%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	87.32%	12.68%	4.67%	95.33%	0.00%	
PEAK HR START TIME :	715 AM												
PEAK HR VOL :	113	0	90	0	0	0	0	680	122	63	1075	0	2143
PEAK HR FACTOR :	0.677			0.000			0.774			0.878			0.873

CONTROL : Signalized

UTURNS			
NB	SB	EB	WB
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	1
0	0	0	0
NB	SB	EB	WB
0	0	0	1



# Intersection Turning Movement

Prepared by:  
National Data & Surveying Services

Project ID: 17-5125-001

Day: Thursday

City: Long Beach

Date: 3/2/2017

PM													
NS/EW Streets:	Western Myrtle Ave			Western Myrtle Ave			E Artesia Blvd			E Artesia Blvd			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
4:00 PM	10	0	20	0	0	0	0	328	12	4	171	0	545
4:15 PM	15	0	6	0	0	0	0	343	22	9	183	0	578
4:30 PM	18	0	11	0	0	0	1	313	12	8	168	0	531
4:45 PM	14	0	12	0	0	0	0	307	15	12	156	0	516
5:00 PM	14	0	7	0	0	0	0	331	14	6	197	0	569
5:15 PM	8	0	10	0	0	0	1	317	13	11	159	0	519
5:30 PM	16	0	10	0	0	0	1	334	18	8	177	0	564
5:45 PM	15	0	4	0	0	0	0	311	15	10	162	0	517
TOTAL VOLUMES :	110	0	80	0	0	0	3	2584	121	68	1373	0	4339
APPROACH %'s :	57.89%	0.00%	42.11%	#DIV/0!	#DIV/0!	#DIV/0!	0.11%	95.42%	4.47%	4.72%	95.28%	0.00%	
PEAK HR START TIME :	415 PM												
PEAK HR VOL :	61	0	36	0	0	0	1	1294	63	35	704	0	2194
PEAK HR FACTOR :	0.836			0.000			0.930			0.910			0.949

UTURNS			
NB	SB	EB	WB
0	0	0	0
0	0	0	2
0	0	1	0
0	0	0	0
0	0	0	1
0	0	1	1
0	0	1	2
0	0	0	0
NB	SB	EB	WB
0	0	3	6

CONTROL : Signalized

# ITM Peak Hour Summary

Prepared by:



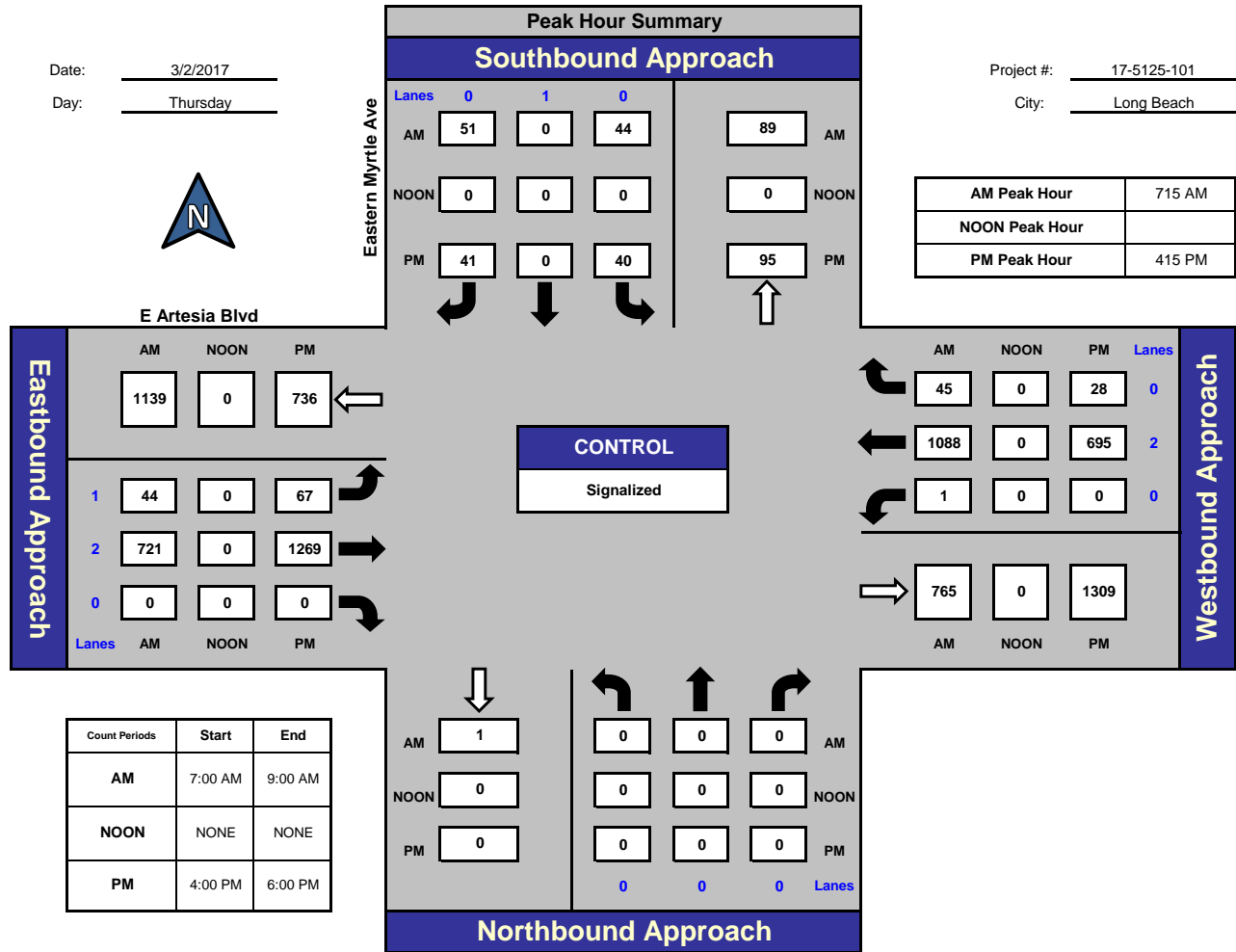
## Eastern Myrtle Ave and E Artesia Blvd , Long Beach

Date: 3/2/2017

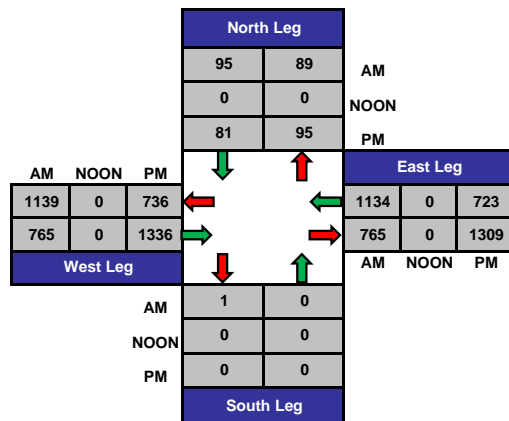
Day: Thursday

Project #: 17-5125-101

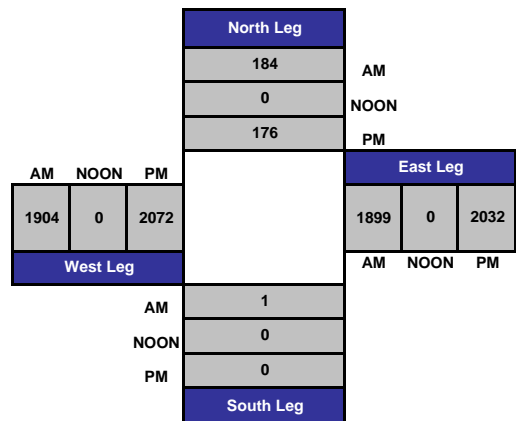
City: Long Beach



### Total Ins & Outs



### Total Volume Per Leg



# Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 17-5125-101

Day: Thursday

City: Long Beach

Date: 3/2/2017

AM													
NS/EW Streets:	Eastern Myrtle Ave			Eastern Myrtle Ave			E Artesia Blvd			E Artesia Blvd			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
7:00 AM	0	0	0	5	0	10	5	98	0	0	265	7	390
7:15 AM	0	0	0	7	0	11	4	142	0	0	311	6	481
7:30 AM	0	0	0	10	0	19	4	229	0	0	263	19	544
7:45 AM	0	0	0	17	0	8	22	217	0	0	241	10	515
8:00 AM	0	0	0	10	0	13	14	133	0	1	273	10	454
8:15 AM	0	0	0	9	0	12	15	111	0	0	253	10	410
8:30 AM	0	0	0	6	0	20	31	106	0	0	248	16	427
8:45 AM	0	0	0	18	0	23	27	106	0	0	189	11	374
TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	0	0	0	82	0	116	122	1142	0	1	2043	89	3595
	#DIV/OI	#DIV/OI	#DIV/OI	41.41%	0.00%	58.59%	9.65%	90.35%	0.00%	0.05%	95.78%	4.17%	
PEAK HR START TIME :	715 AM												
PEAK HR VOL :	0	0	0	44	0	51	44	721	0	1	1088	45	1994
PEAK HR FACTOR :	0.000			0.819			0.800			0.894			0.916

CONTROL : Signalized

UTURNS			
NB	SB	EB	WB
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	1
0	0	0	0
0	0	0	0
0	0	0	0
NB	SB	EB	WB
0	0	0	1

# Intersection Turning Movement

Prepared by:  
National Data & Surveying Services

Project ID: 17-5125-101

Day: Thursday

City: Long Beach

Date: 3/2/2017

PM													
NS/EW Streets:	Eastern Myrtle Ave			Eastern Myrtle Ave			E Artesia Blvd			E Artesia Blvd			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
4:00 PM	0	0	0	7	0	22	22	329	0	0	154	10	544
4:15 PM	0	0	0	9	0	14	15	339	0	0	180	5	562
4:30 PM	0	0	0	13	0	12	19	305	0	0	163	8	520
4:45 PM	0	0	0	9	0	7	21	300	0	0	159	7	503
5:00 PM	0	0	0	9	0	8	12	325	0	0	193	8	555
5:15 PM	0	0	0	10	0	8	7	318	0	0	159	6	508
5:30 PM	0	0	0	6	0	9	13	337	0	0	177	7	549
5:45 PM	0	0	0	11	0	10	12	303	0	1	158	4	499
TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	0	0	0	74	0	90	121	2556	0	1	1343	55	4240
	#DIV/OI	#DIV/OI	#DIV/OI	45.12%	0.00%	54.88%	4.52%	95.48%	0.00%	0.07%	96.00%	3.93%	
PEAK HR START TIME :	415 PM												
PEAK HR VOL :	0	0	0	40	0	41	67	1269	0	0	695	28	2140
PEAK HR FACTOR :	0.000			0.810			0.944			0.899			0.952

UTURNS			
NB	SB	EB	WB
0	0	0	0
0	0	0	0
0	0	1	0
0	0	0	0
0	0	0	0
0	0	1	0
0	0	1	0
0	0	0	1
NB	SB	EB	WB
0	0	3	1

CONTROL : Signalized

# ITM Peak Hour Summary

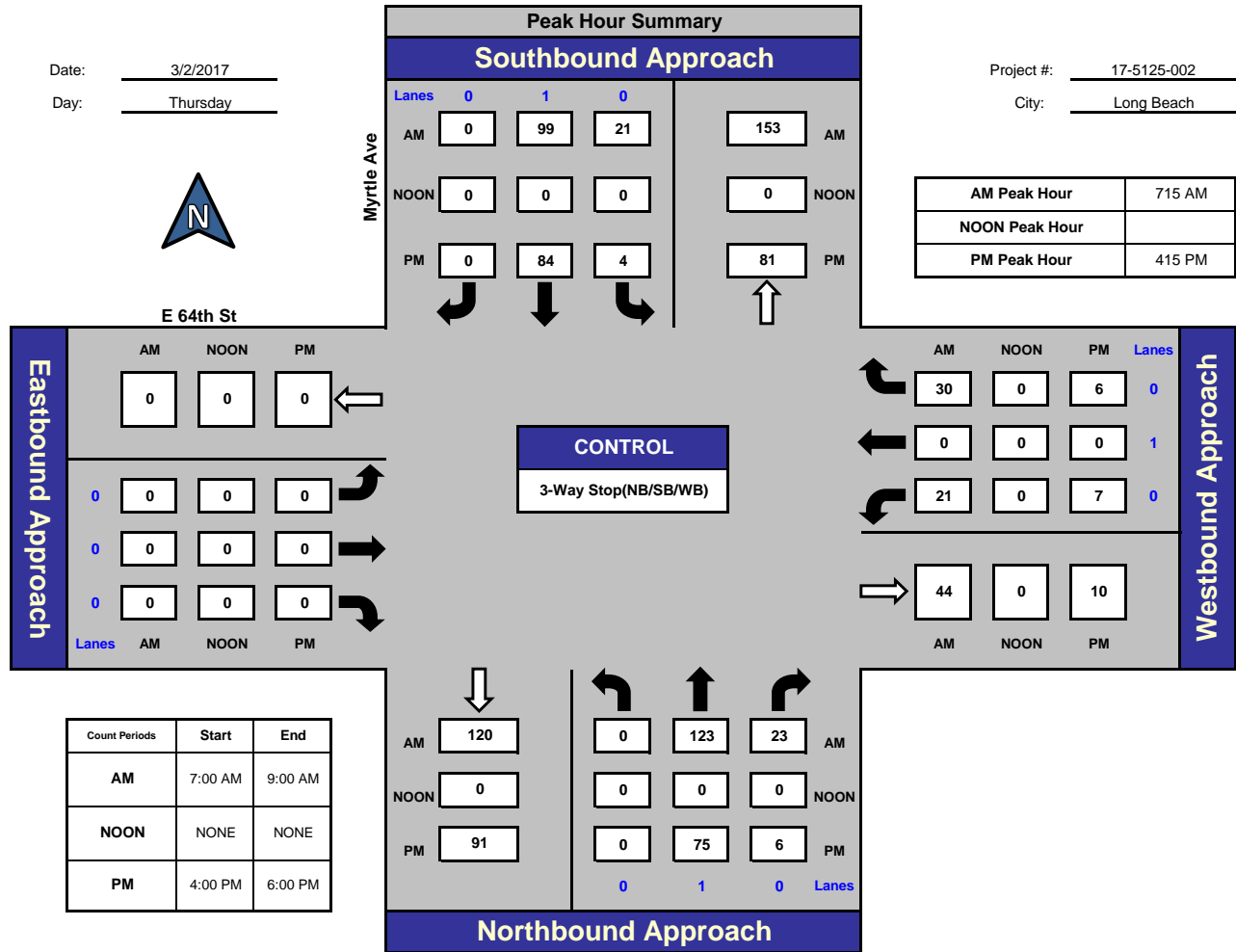
Prepared by:



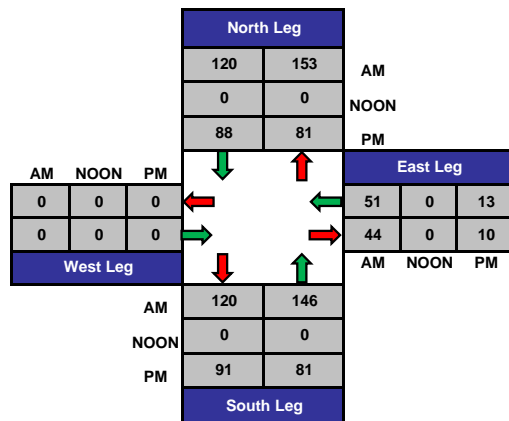
## Myrtle Ave and E 64th St, Long Beach

Date: 3/2/2017  
Day: Thursday

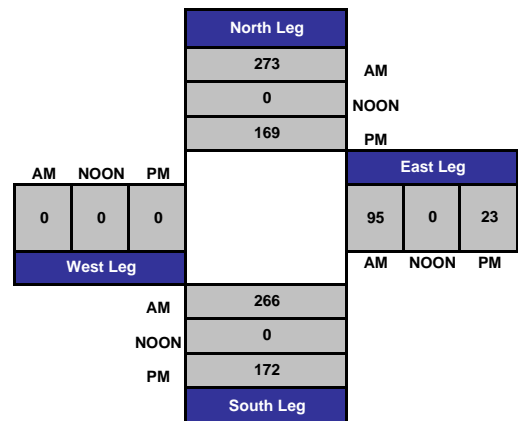
Project #: 17-5125-002  
City: Long Beach



### Total Ins & Outs



### Total Volume Per Leg



# Intersection Turning Movement

Prepared by:  
National Data & Surveying Services

Project ID: 17-5125-002

Day: Thursday

City: Long Beach

Date: 3/2/2017

AM													
NS/EW Streets:	Myrtle Ave			Myrtle Ave			E 64th St			E 64th St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
7:00 AM	0	13	0	4	8	0	0	0	0	2	0	0	27
7:15 AM	0	36	2	3	21	0	0	0	0	3	0	4	69
7:30 AM	0	51	12	8	31	0	0	0	0	9	0	13	124
7:45 AM	0	26	6	8	30	0	0	0	0	5	0	5	80
8:00 AM	0	10	3	2	17	0	0	0	0	4	0	8	44
8:15 AM	0	7	0	1	11	0	0	0	0	0	0	2	21
8:30 AM	0	9	2	0	13	0	0	0	0	1	0	2	27
8:45 AM	0	8	1	1	16	0	0	0	0	1	0	1	28
TOTAL VOLUMES :	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
APPROACH %'s :	0	160	26	27	147	0	0	0	0	25	0	35	420
	0.00%	86.02%	13.98%	15.52%	84.48%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	41.67%	0.00%	58.33%	
PEAK HR START TIME :	715 AM												
PEAK HR VOL :	0	123	23	21	99	0	0	0	0	21	0	30	317
PEAK HR FACTOR :	0.579			0.769			0.000			0.580			0.639

CONTROL : 3-Way Stop(NB/SB/WB)

UTURNS			
NB	SB	EB	WB
0	2	0	0
0	0	0	0
0	1	0	0
0	1	0	0
0	1	0	0
0	1	0	0
0	0	0	0
0	1	0	0
0	7	0	0

Prepared by:  
**National Data & Surveying Services**

**Day:** Thursday

**Date:** 3/2/2017

UTURNS			
NB	SB	EB	WB
0	1	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	1	0	0
0	0	0	0
0	0	0	0
0	0	0	0

**CONTROL : 3-Way Stop(NB/SB/WB)**

# ITM Peak Hour Summary

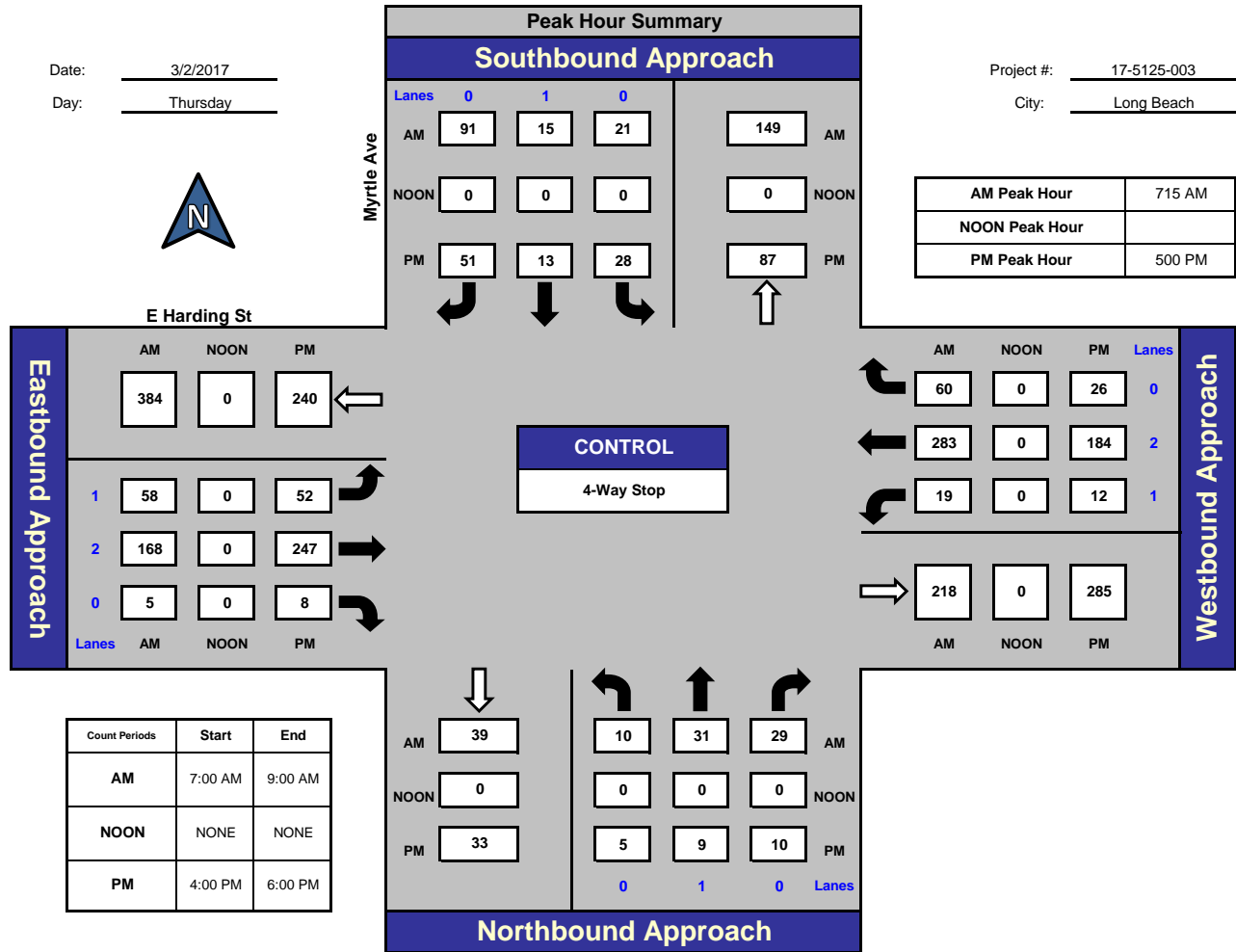
Prepared by:



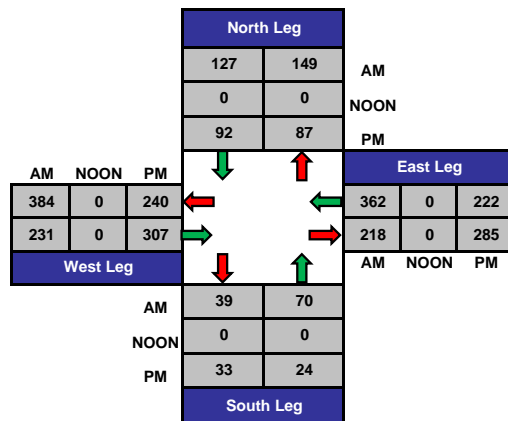
## Myrtle Ave and E Harding St, Long Beach

Date: 3/2/2017  
Day: Thursday

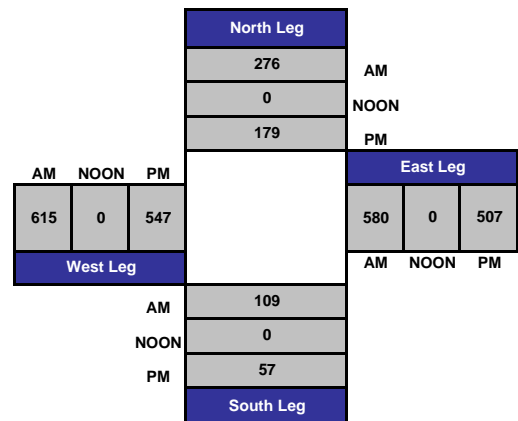
Project #: 17-5125-003  
City: Long Beach



### Total Ins & Outs



### Total Volume Per Leg





Prepared by:  
**National Data & Surveying Services**

**Day:** Thursday

**Date:** 3/2/2017

UTURNS			
NB	SB	EB	WB
0	0	0	0
0	0	0	0
0	0	0	1
0	0	1	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

**CONTROL : 4-Way Stop**

# Intersection Turning Movement

Prepared by:  
National Data & Surveying Services

Project ID: 17-5125-003

Day: Thursday

City: Long Beach

Date: 3/2/2017

PM													
NS/EW Streets:	Myrtle Ave			Myrtle Ave			E Harding St			E Harding St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	1	0	0	1	0	1	2	0	1	2	0	
4:00 PM	3	5	0	4	3	16	20	53	3	4	39	9	159
4:15 PM	2	0	6	4	4	16	14	55	2	7	44	7	161
4:30 PM	1	0	3	9	2	16	14	69	2	1	44	2	163
4:45 PM	0	5	2	7	4	6	11	68	0	2	36	6	147
5:00 PM	1	3	0	9	6	8	8	53	3	3	49	8	151
5:15 PM	0	2	1	12	3	18	11	70	1	2	46	2	168
5:30 PM	2	3	5	4	3	18	17	65	2	5	45	8	177
5:45 PM	2	1	4	3	1	7	16	59	2	2	44	8	149
TOTAL VOLUMES :	11	19	21	52	26	105	111	492	15	26	347	50	1275
APPROACH %'s :	21.57%	37.25%	41.18%	28.42%	14.21%	57.38%	17.96%	79.61%	2.43%	6.15%	82.03%	11.82%	
PEAK HR START TIME :	500 PM												
PEAK HR VOL :	5	9	10	28	13	51	52	247	8	12	184	26	645
PEAK HR FACTOR :	0.600			0.697			0.914			0.925			0.911

CONTROL : 4-Way Stop

UTURNS			
NB	SB	EB	WB
0	0	2	0
0	0	1	0
0	0	0	0
0	0	0	0
0	0	1	0
0	0	0	0
0	0	1	0
0	0	1	0
0	0	1	0
NB	SB	EB	WB
0	0	6	0




## APPENDIX B

### EXISTING TRAFFIC CONDITIONS INTERSECTION LEVEL OF SERVICE CALCULATION WORKSHEETS

**Intersection Level Of Service Report**  
**Intersection 1: Myrtle Avenue (South) at Artesia Boulevard**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.436

**Intersection Setup**

Name	Myrtle Ave (South)		Artesia Blvd		Artesia Blvd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		No	

**Volumes**

Name	Myrtle Ave (South)		Artesia Blvd		Artesia Blvd	
Base Volume Input [veh/h]	113	90	680	122	63	1075
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	113	90	680	122	63	1075
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	23	170	31	16	269
Total Analysis Volume [veh/h]	113	90	680	122	63	1075
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Cycle Length [s]	100
Lost time [s]	10.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	5	0	8	0	0	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-


**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.07	0.13	0.25	0.25	0.04	0.34
Intersection LOS	A					
Intersection V/C	0.436					

**Intersection Level Of Service Report**  
**Intersection 2: Myrtle Avenue (North) at Artesia Boulevard**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.482

**Intersection Setup**

Name	Myrtle Ave (North)		Artesia Blvd		Artesia Blvd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

**Volumes**

Name	Myrtle Ave (North)		Artesia Blvd		Artesia Blvd	
Base Volume Input [veh/h]	44	51	44	721	1088	45
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	51	44	721	1088	45
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	13	11	180	272	11
Total Analysis Volume [veh/h]	44	51	44	721	1088	45
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Cycle Length [s]	100
Lost time [s]	10.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	0	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-




**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.03	0.06	0.03	0.23	0.35	0.35
Intersection LOS	A					
Intersection V/C	0.482					

**Intersection Level Of Service Report**  
**Intersection 3: Myrtle Avenue at 64th Street**

Control Type:	All-way stop	Delay (sec / veh):	7.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.165

**Intersection Setup**

Name	Myrtle Ave		Myrtle Ave		64th St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Myrtle Ave		Myrtle Ave		64th St	
Base Volume Input [veh/h]	123	23	21	99	21	30
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	123	23	21	99	21	30
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	6	5	25	5	8
Total Analysis Volume [veh/h]	123	23	21	99	21	30
Pedestrian Volume [ped/h]	0		0		0	



**Intersection Settings****Lanes**

Capacity per Entry Lane [veh/h]	883	851	850
Degree of Utilization, x	0.17	0.14	0.06

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.59	0.49	0.19
95th-Percentile Queue Length [ft]	14.76	12.24	4.78
Approach Delay [s/veh]	7.88	7.92	7.51
Approach LOS	A	A	A
Intersection Delay [s/veh]	7.84		
Intersection LOS	A		

**Intersection Level Of Service Report**  
**Intersection 4: Myrtle Avenue at E. Harding St**

Control Type:	All-way stop	Delay (sec / veh):	11.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.496

**Intersection Setup**

Name	Myrtle Ave			Myrtle Ave			E. Harding St			E. Harding St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Myrtle Ave			Myrtle Ave			E. Harding St			E. Harding St		
Base Volume Input [veh/h]	10	31	29	21	15	91	58	168	5	19	283	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	31	29	21	15	91	58	168	5	19	283	60
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	8	7	5	4	23	15	42	1	5	71	15
Total Analysis Volume [veh/h]	10	31	29	21	15	91	58	168	5	19	283	60
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings****Lanes**

Capacity per Entry Lane [veh/h]	669	707	605	663	617	691
Degree of Utilization, x	0.10	0.18	0.10	0.26	0.03	0.50




**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.35	0.65	0.32	1.04	0.10	2.78
95th-Percentile Queue Length [ft]	8.71	16.29	7.92	26.02	2.38	69.42
Approach Delay [s/veh]	9.00	9.21	9.84		12.70	
Approach LOS	A	A	A		B	
Intersection Delay [s/veh]	10.98					
Intersection LOS	B					

**Intersection Level Of Service Report**  
**Intersection 1: Myrtle Avenue (South) at Artesia Boulevard**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.546

**Intersection Setup**

Name	Myrtle Ave (South)		Artesia Blvd		Artesia Blvd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		No	

**Volumes**

Name	Myrtle Ave (South)		Artesia Blvd		Artesia Blvd	
Base Volume Input [veh/h]	61	36	1294	63	35	704
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	61	36	1294	63	35	704
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	9	324	16	9	176
Total Analysis Volume [veh/h]	61	36	1294	63	35	704
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Cycle Length [s]	100
Lost time [s]	10.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	5	0	8	0	0	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-



**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.04	0.06	0.42	0.42	0.02	0.22
Intersection LOS	A					
Intersection V/C	0.546					

**Intersection Level Of Service Report**  
**Intersection 2: Myrtle Avenue (North) at Artesia Boulevard**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.497

**Intersection Setup**

Name	Myrtle Ave (North)		Artesia Blvd		Artesia Blvd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

**Volumes**

Name	Myrtle Ave (North)		Artesia Blvd		Artesia Blvd	
Base Volume Input [veh/h]	40	41	67	1269	695	28
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	40	41	67	1269	695	28
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	10	17	317	174	7
Total Analysis Volume [veh/h]	40	41	67	1269	695	28
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Cycle Length [s]	100
Lost time [s]	10.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	0	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-




**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.03	0.05	0.04	0.40	0.23	0.23
Intersection LOS	A					
Intersection V/C	0.497					

**Intersection Level Of Service Report**  
**Intersection 3: Myrtle Avenue at 64th Street**

Control Type:	All-way stop	Delay (sec / veh):	7.4
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.099

**Intersection Setup**

Name	Myrtle Ave		Myrtle Ave		64th St	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Myrtle Ave		Myrtle Ave		64th St	
Base Volume Input [veh/h]	75	6	4	84	7	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	75	6	4	84	7	6
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	2	1	21	2	2
Total Analysis Volume [veh/h]	75	6	4	84	7	6
Pedestrian Volume [ped/h]	0		0		0	



**Intersection Settings****Lanes**

Capacity per Entry Lane [veh/h]	900	890	874
Degree of Utilization, x	0.09	0.10	0.01




**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.30	0.33	0.05
95th-Percentile Queue Length [ft]	7.40	8.21	1.13
Approach Delay [s/veh]	7.40	7.49	7.18
Approach LOS	A	A	A
Intersection Delay [s/veh]	7.43		
Intersection LOS	A		

**Intersection Level Of Service Report**  
**Intersection 4: Myrtle Avenue at E. Harding St**

Control Type:	All-way stop	Delay (sec / veh):	9.7
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.355

**Intersection Setup**

Name	Myrtle Ave			Myrtle Ave			E. Harding St			E. Harding St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Myrtle Ave			Myrtle Ave			E. Harding St			E. Harding St		
Base Volume Input [veh/h]	5	9	10	28	13	51	52	247	8	12	184	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	9	10	28	13	51	52	247	8	12	184	26
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	2	3	7	3	13	13	62	2	3	46	7
Total Analysis Volume [veh/h]	5	9	10	28	13	51	52	247	8	12	184	26
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings****Lanes**

Capacity per Entry Lane [veh/h]	705	731	650	718	640	715
Degree of Utilization, x	0.03	0.13	0.08	0.36	0.02	0.29

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.11	0.43	0.26	1.61	0.06	1.22
95th-Percentile Queue Length [ft]	2.64	10.75	6.50	40.22	1.43	30.60
Approach Delay [s/veh]	8.29	8.64	10.16		9.74	
Approach LOS	A	A	B		A	
Intersection Delay [s/veh]	9.73					
Intersection LOS	A					