11.3 Traffic Impact Analysis

TINA-PACIFIC RESIDENTIAL TRAFFIC IMPACT ANALYSIS

City of Stanton

January 8, 2019

gandini

Traffic Engineering ● Transportation Planning ● Parking ● Noise & Vibration
Air Quality ● Global Climate Change ● Health Risk Assessment

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City of Stanton

January 8, 2019

prepared by

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EXECUTIVE SUMMARY

The purpose of this Traffic Impact Analysis is to provide an assessment of traffic operations resulting from development of the proposed Tina-Pacific Residential project and to identify measures necessary to mitigate potentially significant traffic impacts. This report analyzes traffic impacts for the anticipated project opening in Year 2022.

Although this is a technical report, effort has been made to write the report clearly and concisely. A glossary is provided in Appendix A to assist the reader with terms related to transportation engineering.

PROJECT DESCRIPTION

The approximately 10.2-acre project site is located at the southwest corner of the intersection of Magnolia Avenue and Tina Way in the City of Stanton. The project site is currently developed with 112 dwelling units of multi-family housing, 110 dwelling units of which are currently occupied. The project proposes to demolish the existing structures and construct 161 dwelling units of multi-family housing and a 2,300 square foot pre-school facility.

The project proposes to provide full gated access at the west leg of the intersection of Magnolia Avenue and Pacific Avenue and egress-only gated access at Sherrill Street. The project proposes to provide emergency vehicle access gates at Magnolia Avenue and at the southern terminus of Sherrill Street. For purposes of this analysis, the proposed project is assumed to be constructed and fully operational by year 2022.

EXISTING OPERATIONS

The study intersections currently operate at Levels of Service C or better during the PM peak hour for Existing conditions (see Table 1).

PROJECT TRIPS

The proposed project is forecast to generate a total of approximately 484 net new daily vehicle trips, including 48 net new vehicle trips during the AM peak hour and 54 net new vehicle trips during the PM peak hour (see Table 2).

FORECAST OPERATIONS

Existing Plus Project: The study intersections are forecast to operate at Levels of Service C or better during the peak hours for Existing Plus Project traffic conditions (see Table 4). The proposed project is forecast to result in no significant transportation impacts for Existing Plus Project conditions based on the thresholds of significance established by the Cities of Stanton and Garden Grove. Therefore, no mitigation is required (see Table 5).

Opening Year (2022) Without Project: The study intersections are forecast to operate at Levels of Service C or better during the peak hours for Opening Year (2022) Without Project conditions (see Table 6).

Opening Year (2022) With Project: The study intersections are forecast to operate at Levels of Service C or better during the peak hours for Opening Year (2022) With Project conditions (see Table 7). The proposed project is forecast to result in no significant transportation impacts for Opening Year (2022) conditions based on the thresholds of significance established by the Cities of Stanton and Garden Grove. Therefore, no mitigation is required (see Table 8).

1. INTRODUCTION

This section describes the purpose of this traffic impact analysis, project location, proposed development, and study area. Figure 1 shows the project location map and Figure 2 illustrates the project site plan.

PURPOSE AND OBJECTIVES

The purpose of this traffic impact analysis is to provide an assessment of roadway operations resulting from development of the proposed Tina-Pacific Residential project and to identify measures necessary to mitigate potentially significant traffic impacts. This report analyzes traffic impacts for the anticipated project opening in Year 2022.

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STUDY AREA

Based on the study intersections identified in the approved scoping agreement (Appendix B), the study area consists of the following study intersections within the City of Stanton and City of Garden Grove of jurisdictions:

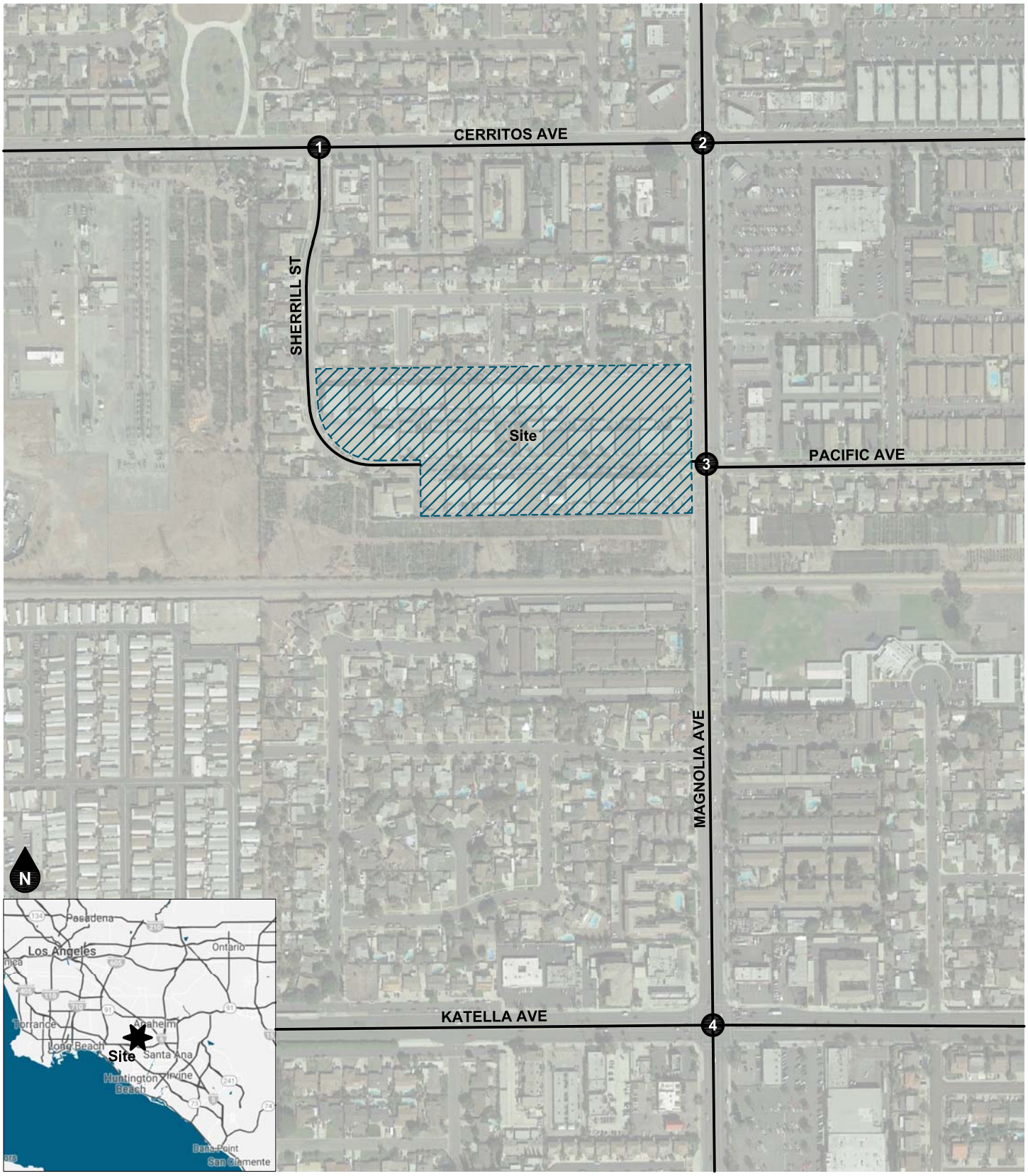
Study Intersections[1]	Jurisdiction
1. Sherrill St (NS) at Cerritos Ave (EW)	City of Stanton
2. Magnolia Ave (NS) at Cerritos Ave (EW)	City of Stanton
3. Magnolia Ave (NS) at Pacific Ave (EW)	City of Stanton
4. Magnolia Ave (NS) at Katella Ave (EW)	City of Stanton/Garden Grove

ANALYSIS SCENARIOS

The following scenarios are analyzed during typical weekday AM and PM peak hour conditions:

- Existing Conditions
- Existing Plus Project Conditions
- Opening Year (2022) Without Project Conditions
- Opening Year (2022) With Project Conditions

[1] (NS) = north-south roadway; (EW) = east-west roadway



Legend

(#) Study Intersection

Figure 1
Project Location Map

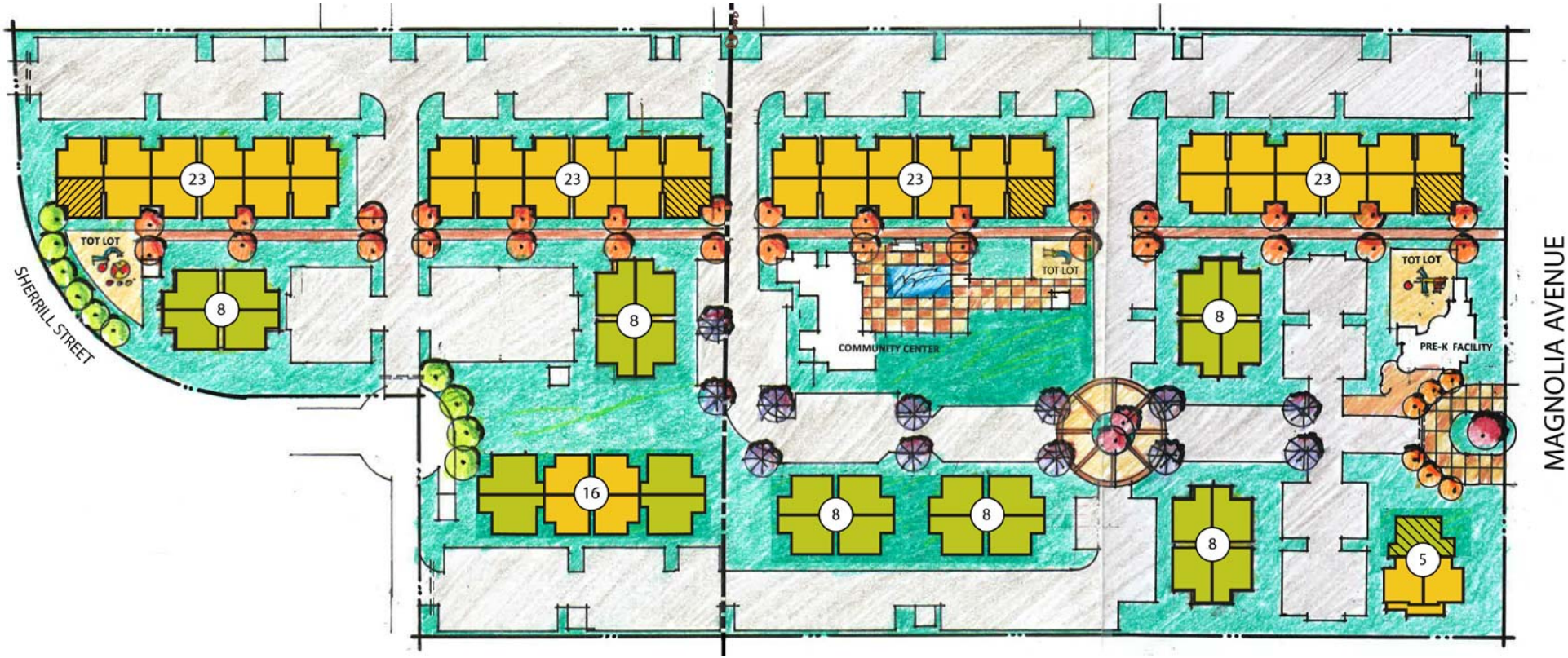


Figure 2
Site Plan

2. METHODOLOGY

This section describes the analysis methodologies used to assess transportation facility performance as adopted by the respective jurisdictional agencies.

INTERSECTION CAPACITY UTILIZATION METHODOLOGY

Analysis of signalized intersections is based on the Intersection Capacity Utilization methodology. The Intersection Capacity Utilization methodology compares the traffic volumes using the intersection to the capacity of the intersection. The resulting Intersection Capacity Utilization value represents that portion of the hour required to provide sufficient capacity to accommodate all intersection traffic volumes if all approaches operate at capacity. Level of Service is used to qualitatively describe the performance of a roadway facility, ranging from Level of Service A (free-flow conditions) to Level of Service F (extreme congestion and system failure). The volume to capacity ratio is then correlated to a performance measure known as Level of Service based on the following thresholds:

Level of Service	Volume to Capacity (V/C)
A	≤ 0.600
B	0.601 to 0.700
C	0.701 to 0.800
D	0.801 to 0.900
E	0.901 to 1.000
F	> 1.000

Source: Highway Capacity Manual, Special Report 209, Transportation Research Board, Washington, D.C., 1985 and Interim Materials on Highway Capacity, NCHRP Circular 212, 1982

Intersection capacity utilization analysis was performed using the Vistro (Version 6.00-00) software. In accordance with the City of Stanton and City of Garden Grove requirements, the Intersection Capacity Utilization analysis uses the following parameters: 1,700 vehicles per hour per lane and a total yellow clearance time of 5 percent.

INTERSECTION DELAY METHODOLOGY

The methodology used to assess the performance of unsignalized intersections is known as the intersection delay methodology based on the procedures contained in the Highway Capacity Manual (Transportation Research Board, 6th Edition). The methodology considers the traffic volume and distribution of movements, traffic composition, geometric characteristics, and signalization details (if signalized) to calculate the average control delay per vehicle and corresponding Level of Service. Control delay is defined as the portion of delay attributed to the intersection traffic control (such as a traffic signal or stop sign) and includes initial deceleration, queue move-up time, stopped delay, and final acceleration delay. The intersection control delay is then correlated to Level of Service based on the following thresholds:

Level of Service	Intersection Control Delay (Seconds / Vehicle)
	Unsignalized Intersection
A	≤ 10.0
B	> 10.0 to ≤ 15.0
C	> 15.0 to ≤ 25.0
D	> 25.0 to ≤ 35.0
E	> 35.0 to ≤ 50.0
F	> 50.0

Source: Transportation Research Board, Highway Capacity Manual (6th Edition).

Level of Service is used to qualitatively describe the performance of a roadway facility, ranging from Level of Service A (free-flow conditions) to Level of Service F (extreme congestion and system failure). At intersections with traffic signal or all way stop control, Level of Service is determined by the average control delay for the overall intersection. At intersections with cross street stop control (i.e., one- or two-way stop control), Level of Service is determined by the average control delay for the worst individual movement (or movements sharing a single lane).

Intersection delay analysis was performed using the Vistro (Version 6.00-00) software. Default values recommended in the Highway Capacity Manual were used for any values not specifically identified in the City guidelines.

PERFORMANCE STANDARDS

City of Stanton. The minimum acceptable Levels of Service established by the City of Stanton are Level of Service E on Beach Boulevard, and Level of Service D on all other roadways.

City of Garden Grove. The City of Garden Grove General Plan establishes Level of Service D as the minimum acceptable Level of Service for its arterial roadway system. Roadway facilities operating at Level of Service E or F are considered deficient.

THRESHOLDS OF SIGNIFICANCE

Shared study intersections between the City of Stanton and City of Garden Grove are analyzed in accordance with the thresholds established by both agencies.

City of Stanton. The City of Stanton considers a traffic impact to be significant if project traffic is forecast to increase the Volume-to-capacity ratio (V/C) at an intersection by three percent (V/C ≥ 0.030) of the Level of Service E capacity.

City of Garden Grove. Based on the City of Garden Grove performance criteria, a traffic impact is considered significant if:

- The addition of project-generated trips is forecast to cause a signalized study intersection to change from acceptable Level of Service (D or better) to deficient Level of Service (E of F); or
- The addition of project-generated trips is forecast to increase the volume to capacity ratio of a signalized study intersection by one percent or more of capacity (V/C ≥ 0.010) if the intersection is already operating at a deficient Level of Service (E or F); or

- The addition of project-generated trips is forecast to cause or worsen a deficient Level of Service (E or F) at an unsignalized intersection and a traffic warrant is satisfied.

MITIGATION REQUIREMENTS

If a project is forecast to cause a significant transportation impact, feasible mitigation measures shall be identified that will reduce the impact to a less than significant level based on the established thresholds. Mitigation measures can be in many forms, including the addition of lanes, traffic control modification, or demand management measures. If no feasible mitigation measures can be identified to reduce the impact to a less than significant level, the impact will remain significant and unavoidable. If the Lead Agency determines that the benefits of a proposed project outweigh any significant and unavoidable impacts, a statement of overriding considerations must be adopted for project approval.

3. EXISTING CONDITIONS

EXISTING ROADWAY SYSTEM

Figure 3 identifies the lane geometry and intersection traffic controls for Existing conditions based on a field survey of the study area. Regional access to the project area is provided by the State Route 22 and Interstate 5 freeways. The north-south roadways of Sherrill Street and Magnolia Avenue and the east-west roadways of Cerritos Avenue and Katella Avenue provide local circulation.

PEDESTRIAN FACILITIES

Existing pedestrian facilities in the project vicinity are shown on Figure 4. As shown on Figure 4, pedestrian sidewalks are currently provided along the roadways adjacent to the project site.

BICYCLE FACILITIES

The City of Stanton Bicycle Route Map is depicted on Figure 5. Class II bike lanes are proposed along Cerritos Avenue and Magnolia Avenue; however, there are no existing bicycle facilities in the immediate project vicinity.

TRANSIT FACILITIES

Figure 6 shows the existing transit routes available in the project vicinity. As shown on Figure 6, Orange County Transportation Authority Route 33 provides transit service along Magnolia Avenue and Route 50 provides transit service along Katella Avenue. The nearest transit stops are for Route 33 located adjacent to the project site at the intersection of Magnolia Avenue and Pacific Avenue.

GENERAL PLAN CONTEXT

Figure 7 shows the City of Stanton General Plan Roadway Classification map. This figure shows the nature and extent of arterial and collector highways that are needed to adequately serve the ultimate development depicted by the Land Use Element of the General Plan.

EXISTING INTERSECTION VOLUMES

Existing peak hour intersection volumes are based upon AM and PM peak period intersection turning movement counts obtained in December 2018 during typical weekday conditions while local schools were in session. The AM peak period was counted between 7:00 AM and 9:00 PM and the PM peak period was counted between 4:00 PM and 6:00 PM. The actual peak hour within the peak period is the four consecutive 15 minute periods with the highest total volume when all movements are added together. Thus, the weekday PM peak hour at one intersection may be 4:45 PM to 5:45 PM if those four consecutive 15 minute periods have the highest combined volume. Intersection turning movement count worksheets are provided in Appendix C. For reference, existing and projected average daily traffic volumes are provided in Appendix D.

Figure 8 and Figure 9 show the Existing AM and PM peak hour intersection turning movement volumes.

EXISTING INTERSECTION LEVEL OF SERVICE

The intersection Levels of Service for Existing traffic conditions have been calculated and are shown in Table 1. As shown in Table 1, the study intersections currently operate within acceptable Levels of Service during the peak hours for Existing conditions. Level of Service worksheets are provided in Appendix E.

Table 1
Existing Intersection Levels of Service

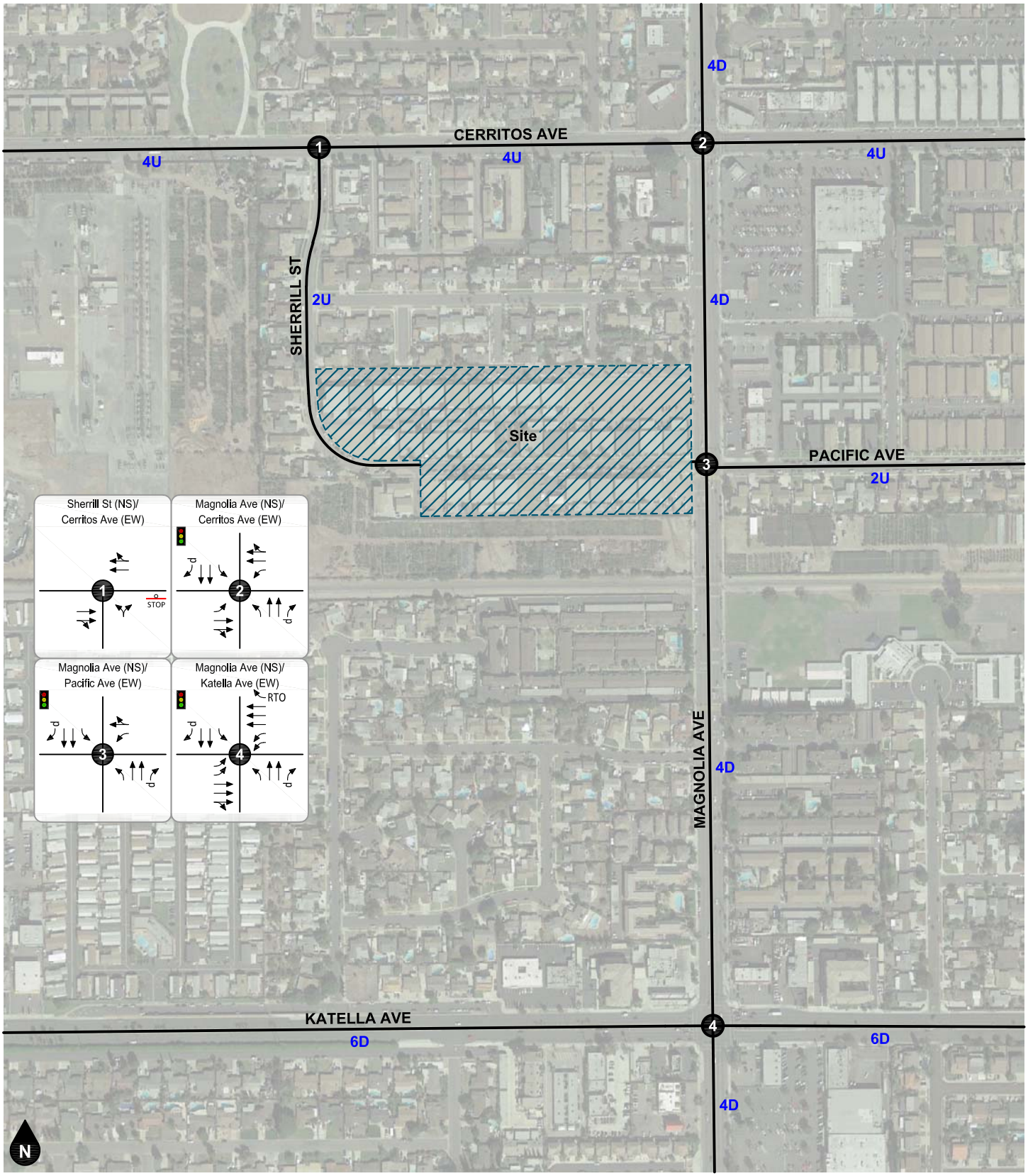
ID	Study Intersection	Traffic Control[1]	AM Peak Hour V/C[2] or [Delay][3]	AM Peak Hour LOS[4]	PM Peak Hour V/C[2] or [Delay][3]	PM Peak Hour LOS[4]
1.	Sherrill St at Cerritos Ave	CSS	[20.2]	C	[22.1]	C
2.	Magnolia Ave at Cerritos Ave	TS	0.546	A	0.619	B
3.	Magnolia Ave at Pacific Ave	TS	0.384	A	0.414	A
4.	Magnolia Ave at Katella Ave	TS	0.610	B	0.665	B

Notes:
(1) CSS = Cross Street Stop; TS = Traffic Signal

(2) V/C = Volume/Capacity

(3) Delay is shown in [seconds/vehicle] for unsignalized study intersections. For intersections with cross street stop control, Level of Service is based on average delay of the worst individual lane (or movements sharing a lane).

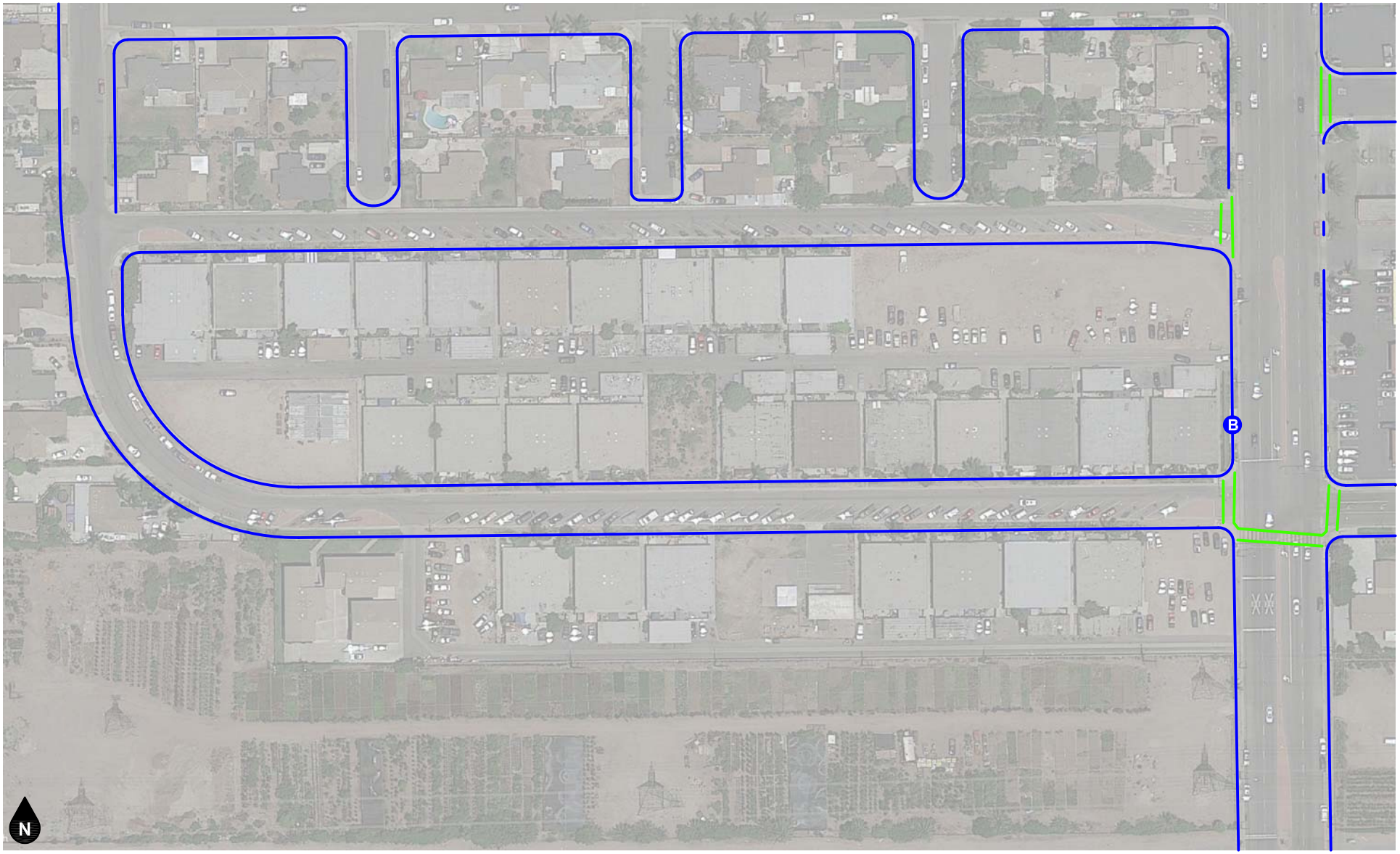
(4) LOS = Level of Service



Legend

- Traffic Signal
- STOP Stop Sign
- #D #-Lane Divided Roadway
- #U #-Lane Undivided Roadway
- Existing Lane
- RTO Right Turn Overlap
- d De Facto Right Turn Lane

Figure 3
Existing Lane Geometry and Intersection Traffic Controls



Legend
- Sidewalk
- Cross Walk
- B Bus Stop

Figure 4
Existing Pedestrian Facilities

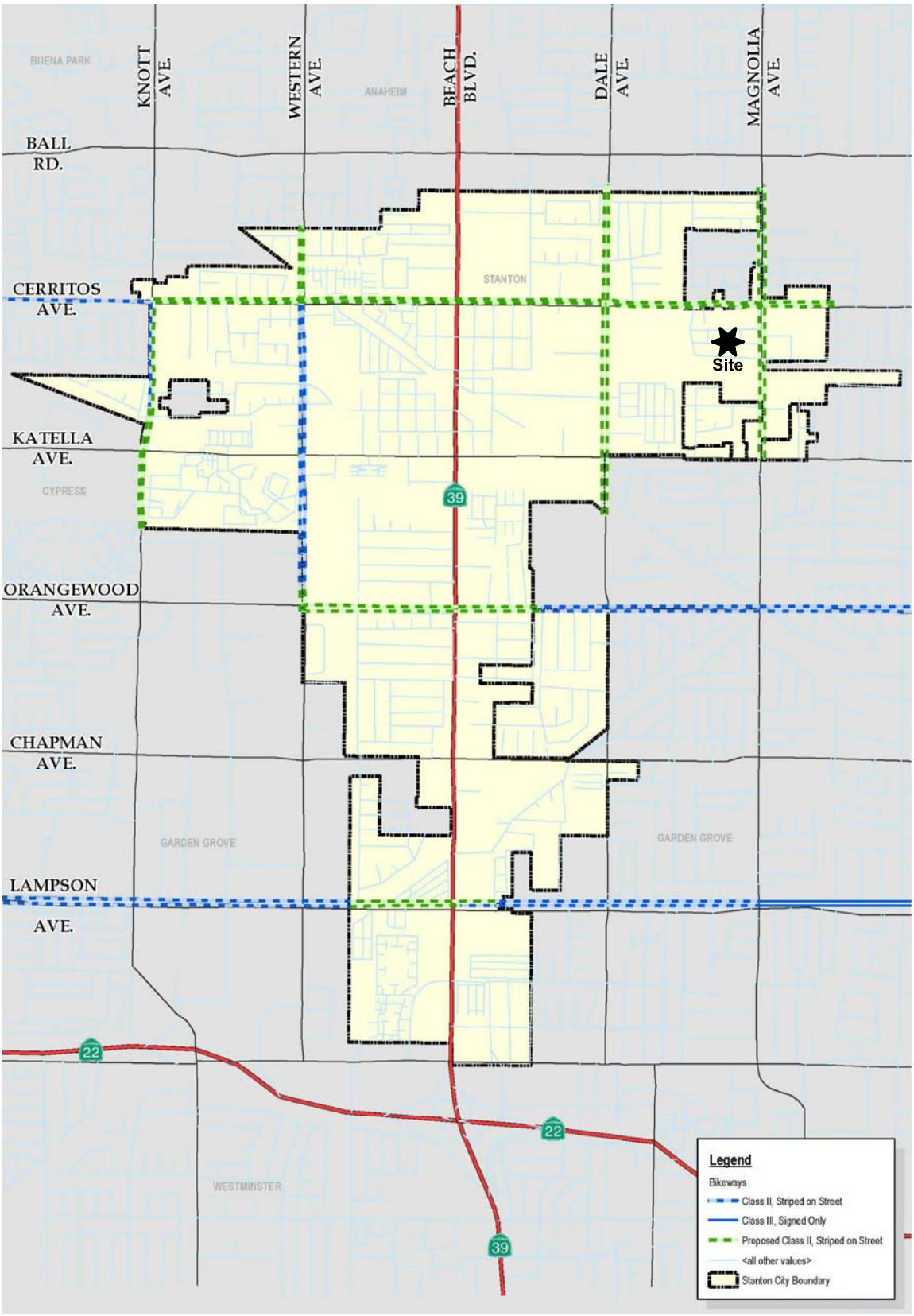


Figure 5
City of Stanton Bicycle Route Map

Source: City of Stanton

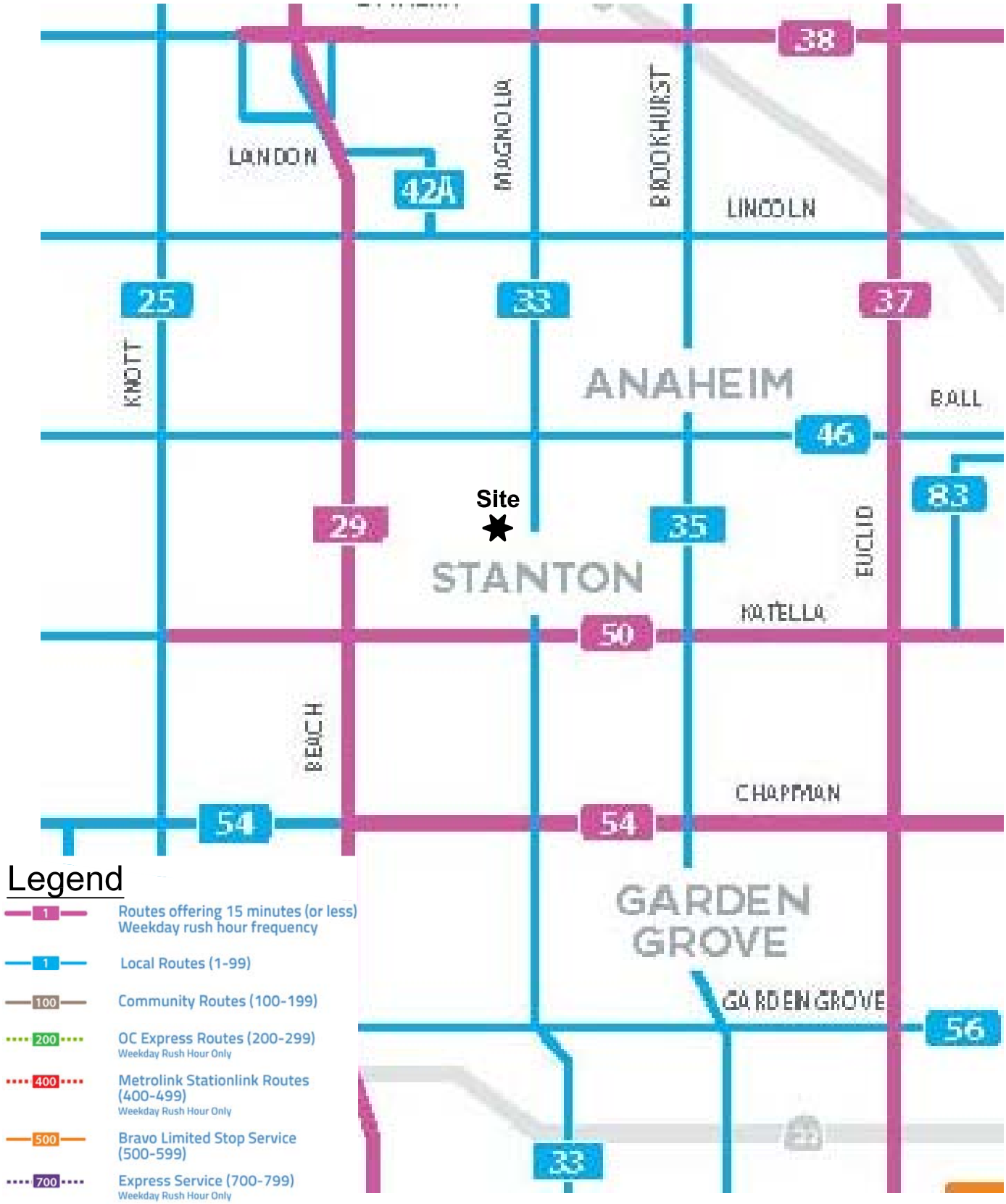


Figure 6
Orange County Transportation Authority System Map

Source: Orange County Transportation Authority

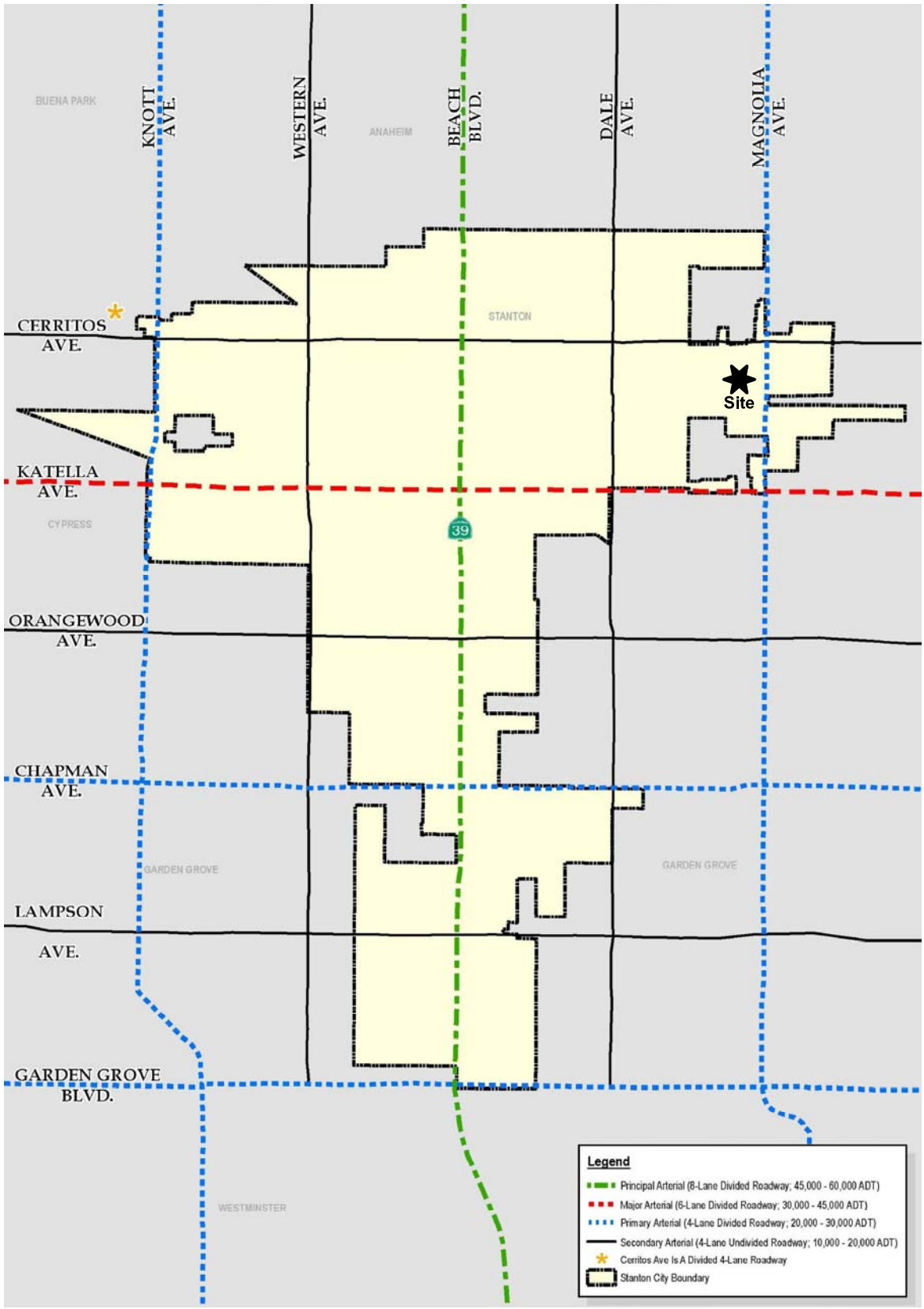
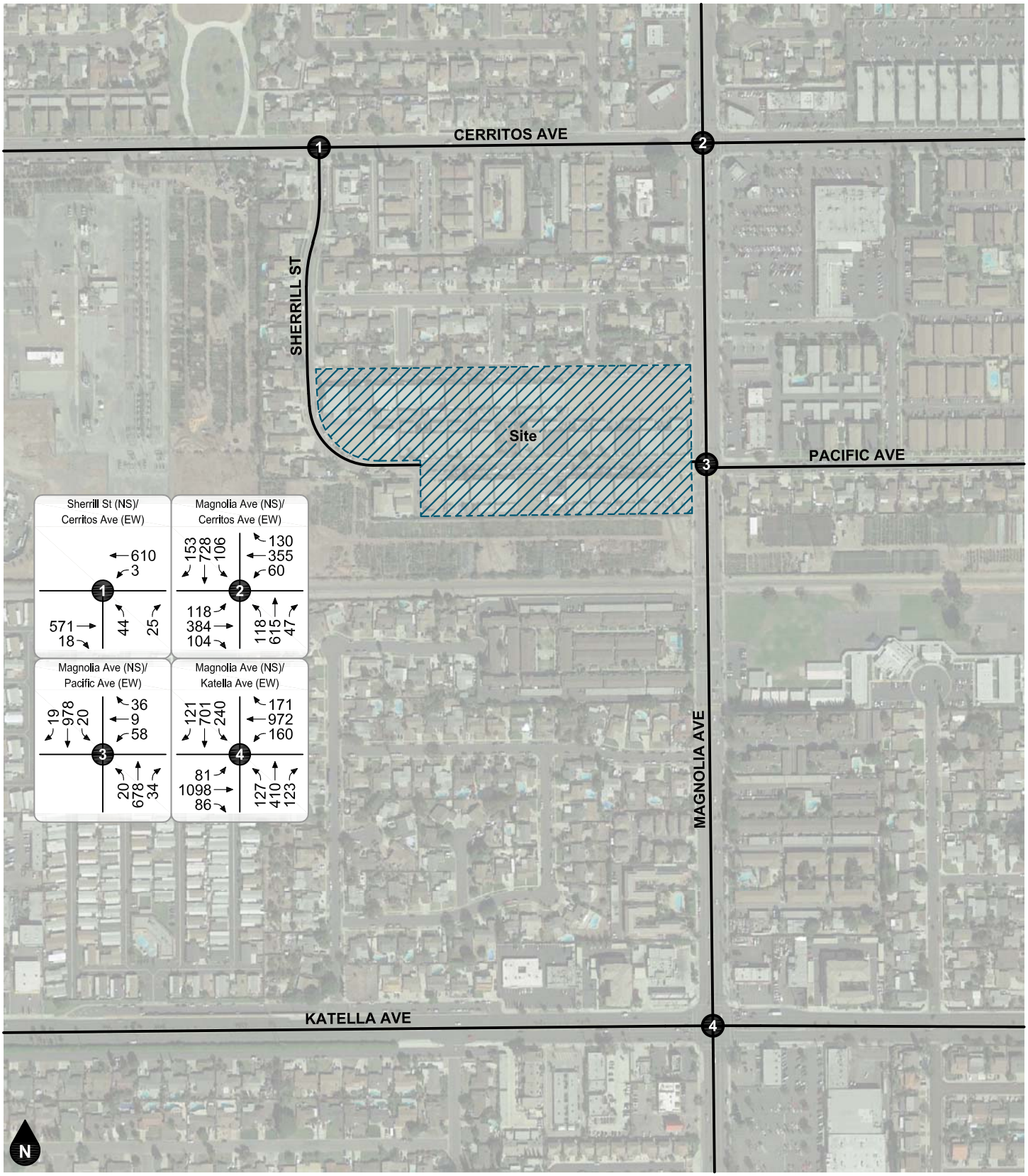


Figure 7
City of Stanton General Plan Roadway Classifications

Source: City of Stanton



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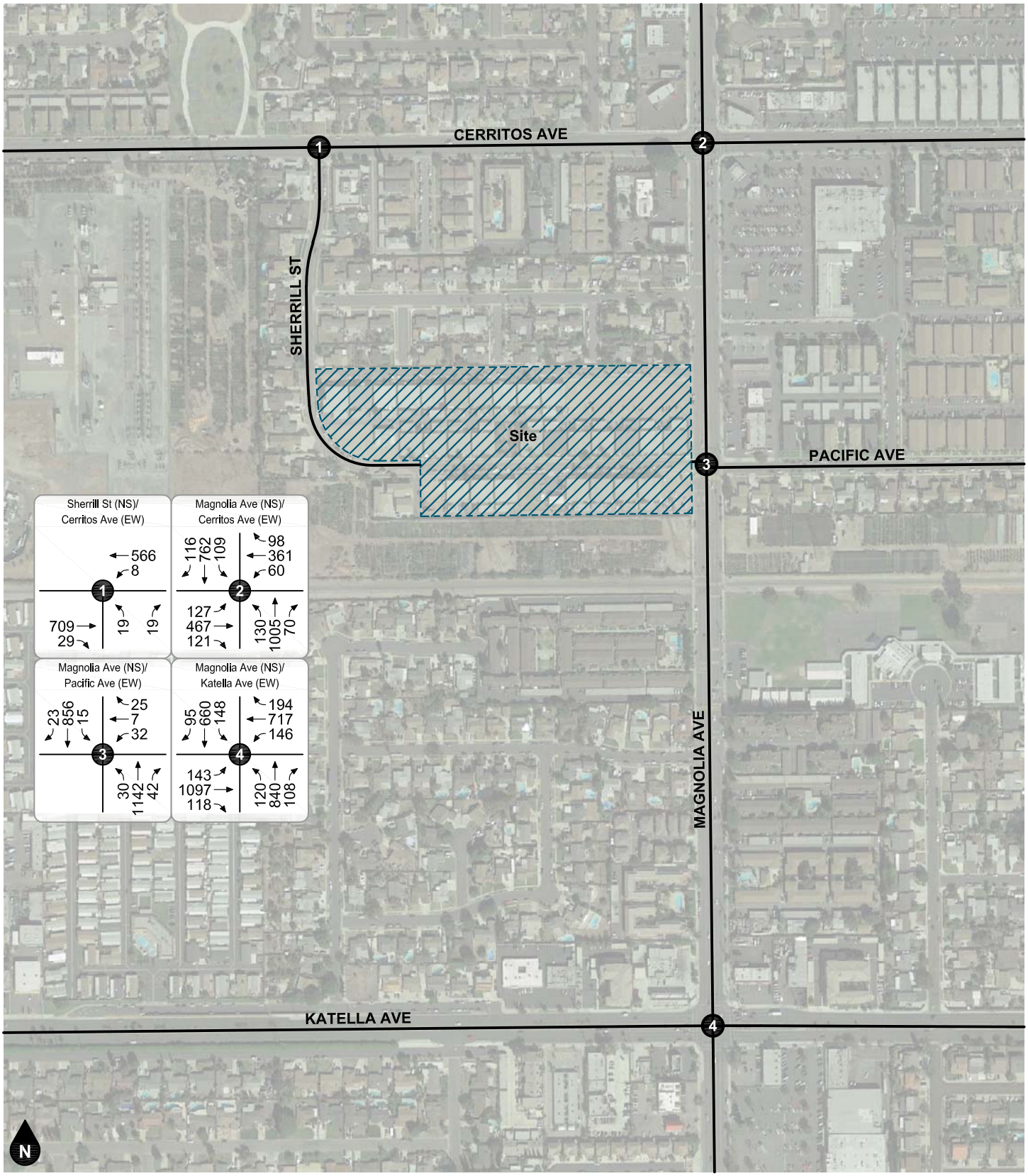
(#) Study Intersection

Figure 8
Existing AM Peak Hour Intersection Turning Movement Volumes



Legend

(#) Study Intersection

Figure 9
Existing PM Peak Hour Intersection Turning Movement Volumes

4. PROJECT FORECASTS

This section describes how project trip generation, trip distribution, and trip assignment forecasts were developed. The forecast project volumes are illustrated on figures contained in this section.

PROJECT TRIP GENERATION

Table 2 shows the project trip generation based upon trip generation rates obtained from the Institute of Transportation Engineers, Trip Generation Manual, 10th Edition, 2017. The project site is currently occupied by 110 multifamily housing units. The project proposes to demolish the existing structures and construct 161 dwelling units of multifamily housing and a 2,300 square foot pre-school facility. The project trip generation forecast is determined by multiplying the trip generation rates by the existing and proposed land use quantities.

As shown in Table 2, the existing site is estimated to generate approximately 805 daily vehicle trips, including 51 trips during the AM peak hour and 62 trips during the PM peak hour. The proposed uses are forecast to generate a total of approximately 1,289 daily vehicle trips, including 99 trips during the AM peak hour and 116 trips during the PM peak hour. Therefore, the proposed project is forecast to generate a total of approximately 484 net new daily vehicle trips, including 48 net new vehicle trips during the AM peak hour and 54 net new vehicle trips during the PM peak hour.

PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

Figure 10 and Figure 11 show the forecast directional distribution patterns for the outbound and inbound project-generated trips, respectively. The project trip distribution patterns are based on review of existing volume data, surrounding land uses, and the local and regional roadway facilities in the project vicinity.

AM and PM peak hour intersection turning movement volumes expected from the project are depicted on Figure 12 and Figure 13.

Table 2
Project Trip Generation

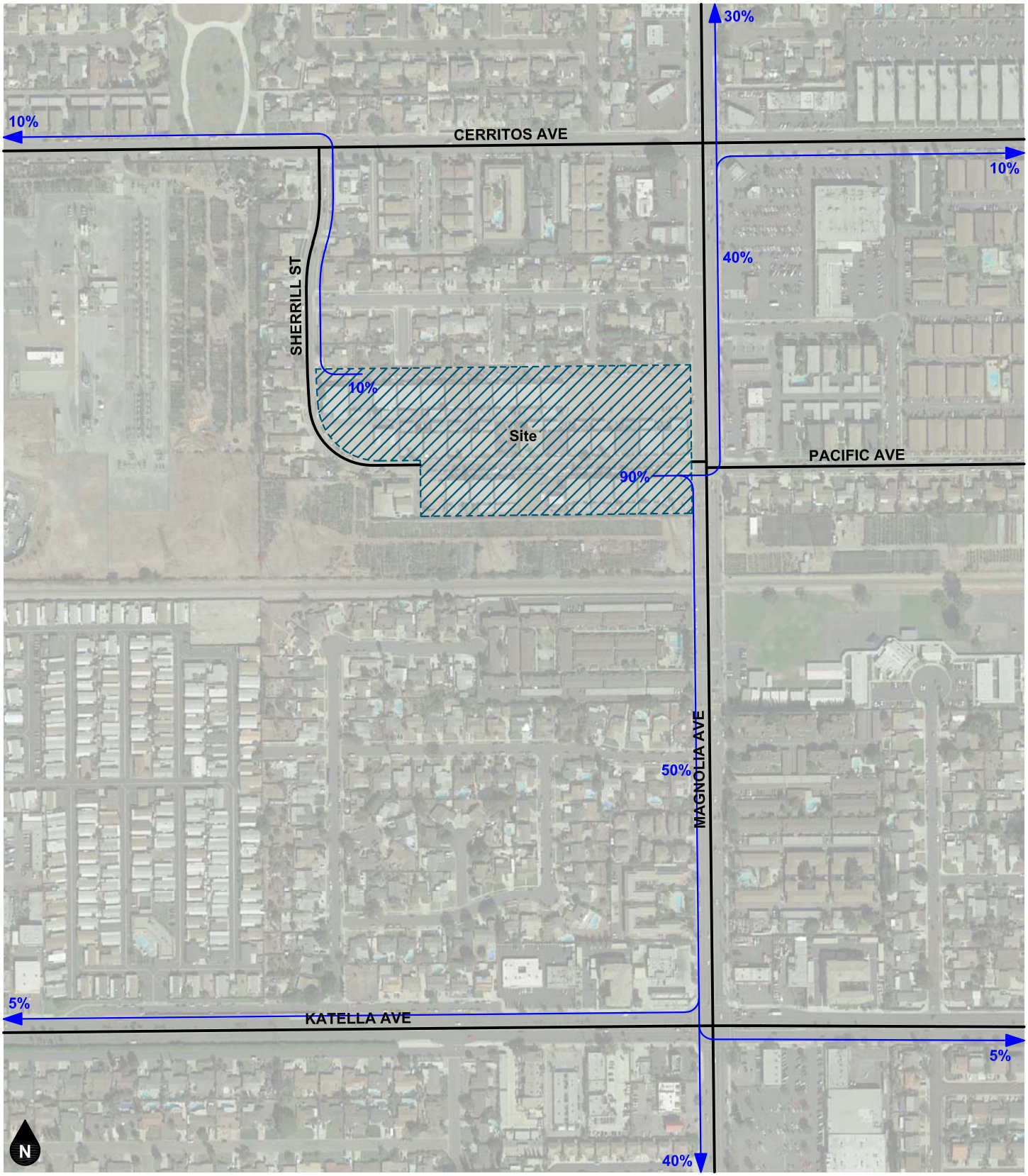
Trip Generation Rates									
			AM Peak Hour			PM Peak Hour			Daily
Land Use	Source[1]	Units[2]	% In	% Out	Rate	% In	% Out	Rate	Rate
Multifamily Housing (Low-Rise)	ITE 220	TSF	23%	77%	0.46	63%	37%	0.56	7.32
Pre-school	ITE 565	TSF	53%	47%	11.00	47%	53%	11.12	47.62

Trips Generated									
			AM Peak Hour			PM Peak Hour			
Land Use	Quantity	Units[2]	In	Out	Total	In	Out	Total	Daily
Existing Uses to be Removed									
Multifamily Housing (Low-Rise)	110	DU	12	39	51	39	23	62	805
Proposed Uses									
Multifamily Housing (Low-Rise)	161	DU	17	57	74	57	33	90	1,179
Pre-school	2.300	TSF	13	12	25	12	14	26	110
Subtotal - Gross Trips Generated			30	69	99	69	47	116	1,289
TOTAL - NET NEW TRIPS GENERATED			**18**	**30**	**48**	**30**	**24**	**54**	**484**

Notes:

(1) ITE = Institute of Transportation Engineers, Trip Generation Manual, 10th Edition, 2017; ### = Land Use Code

(2) DU = Dwelling Units; TSF = Thousand Square Feet



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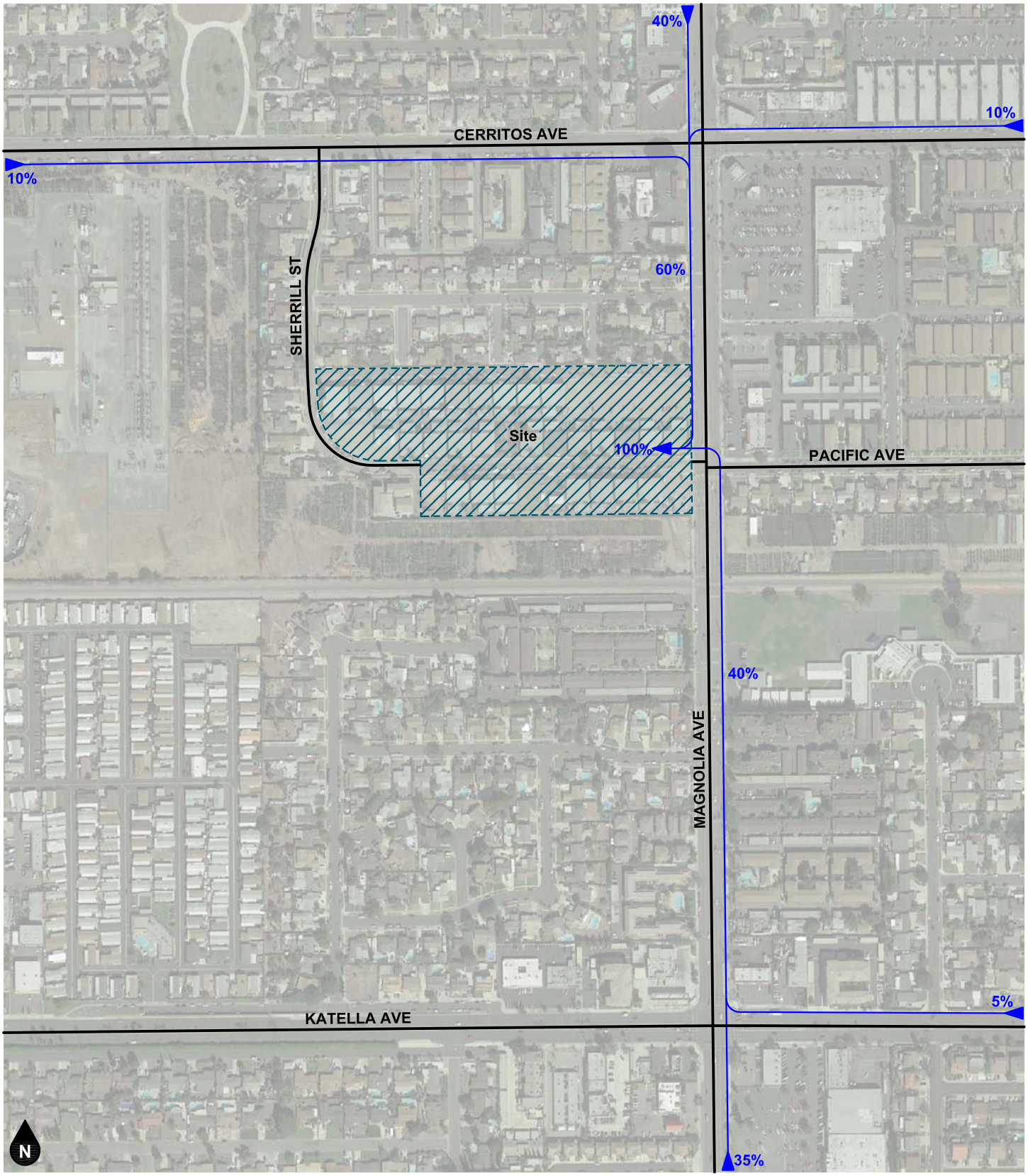
10% Percent From Project

Figure 10
Project Trip Distribution - Outbound



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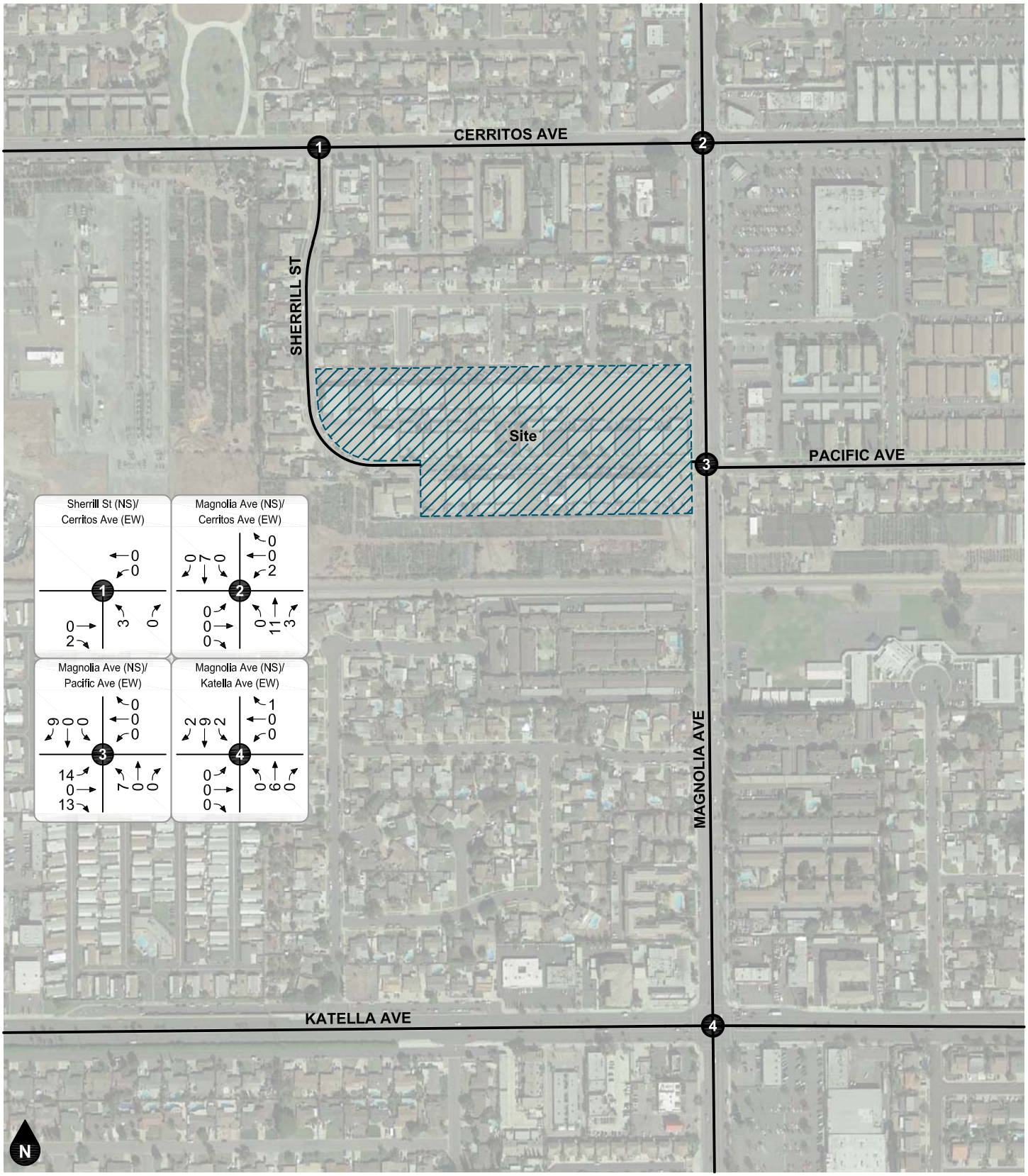
10% Percent To Project

Figure 11
Project Trip Distribution - Inbound



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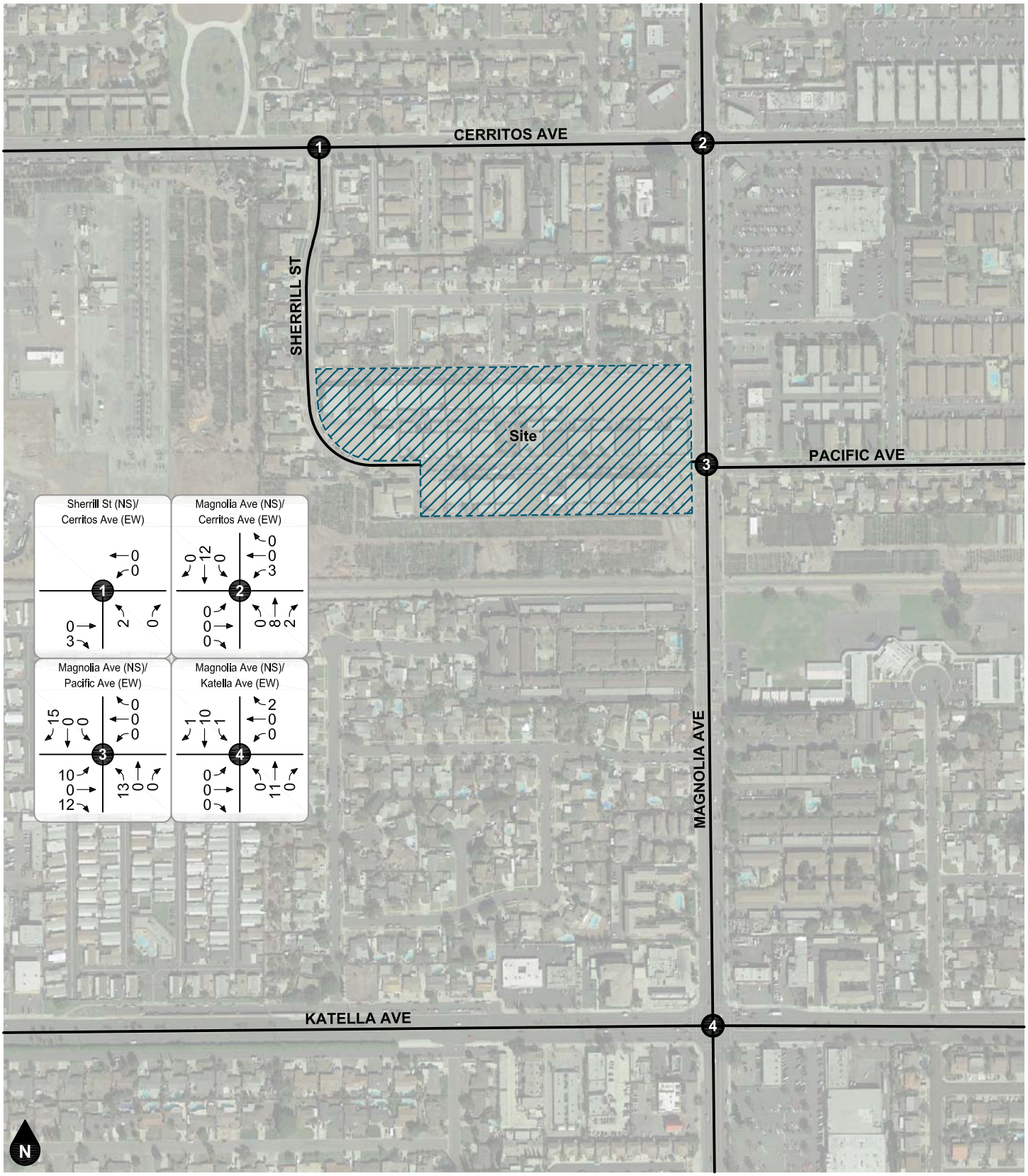
(#) Study Intersection

Figure 12
Project AM Peak Hour Intersection Turning Movement Volumes



Legend

(#) Study Intersection

Figure 13
Project PM Peak Hour Intersection Turning Movement Volumes

5. FUTURE VOLUME FORECASTS

This section describes how future volume forecasts for each analysis scenario were developed. Forecast study area volumes are illustrated on figures contained in this section. Forecast average daily traffic volumes are provided in Appendix D for informational purposes.

CUMULATIVE TRIPS

Ambient Growth Rate

To account for ambient growth on roadways, existing volumes were increased by a growth rate of 1.0 percent (1.0%) per year over a four-year period for Opening Year (2022) conditions. This equates to a total growth factor of approximately 1.04 for Opening Year conditions. The ambient growth rate was conservatively applied to all movements at the study intersections.

Other Development

To account for trips generated by future development, trips generated by pending or approved other development projects in the Cities of Stanton, Garden Grove, and Anaheim were added to the study intersections. Table 3 shows the trip generation summary for other development projects. Figure 14 shows the other development location map. The previously discussed ambient growth is assumed to account for any additional background volume growth generated by other developments outside the project vicinity and not specifically listed in this report.

Figure 15 and Figure 16 show the forecast peak hour intersection turning movement volumes for trips generated by other developments.

ANALYSIS SCENARIO VOLUME FORECASTS

Existing Plus Project

Existing Plus Project volume forecasts were derived by adding the project-generated trips to Existing volumes. Existing Plus Project AM and PM peak hour intersection turning movement volumes are shown on Figure 17 and Figure 18.

Opening Year (2022) Without Project

To develop Opening Year (2022) Without Project volume forecasts, Existing volumes were combined with ambient growth and trips generated by other developments. Opening Year (2022) Without Project AM and PM peak hour intersection turning movement volumes are shown on Figure 19 and Figure 20.

Opening Year (2022) With Project

Opening Year (2022) With Project volume forecasts were developed by adding project-generated trips to the Opening Year (2022) Without Project forecast. Opening Year (2022) With Project AM and PM peak hour intersection turning movement volumes are shown on Figure 21 and Figure 22.

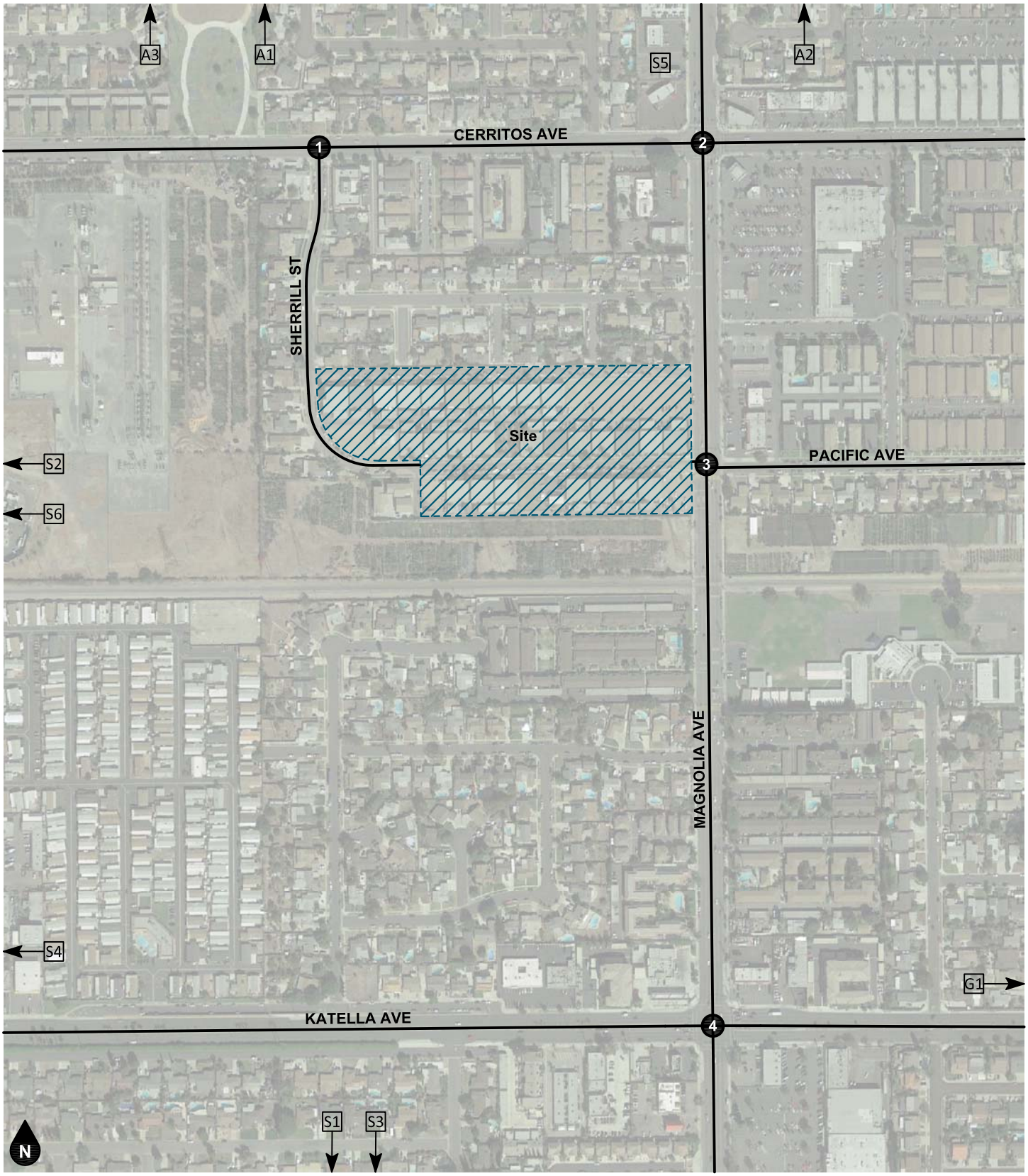
Table 3
Other Development Trip Generation

ID	Land Use	Quantity	Units[1]	Source[2]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
City of Stanton											
S1	Stanton Plaza										
	Retail	2.000	TSF	ITE 820	1	1	2	4	4	8	76
	Fast Casual Restaurant	4.000	TSF	ITE 930	6	2	8	31	26	57	1,261
	Wendy's	3.300	TSF	ITE 934	68	65	133	56	52	108	1,554
	Pass-By (49% AM, 50% PM)			[a]	-33	-32	-65	-28	-26	-54	-119
	Arco	16	FP	ITE 945	102	98	200	114	110	224	3,286
	Pass-By (62% AM, 56% PM)			[a]	-63	-61	-124	-64	-61	-125	-249
S2	10580-10600 Beach Boulevard										
	Retail	4.100	TSF	ITE 820	2	2	4	8	8	16	155
	Warehouse	0.850	TSF	ITE 110	1	0	1	0	1	1	4
S3	Village Center										
	Residential	208	DU	ITE 210	40	114	154	129	77	206	1,964
	Shopping Center	105.000	TSF	ITE 820	127	77	204	270	293	563	6,215
	Pass-By (34% PM)				0	0	0	-92	-100	-191	-191
	Existing Trips				-116	-87	-203	-77	-230	-307	-3,336
S4	Starbucks	2.100	TSF	ITE 937	95	92	187	46	45	91	1,723
	Pass-By (49% AM)			[a] [b]	-47	-45	-92	0	0	0	-92
S5	10441 Magnolia Avenue	1.065	TSF	ITE 720	2	1	3	1	3	4	37
S6	10662 Court Avenue	19.296	TSF	ITE 110	12	2	14	2	10	12	96
City of Garden Grove											
G1	Crunch Gym	40.704	TSF	ITE 492	27	26	53	80	60	140	1,458
City of Anaheim											
A1	DEV2016-00100	41	DU	ITE 210	8	22	30	25	16	41	387
A2	DEV2018-00050	4.660	TSF	ITE 720	10	3	13	5	11	16	162
A3	DEV2016-00136	34	DU	ITE 210	6	19	25	21	13	34	321
Total Other Development Trips Generated					**248**	**299**	**547**	**531**	**312**	**844**	**14,712**

Notes:

(1) TSF = Thousand Square Feet; DU = Dwelling Units; FP = Fueling Positions

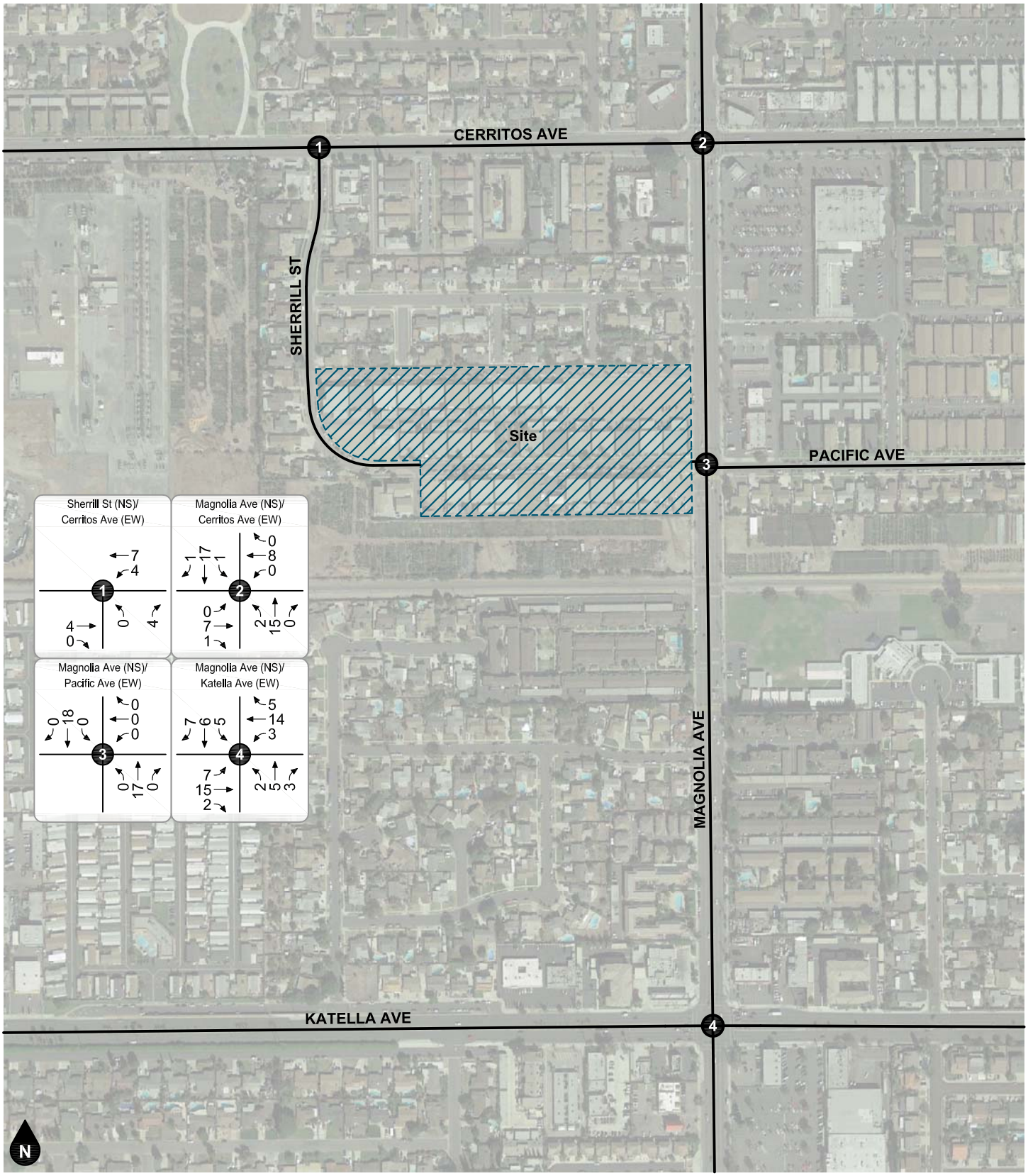
(2) ITE = Institute of Transportation Engineers, Trip Generation Manual, 10th Edition, 2017; ### = Land Use Code
[a] = Institute of Transportation Engineers, Trip Generation Handbook, 3rd Edition, 2017.
[b] = The AM pass-by rate for Fast-Food Restaurant with Drive-Thru (ITE 934) was used.



Legend

[1] = Traffic Analysis Zone

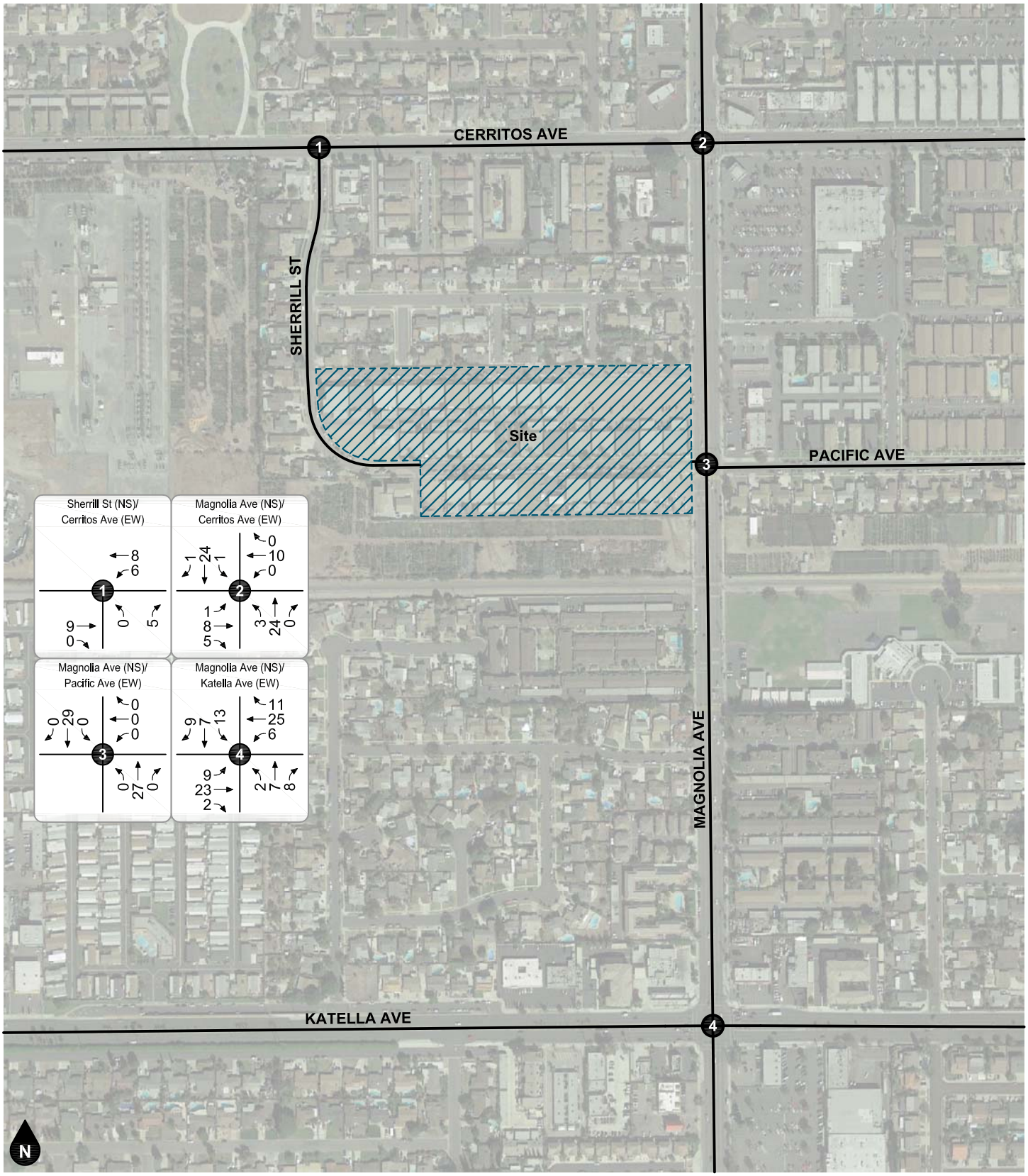
Figure 14
Other Development Location Map



Legend

(#) Study Intersection

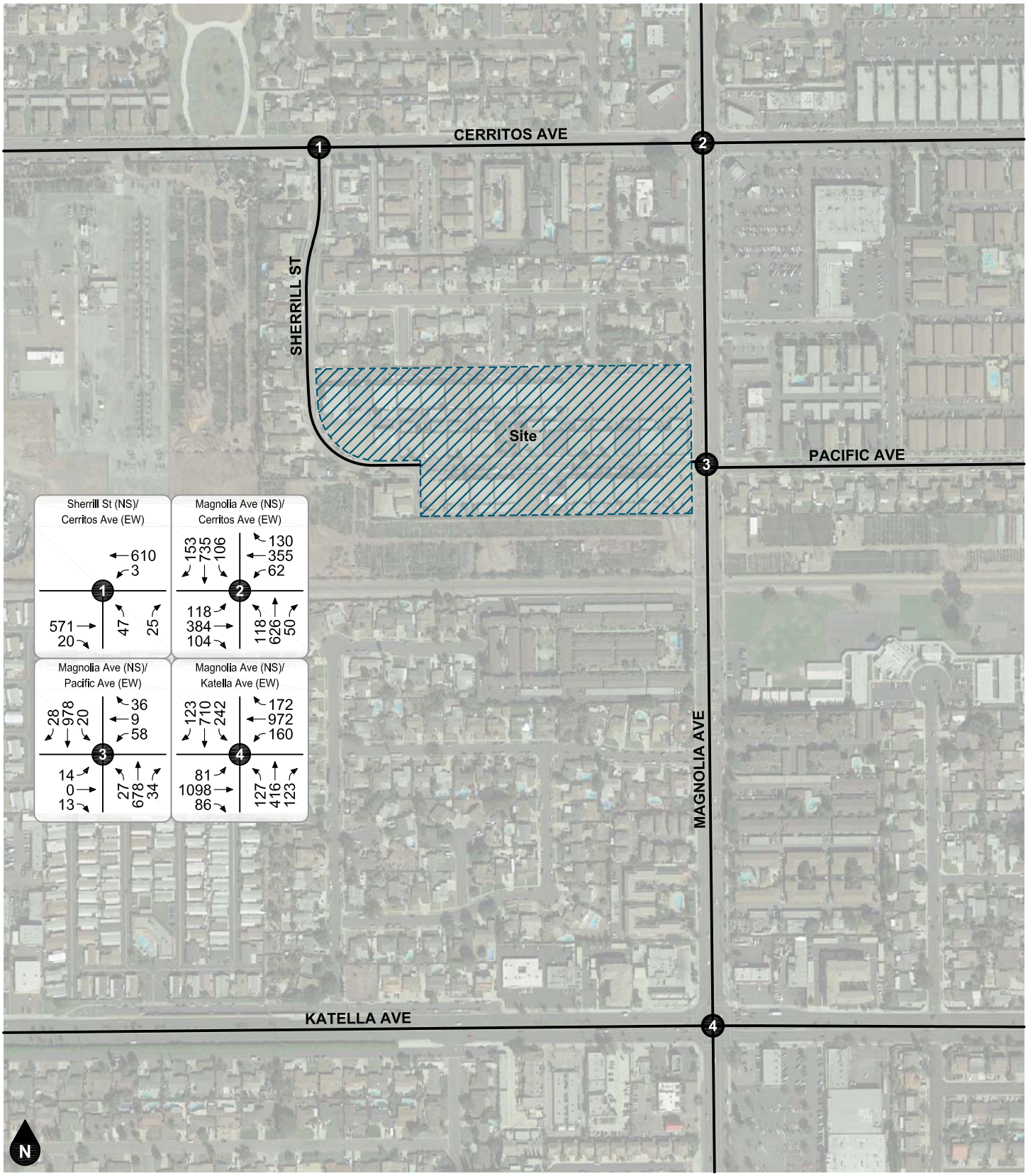
Figure 15
Other Development
AM Peak Hour Intersection Turning Movement Volumes



Legend

(#) Study Intersection

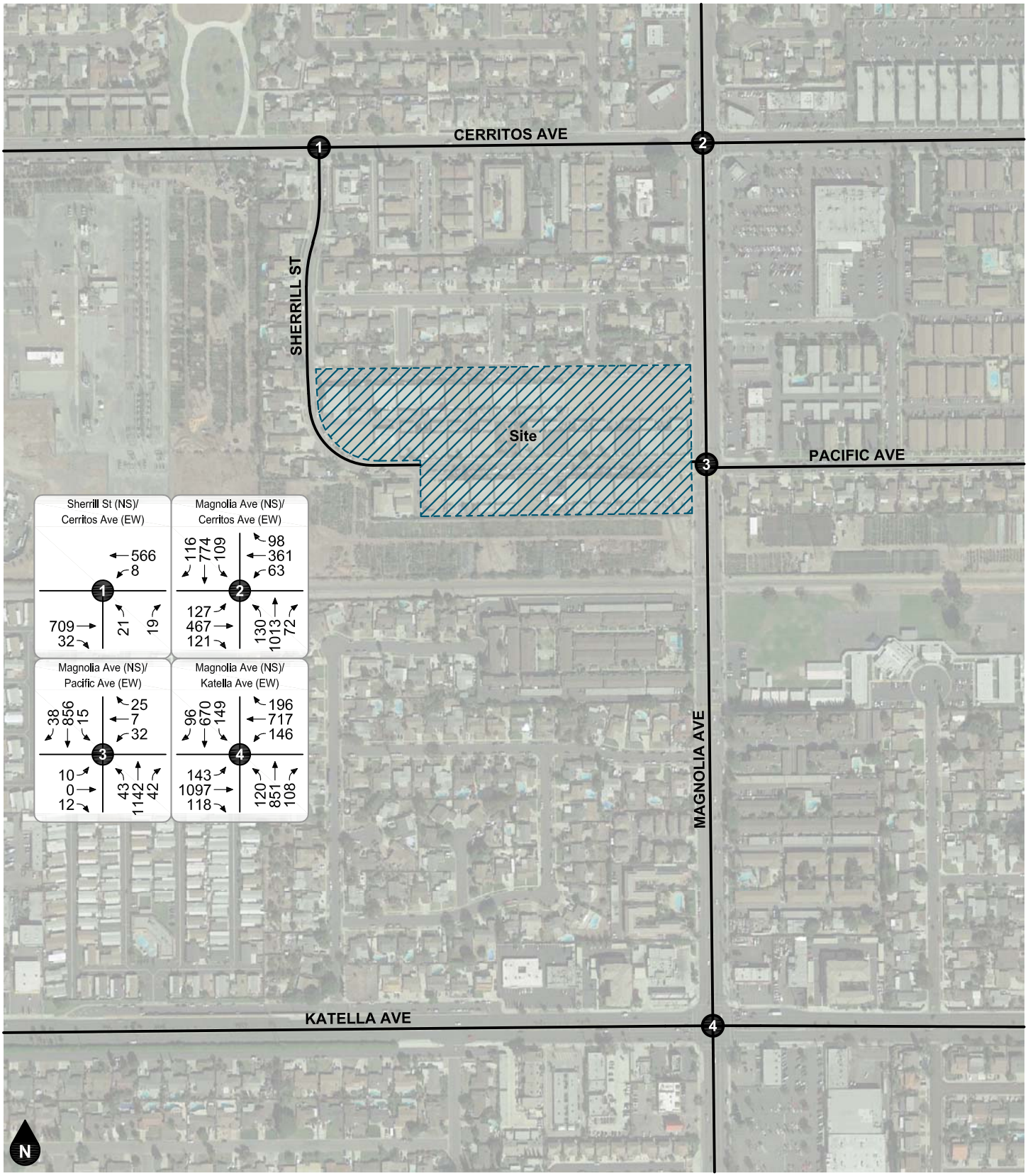
Figure 16
Other Development
PM Peak Hour Intersection Turning Movement Volumes



Legend

(#) Study Intersection

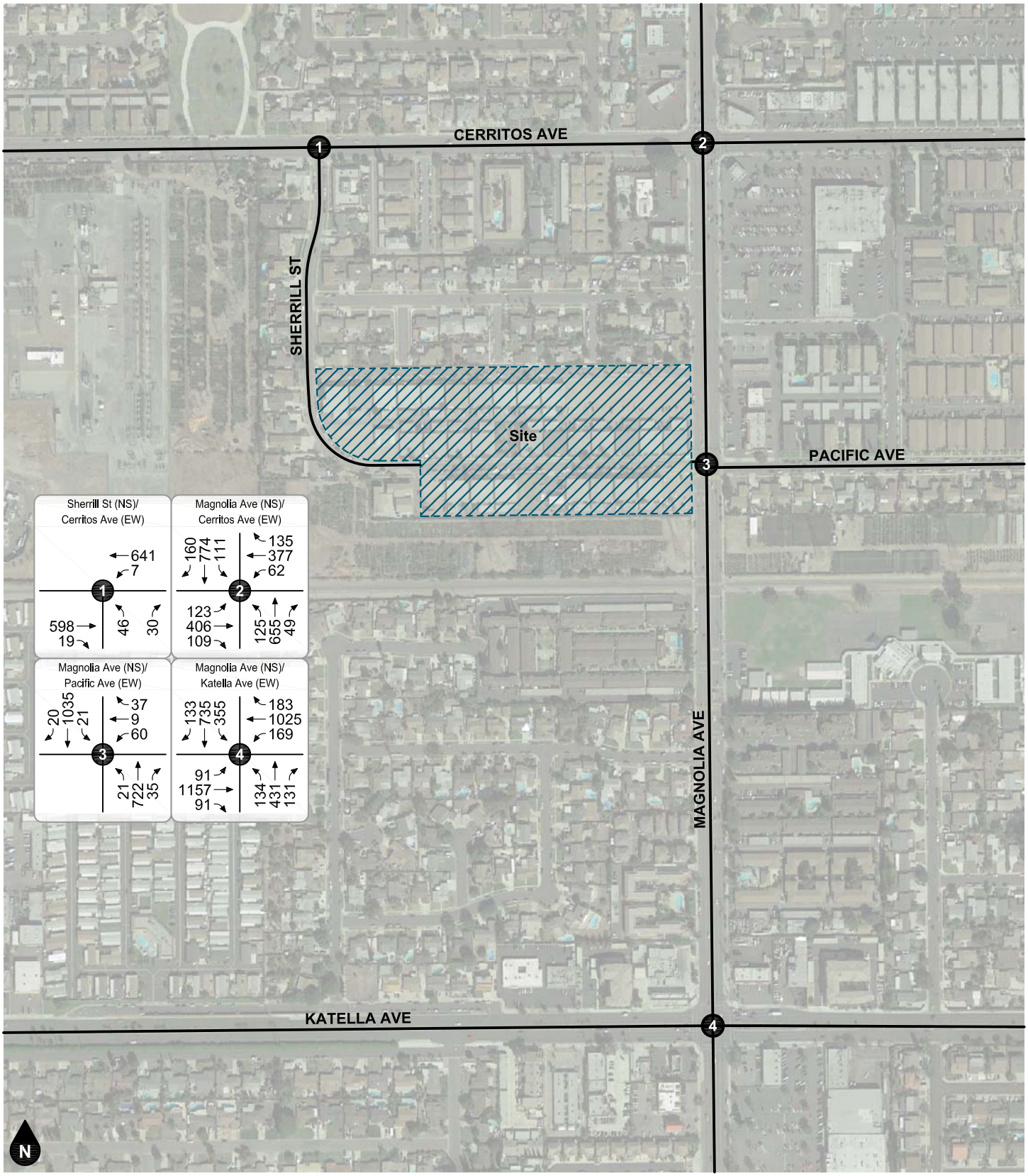
Figure 17
Existing Plus Project
AM Peak Hour Intersection Turning Movement Volumes



Legend

(#) Study Intersection

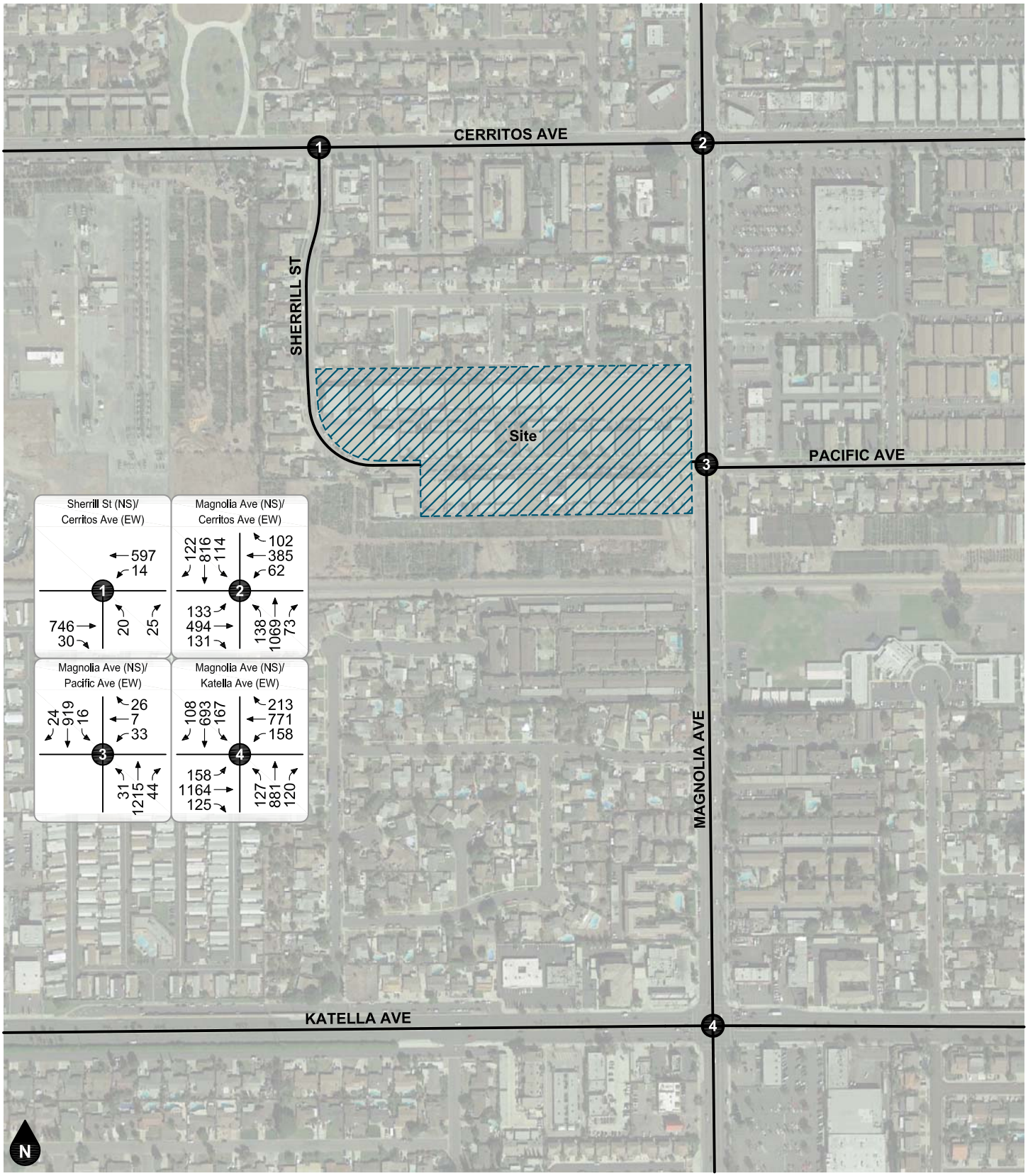
Figure 18
Existing Plus Project
PM Peak Hour Intersection Turning Movement Volumes



Legend

(#) Study Intersection

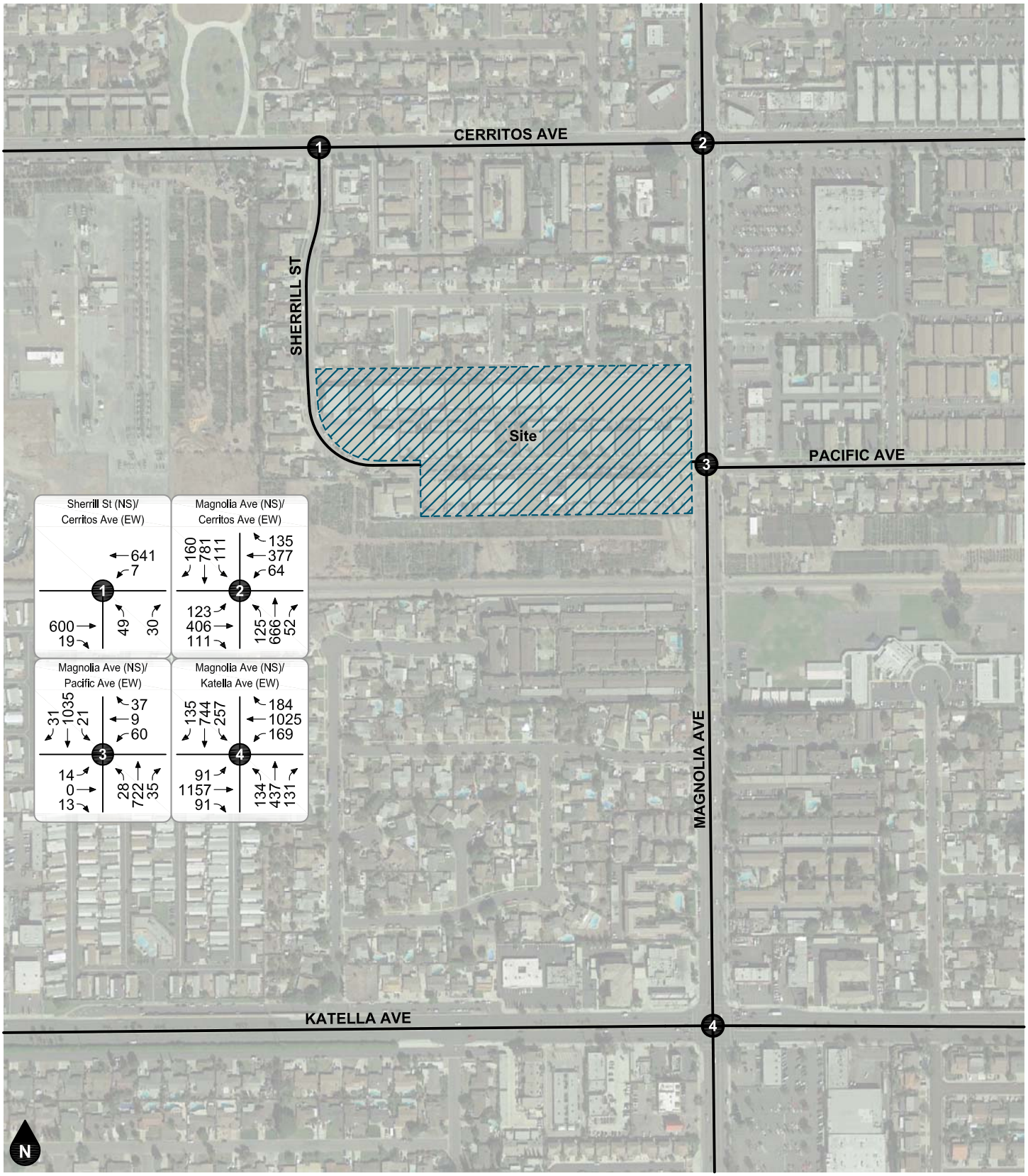
Figure 19
Opening Year (2022) Without Project
AM Peak Hour Intersection Turning Movement Volumes



Legend

(#) Study Intersection

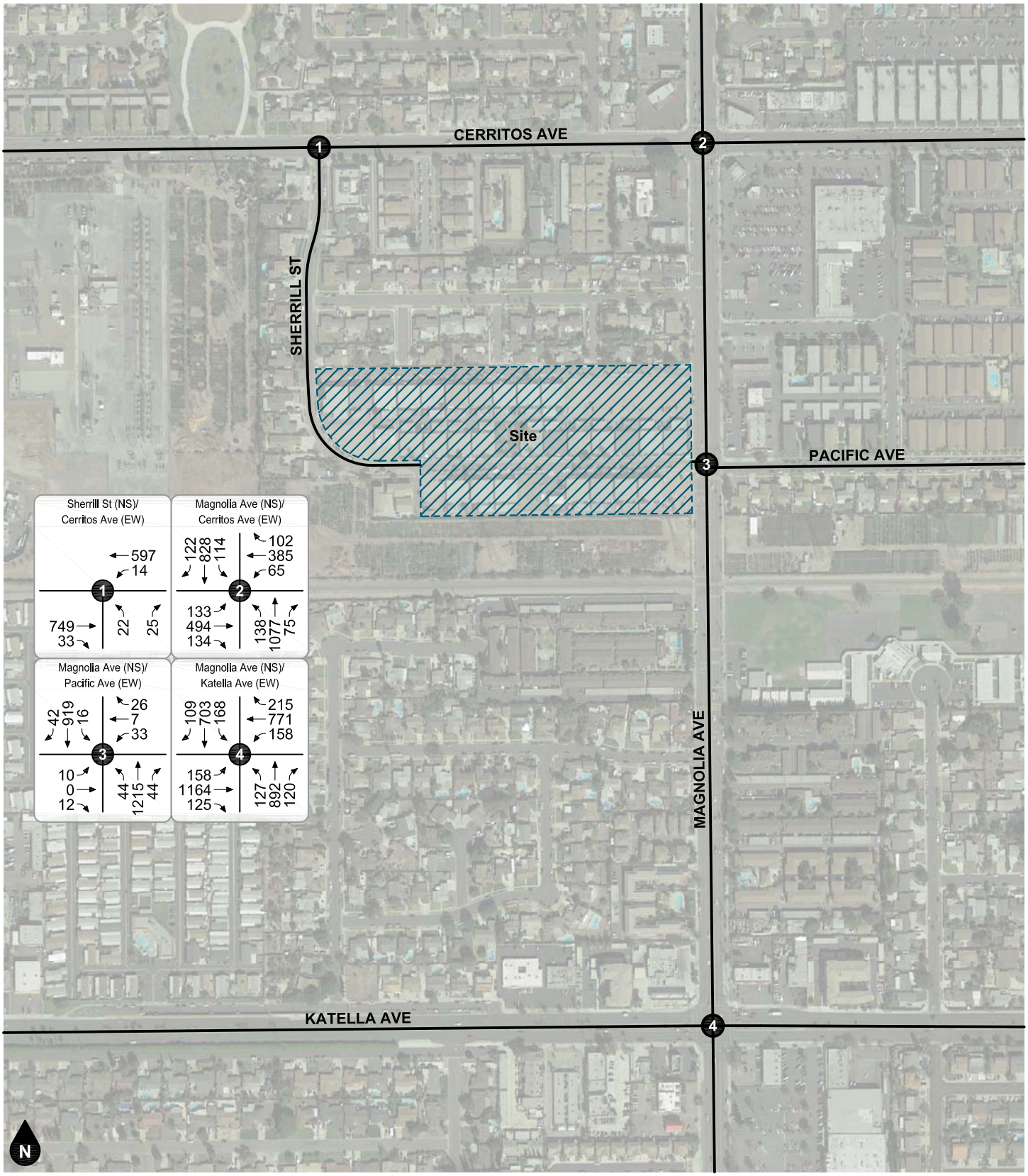
Figure 20
Opening Year (2022) Without Project
PM Peak Hour Intersection Turning Movement Volumes



Legend

(#) Study Intersection

Figure 21
Opening Year (2022) With Project
AM Peak Hour Intersection Turning Movement Volumes



Legend

(#) Study Intersection

Figure 22
Opening Year (2022) With Project
PM Peak Hour Intersection Turning Movement Volumes

6. FUTURE OPERATIONAL ANALYSIS

Detailed intersection Level of Service calculation worksheets for each of the following analysis scenarios are provided in Appendix E.

INTERSECTION LEVELS OF SERVICE

Existing Plus Project

The intersection Levels of Service for Existing Plus Project conditions are shown in Table 4. The study intersections are forecast to operate at Levels of Service C or better during the peak hours for Existing Plus Project conditions (see Table 4).

Table 5 summarizes the significant impact assessment for Existing Plus Project conditions. The proposed project is forecast to result in no significant transportation impacts for Existing Plus Project conditions based on the thresholds of significance established by the Cities of Stanton and Garden Grove. Therefore, no mitigation is required (see Table 5).

Opening Year (2022) Without Project

The intersection Levels of Service for Opening Year (2022) Without Project conditions are shown in Table 6. The study intersections are forecast to operate at Levels of Service C or better during the peak hours for Opening Year (2022) Without Project conditions (see Table 6).

Opening Year (2022) With Project

The intersection Levels of Service for Opening Year (2022) With Project conditions are shown in Table 7. The study intersections are forecast to operate at Levels of Service C or better during the peak hours for Opening Year (2022) With Project conditions (see Table 7).

Table 8 summarizes the significant impact assessment for Opening Year (2022) conditions. The proposed project is forecast to result in no significant transportation impacts for Opening Year (2022) conditions based on the thresholds of significance established by the Cities of Stanton and Garden Grove. Therefore, no mitigation is required (see Table 8).

Table 4
Existing Plus Project Intersection Levels of Service

ID	Study Intersection	Traffic Control[1]	AM Peak Hour V/C[2] or [Delay][3]	AM Peak Hour LOS[4]	PM Peak Hour V/C[2] or [Delay][3]	PM Peak Hour LOS[4]
1.	Sherrill St at Cerritos Ave	CSS	[20.4]	C	[22.3]	C
2.	Magnolia Ave at Cerritos Ave	TS	0.548	A	0.622	B
3.	Magnolia Ave at Pacific Ave	TS	0.404	A	0.426	A
4.	Magnolia Ave at Katella Ave	TS	0.613	B	0.669	B

Notes:
(1) CSS = Cross Street Stop; TS = Traffic Signal

(2) V/C = Volume/Capacity

(3) Delay is shown in [seconds/vehicle] for unsignalized study intersections. For intersections with cross street stop control, Level of Service is based on average delay of the worst individual lane (or movements sharing a lane).

(4) LOS = Level of Service

Table 5
Existing Plus Project Significant Impact Evaluation

Signalized Intersections												
	AM Peak Hour						PM Peak Hour					
	Without Project		With Project				Without Project		With Project			
ID Study Intersection	V/C[1]	LOS[2]	V/C[1]	LOS	Change	Significant Impact?	V/C[1]	LOS[2]	V/C[1]	LOS	Change	Significant Impact?
2. Magnolia Ave at Cerritos Ave	0.546	A	0.548	A	+0.002	No	0.619	B	0.622	B	+0.003	No
3. Magnolia Ave at Pacific Ave	0.384	A	0.404	A	+0.020	No	0.414	A	0.426	A	+0.012	No
4. Magnolia Ave at Katella Ave	0.610	B	0.613	B	+0.003	No	0.665	B	0.669	B	+0.004	No

Unsignalized Intersections											
	AM Peak Hour					PM Peak Hour					
	With Project					With Project					
ID Intersection	[Delay][1]	LOS[2]	LOS E or F?	Traffic Signal Warranted?	Significant Impact?	[Delay][1]	LOS[2]	LOS E or F?	Traffic Signal Warranted?	Significant Impact?	
1. Sherrill St at Cerritos Ave	[20.4]	C	No	n/a[3]	No	[22.3]	C	No	n/a	No	

Notes:

(1) V/C = Volume/Capacity; [Delay] is shown in seconds/vehicle

(2) LOS = Level of Service

(3) n/a = not applicable; peak hour traffic signal warrant only evaluated for LOS E or F conditions.

Table 6
Opening Year (2022) Without Project Intersection Levels of Service

ID	Study Intersection	Traffic Control[1]	AM Peak Hour V/C[2] or [Delay][3]	AM Peak Hour LOS[4]	PM Peak Hour V/C[2] or [Delay][3]	PM Peak Hour LOS[4]
1.	Sherrill St at Cerritos Ave	CSS	[21.9]	C	[24.2]	C
2.	Magnolia Ave at Cerritos Ave	TS	0.574	A	0.653	B
3.	Magnolia Ave at Pacific Ave	TS	0.402	A	0.436	A
4.	Magnolia Ave at Katella Ave	TS	0.639	B	0.707	C

Notes:
(1) CSS = Cross Street Stop; TS = Traffic Signal

(2) V/C = Volume/Capacity

(3) Delay is shown in [seconds/vehicle] for unsignalized study intersections. For intersections with cross street stop control, Level of Service is based on average delay of the worst individual lane (or movements sharing a lane).

(4) LOS = Level of Service

Table 7
Opening Year (2022) With Project Intersection Levels of Service

ID	Study Intersection	Traffic Control[1]	AM Peak Hour V/C[2] or [Delay][3]	AM Peak Hour LOS[4]	PM Peak Hour V/C[2] or [Delay][3]	PM Peak Hour LOS[4]
1.	Sherrill St at Cerritos Ave	CSS	[22.1]	C	[24.5]	C
2.	Magnolia Ave at Cerritos Ave	TS	0.576	A	0.657	B
3.	Magnolia Ave at Pacific Ave	TS	0.422	A	0.449	A
4.	Magnolia Ave at Katella Ave	TS	0.642	B	0.710	C

Notes:
(1) CSS = Cross Street Stop; TS = Traffic Signal

(2) V/C = Volume/Capacity

(3) Delay is shown in [seconds/vehicle] for unsignalized study intersections. For intersections with cross street stop control, Level of Service is based on average delay of the worst individual lane (or movements sharing a lane).

(4) LOS = Level of Service

Table 8
Opening Year (2022) Significant Impact Evaluation

Signalized Intersections													
		AM Peak Hour						PM Peak Hour					
		Without Project		With Project				Without Project		With Project			
ID	Study Intersection	V/C[1]	LOS[2]	V/C[1]	LOS	Change	Significant Impact?	V/C[1]	LOS[2]	V/C[1]	LOS	Change	Significant Impact?
2.	Magnolia Ave at Cerritos Ave	0.574	A	0.576	A	+0.002	No	0.653	B	0.657	B	+0.004	No
3.	Magnolia Ave at Pacific Ave	0.402	A	0.422	A	+0.020	No	0.436	A	0.449	A	+0.013	No
4.	Magnolia Ave at Katella Ave	0.639	B	0.642	B	+0.003	No	0.707	C	0.710	C	+0.003	No

Unsignalized Intersections												
		AM Peak Hour					PM Peak Hour					
		With Project					With Project					
ID	Intersection	[Delay][1]	LOS[2]	LOS E or F?	Traffic Signal Warranted?	Significant Impact?	[Delay][1]	LOS[2]	LOS E or F?	Traffic Signal Warranted?	Significant Impact?	
1.	Sherrill St at Cerritos Ave	[22.1]	C	No	n/a[3]	No	[24.5]	C	No	n/a[3]	No	

Notes:

(1) V/C = Volume/Capacity; [Delay] is shown in seconds/vehicle

(2) LOS = Level of Service

(3) n/a = not applicable; peak hour traffic signal warrant only evaluated for LOS E or F conditions.

7. CONCLUSIONS

The proposed project is forecast to result in no significant transportation impacts for the analyzed scenarios based on the thresholds of significance established by the Cities of Stanton and Garden Grove. Therefore, no mitigation measures are required.

GENERAL RECOMMENDATIONS

All roadway design, traffic signing and striping, and traffic control improvements relating to the proposed project should be constructed in accordance with applicable engineering standards and to the satisfaction of the City of Stanton Public Works Department.

On-site traffic signing and striping plans should be submitted for City of Stanton approval in conjunction with detailed construction plans for the project.

Off-street parking should be provided to meet City of Stanton Municipal Code requirements.

The final grading, landscaping, and street improvement plans should demonstrate that sight distance standards are met in accordance with applicable City of Stanton/California Department of Transportation sight distance standards.

As is the case for any roadway design, the City of Stanton should periodically review traffic operations in the vicinity of the project once the project is constructed to assure that the traffic operations are satisfactory.

APPENDICES

Appendix A Glossary

Appendix B Scoping Agreement

Appendix C Volume Count Worksheets

Appendix D Average Daily Traffic Volumes

Appendix E Level of Service Worksheets

APPENDIX A

GLOSSARY

GLOSSARY OF TERMS

ACRONYMS

AC	Acres
ADT	Average Daily Traffic
Caltrans	California Department of Transportation
DU	Dwelling Unit
ICU	Intersection Capacity Utilization
LOS	Level of Service
TSF	Thousand Square Feet
V/C	Volume/Capacity
VMT	Vehicle Miles Traveled

TERMS

AVERAGE DAILY TRAFFIC: The average 24-hour volume for a stated period divided by the number of days in that period. For example, Annual Average Daily Traffic is the total volume during a year divided by 365 days.

BANDWIDTH: The number of seconds of green time available for through traffic in a signal progression.

BOTTLENECK: A point of constriction along a roadway that limits the amount of traffic that can proceed downstream from its location.

CAPACITY: The maximum number of vehicles that can be reasonably expected to pass over a given section of a lane or a roadway in a given time period.

CHANNELIZATION: The separation or regulation of conflicting traffic movements into definite paths of travel by the use of pavement markings, raised islands, or other suitable means to facilitate the safe and orderly movements of both vehicles and pedestrians.

CLEARANCE INTERVAL: Nearly same as yellow time. If there is an all red interval after the end of a yellow, then that is also added into the clearance interval.

CONTROL DELAY: The component of delay, typically expressed in seconds per vehicle, resulting from the type of traffic control at an intersection. Control delay is measured by comparison with the uncontrolled condition; it includes delay incurred by slowing down, stopping/waiting, and speeding up.

CORDON: An imaginary line around an area across which vehicles, persons, or other items are counted (in and out).

CORNER SIGHT DISTANCE: The minimum sight distance required by the driver of a vehicle to cross or enter the lanes of the major roadway without requiring approaching traffic travelling at a given speed to radically alter their speed or trajectory. Corner sight distance is measured from the driver's eye at 42 inches above the pavement to an object height of 36 inches above the pavement in the center of the nearest approach lane.

CYCLE LENGTH: The time period in seconds required for a traffic signal to complete one full cycle of indications.

CUL-DE-SAC: A local street open at one end only and with special provisions for turning around.

DAILY CAPACITY: A theoretical value representing the daily traffic volume that will typically result in a peak hour volume equal to the capacity of the roadway.

DELAY: The time consumed while traffic is impeded in its movement by some element over which it has no control, usually expressed in seconds per vehicle.

DEMAND RESPONSIVE SIGNAL: Same as traffic-actuated signal.

DENSITY: The number of vehicles occupying in a unit length of the through traffic lanes of a roadway at any given instant. Usually expressed in vehicles per mile.

DETECTOR: A device that responds to a physical stimulus and transmits a resulting impulse to the signal controller.

DESIGN SPEED: A speed selected for purposes of design. Features of a highway, such as curvature, superelevation, and sight distance (upon which the safe operation of vehicles is dependent) are correlated to design speed.

DIRECTIONAL SPLIT: The percent of traffic in the peak direction at any point in time.

DIVERSION: The rerouting of peak hour traffic to avoid congestion.

FORCED FLOW: Opposite of free flow.

FREE FLOW: Volumes are well below capacity. Vehicles can maneuver freely and travel is unimpeded by other traffic.

GAP: Time or distance between successive vehicles in a traffic stream, rear bumper to front bumper.

HEADWAY: Time or distance spacing between successive vehicles in a traffic stream, front bumper to front bumper.

INTERCONNECTED SIGNAL SYSTEM: A number of intersections that are connected to achieve signal progression.

LEVEL OF SERVICE: A qualitative measure of a number of factors, which include speed and travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience, and operating costs.

LOOP DETECTOR: A vehicle detector consisting of a loop of wire embedded in the roadway, energized by alternating current and producing an output circuit closure when passed over by a vehicle.

MINIMUM ACCEPTABLE GAP: Smallest time headway between successive vehicles in a traffic stream into which another vehicle is willing and able to cross or merge.

MULTI-MODAL: More than one mode; such as automobile, bus transit, rail rapid transit, and bicycle transportation modes.

OFFSET: The time interval in seconds between the beginning of green at one intersection and the beginning of green at an adjacent intersection.

PLATOON: A closely grouped component of traffic that is composed of several vehicles moving, or standing ready to move, with clear spaces ahead and behind.

PASSENGER CAR EQUIVALENT (PCE): A metric used to assess the impact of larger vehicles, such as trucks, recreational vehicles, and buses, by converting the traffic volume of larger vehicles to an equivalent number of passenger cars.

PEAK HOUR: The 60 consecutive minutes with the highest number of vehicles.

PRETIMED SIGNAL: A type of traffic signal that directs traffic to stop and go on a predetermined time schedule without regard to traffic conditions. Also, fixed time signal.

PROGRESSION: A term used to describe the progressive movement of traffic through several signalized intersections.

QUEUE: The number of vehicles waiting at a service area such as a traffic signal, stop sign, or access gate.

QUEUE LENGTH: The length of vehicle queue, typically expressed in feet, waiting at a service area such as a traffic signal, stop sign, or access gate.

SCREEN-LINE: An imaginary line or physical feature across which all trips are counted, normally to verify the validity of mathematical traffic models.

SHARED/RECIPROCAL PARKING AGREEMENT: A written binding document executed between property owners to provide a designated number of off-street parking stalls within a designated area to be available for specified businesses or land uses.

SIGHT DISTANCE: The continuous length of roadway visible to a driver or roadway user.

SIGNAL CYCLE: The time period in seconds required for one complete sequence of signal indications.

SIGNAL PHASE: The part of the signal cycle allocated to one or more traffic movements.

STACKING DISTANCE: The length of area available behind a service area, such as a traffic signal or gate, for vehicle queueing to occur.

STARTING DELAY: The delay experienced in initiating the movement of queued traffic from a stop to an average running speed through an intersection.

STOPPING SIGHT DISTANCE: The minimum distance required by the driver of a vehicle on the major roadway travelling at a given speed to bring the vehicle to a stop after an object on the road becomes visible. Stopping sight distance is measured from the driver's eye at 42 inches above the pavement to an object height of 6 inches above the pavement.

TRAFFIC-ACTUATED SIGNAL: A type of traffic signal that directs traffic to stop and go in accordance with the demands of traffic, as registered by the actuation of detectors.

TRIP: The movement of a person or vehicle from one location (origin) to another (destination). For example, from home to store to home is two trips, not one.

TRIP-END: One end of a trip at either the origin or destination (i.e., each trip has two trip-ends). A trip-end occurs when a person, object, or message is transferred to or from a vehicle.

TRIP GENERATION RATE: The quantity of trips produced and/or attracted by a specific land use stated in terms of units such as per dwelling, per acre, and per 1,000 square feet of floor space.

TRUCK: A vehicle having dual tires on one or more axles, or having more than two axles.

TURNING RADIUS: The circular arc formed by the smallest turning path radius of the front outside tire of a vehicle, such as that performed by a U-turn maneuver. This is based on the length and width of the wheel base as well as the steering mechanism of the vehicle.

UNBALANCED FLOW: Heavier traffic flow in one direction than the other. On a daily basis, most facilities have balanced flow. During the peak hours, flow is seldom balanced in an urban area.

VEHICLE MILES OF TRAVEL: A measure of the amount of usage of a section of highway, obtained by multiplying the average daily traffic by length of facility in miles.

APPENDIX B

SCOPING AGREEMENT

TASK 1 TRAFFIC IMPACT ANALYSIS

Based on a preliminary trip generation assessment, the following four study intersections are anticipated to be required for analysis:

- Magnolia Avenue at Cerritos Avenue
- ~~Magnolia Avenue at Tina Way~~ Sherrill Street at Cerritos Avenue
- Magnolia Avenue at Pacific Avenue
- Magnolia Avenue at Katella avenue

The following tasks are anticipated to be required for the traffic impact analysis:

Task 1.1 Project Trip Generation

- Determine the proposed project trip generation based on the Institute of Transportation Engineers, Trip Generation Manual, 10th Edition (2017).

Task 1.2 Scoping Agreement

- Prepare a scoping agreement for review/approval by the City of Stanton. The scoping agreement shall outline the fundamental assumptions of the traffic impact analysis such as the proposed study area, trip generation/distribution, analysis methodologies, background growth forecasts, and specific requirements for the study.

Task 1.3 Data Collection

- Obtain intersection turning movement counts on a typical weekday (Tuesday, Wednesday, or Thursday) during the AM and PM peak commute periods (7:00 - 9:00 AM and 4:00 - 6:00 PM) at up to **4 study intersections**, as necessary.

Task 1.4 Field Review

- Conduct a field review of the study area, including: (1) study intersection traffic control devices, (2) study intersection lane configurations, and (3) study roadway segment through travel lanes.

- Conduct a field review of existing non-automobile transportation facilities serving the project site, including pedestrian, bicycle, and transit facilities.

Task 1.5 Traffic Volume Forecasts

- Research and obtain a list of other pending/approved development projects from the City of Stanton (and neighboring jurisdictions, if necessary).

- Develop trip generation, distribution, and assignment forecasts for other development projects (assumes other development list will not exceed 25 projects).

- Develop traffic volume forecasts for the following analysis scenarios:
  - Existing Conditions
  - Existing Plus Project
  - Opening Year Without Project
  - Opening Year With Project

- Opening Year traffic volume forecasts will be developed based on the manual buildup methodology by adding cumulative background growth and project trips to existing volumes.

Task 1.6 Operations Analysis & Impact Assessment

- Identify funded roadway improvements expected to be completed by the future analysis years.

- Analyze signalized study intersection operations for the above-specified analysis scenarios based on the Intersection Capacity Utilization in accordance with parameters and guidelines established by the City of Stanton.

- Analyze unsignalized study intersection operations for the above-specified analysis scenarios based on the Highway Capacity Manual (6th Edition) delay methodology in accordance with Highway Capacity Manual recommended defaults.

- Conduct peak hour evaluations of project entrances, including inbound and outbound queue stacking requirements.

- Provide a traffic signal warrant analysis at unsignalized study intersections, if necessary.

- Identify project-related transportation impacts based on the thresholds of significance established by City of Stanton.

- Identify mitigation measures to reduce the identified significant traffic impacts, if necessary.

Task 1.7 Written Report

- Prepare a draft traffic impact analysis report that incorporates the methodology, findings, and all supporting calculations and assumptions. The traffic impact analysis will be signed and stamped by a Registered Traffic Engineer in the State of California.

From: Rigg, Allan <ARigg@ci.stanton.ca.us>
Sent: Tuesday, December 04, 2018 4:23 PM
To: Giancarlo Ganddini
Cc: Yau, Frances; Chris Pylant; Hart, Kelly
Subject: RE: Tina-Pacific Affordable Housing - TIA Scope of Work

Hi,

The change from Tina is correct. The scope is approved as presented.

Thank you,

Allan Rigg, PE AICP
Public Works Director/City Engineer

City of Stanton
7800 Katella Avenue, Stanton, CA 90680
(714) 890-4203 | (714) 890-1443 (fax)
"Community Pride and Forward Vision"
www.ci.stanton.ca.us

From: Giancarlo Ganddini [mailto:giancarlo@ganddini.com]
Sent: Monday, December 03, 2018 11:11 AM
To: Rigg, Allan
Cc: Yau, Frances; Chris Pylant
Subject: Tina-Pacific Affordable Housing - TIA Scope of Work

Mr. Rigg,

I understand you will be reviewing the traffic study for the proposed Tina-Pacific Affordable Housing project. Attached is the current scope of work. After reviewing the preliminary plans, I might suggest replacing the study intersection of Magnolia Avenue/Tina Way with Sherrill Street/Cerritos Avenue (proposed edit shown in red).

Once we receive confirmation on the number of existing occupied dwelling units to be displaced, we will provide proposed trip generation and trip distribution assumptions for your review. In the meantime, please review the proposed scope of work and let me know if we can proceed with traffic counts over the next two weeks or if we should wait until after the new year.

Thanks,

Giancarlo Ganddini, PE, PTP
Principal

GANDDINI GROUP, INC.
550 Parkcenter Drive, Suite 202
Santa Ana, CA 92705
o. 714 795 3100 x 101
c. 949 735 9314
www.ganddini.com

APPENDIX C

VOLUME COUNT WORKSHEETS

INTERSECTION TURNING MOVEMENT COUNTS

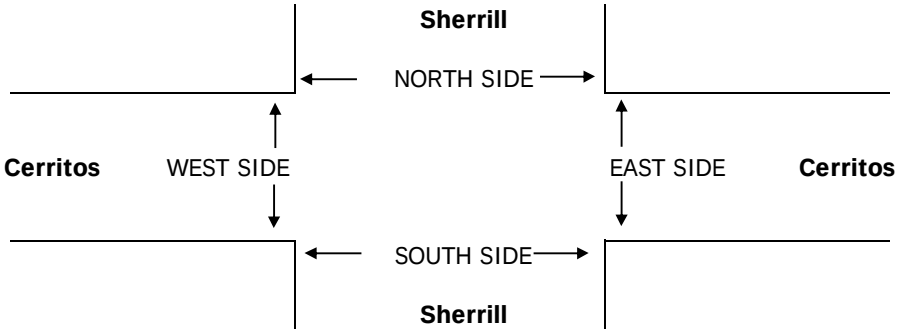
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:					
Tue, Dec 11, 18	LOCATION:	Stanton	PROJECT #:	SC2026	
	NORTH & SOUTH:	Sherrill	LOCATION #:	1	
	EAST & WEST:	Cerritos	CONTROL:	STOP N	

NOTES:

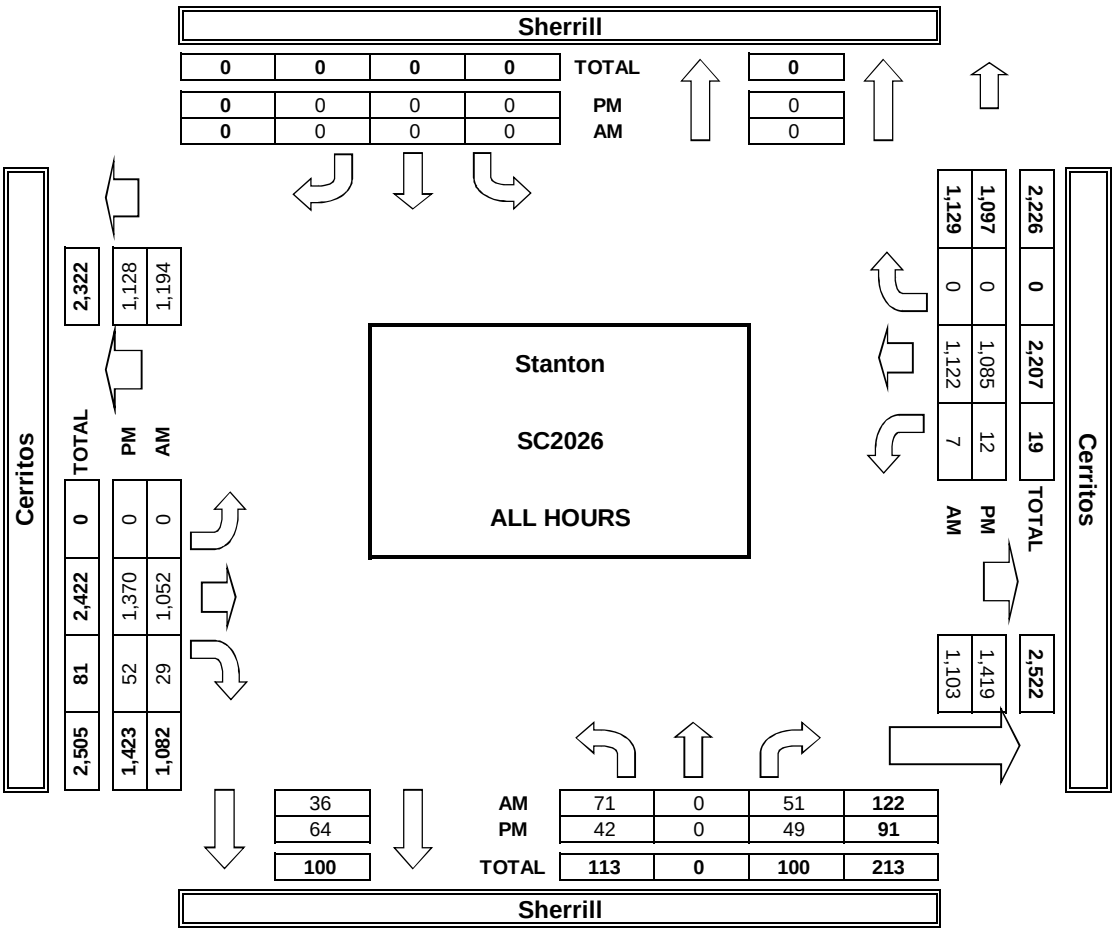
AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

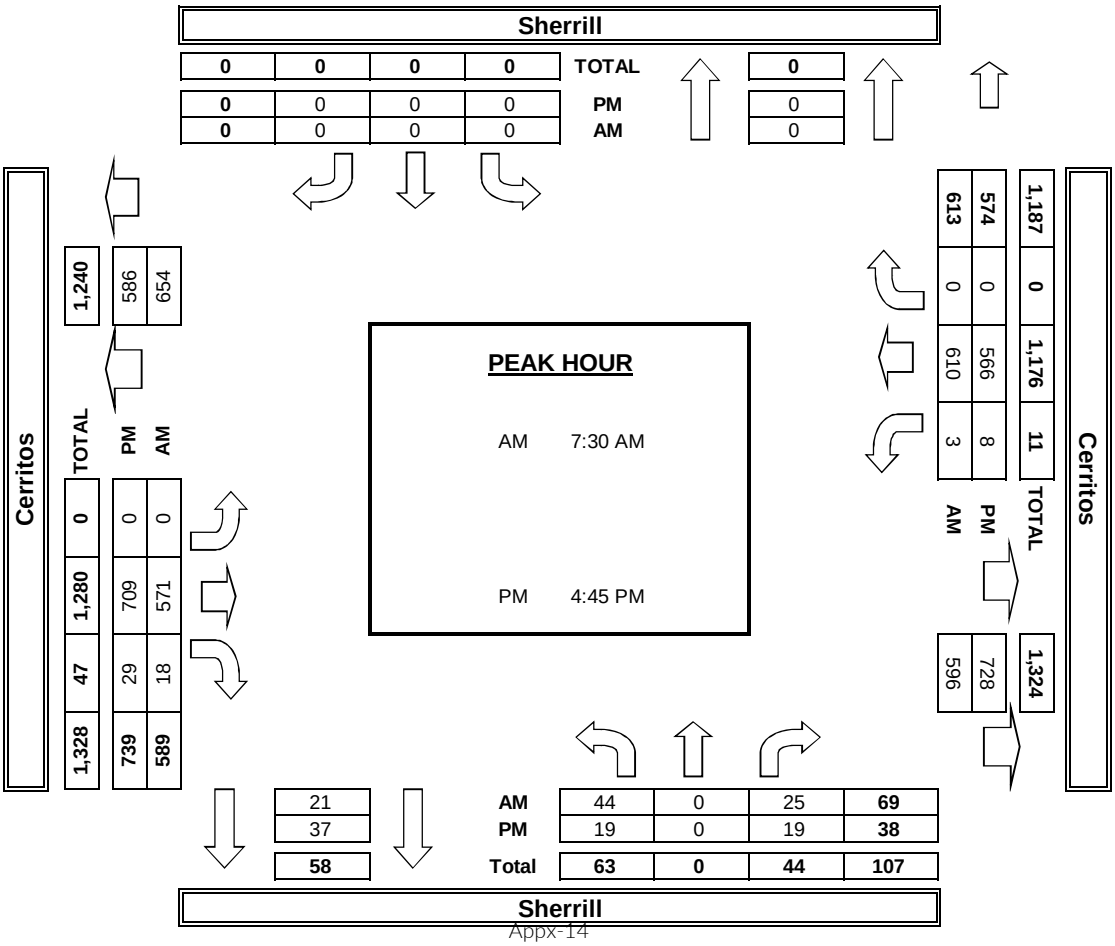
		NORTHBOUND Sherrill			SOUTHBOUND Sherrill			EASTBOUND Cerritos			WESTBOUND Cerritos			
	LANES:	NL 0	NT X	NR 0	SL X	ST X	SR X	EL X	ET 2	ER 0	WL 0	WT 2	WR X	TOTAL
AM	7:00 AM	5	0	7	0	0	0	0	94	3	1	109	0	219
	7:15 AM	7	0	5	0	0	0	0	136	1	1	143	0	293
	7:30 AM	16	0	12	0	0	0	0	138	4	1	135	0	306
	7:45 AM	9	0	4	0	0	0	0	155	3	0	177	0	348
	8:00 AM	9	0	4	0	0	0	0	126	3	0	167	0	309
	8:15 AM	10	0	5	0	0	0	0	152	8	2	131	0	308
	8:30 AM	11	0	9	0	0	0	0	127	4	2	148	0	301
	8:45 AM	4	0	5	0	0	0	0	124	3	0	112	0	248
	VOLUMES	71	0	51	0	0	0	0	1,052	29	7	1,122	0	2,333
	APPROACH %	58%	0%	42%	0%	0%	0%	0%	97%	3%	1%	99%	0%	
	APP/DEPART	122	/	0	0	/	36	1,082	/	1,103	1,129	/	1,194	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	44	0	25	0	0	0	0	571	18	3	610	0	1,271
	APPROACH %	64%	0%	36%	0%	0%	0%	0%	97%	3%	0%	100%	0%	
	PEAK HR FACTOR		0.616			0.000			0.920			0.866		0.913
	APP/DEPART	69	/	0	0	/	21	589	/	596	613	/	654	0
PM	4:00 PM	6	0	7	0	0	0	0	163	4	1	107	0	288
	4:15 PM	3	0	9	0	0	0	0	149	10	1	136	0	308
	4:30 PM	8	0	7	0	0	0	0	181	2	0	132	0	330
	4:45 PM	6	0	6	0	0	0	0	182	7	1	142	0	344
	5:00 PM	5	0	1	0	0	0	0	191	8	2	148	0	355
	5:15 PM	4	0	7	0	0	0	0	157	9	3	134	0	314
	5:30 PM	4	0	5	0	0	0	0	179	5	2	142	0	337
	5:45 PM	6	0	7	0	0	0	0	168	7	2	144	0	334
	VOLUMES	42	0	49	0	0	0	0	1,370	52	12	1,085	0	2,611
	APPROACH %	46%	0%	54%	0%	0%	0%	0%	96%	4%	1%	99%	0%	
	APP/DEPART	91	/	0	0	/	64	1,423	/	1,419	1,097	/	1,128	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	19	0	19	0	0	0	0	709	29	8	566	0	1,351
	APPROACH %	50%	0%	50%	0%	0%	0%	0%	96%	4%	1%	99%	0%	
	PEAK HR FACTOR		0.792			0.000			0.928			0.957		0.951
	APP/DEPART	38	/	0	0	/	37	739	/	728	574	/	586	0



AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

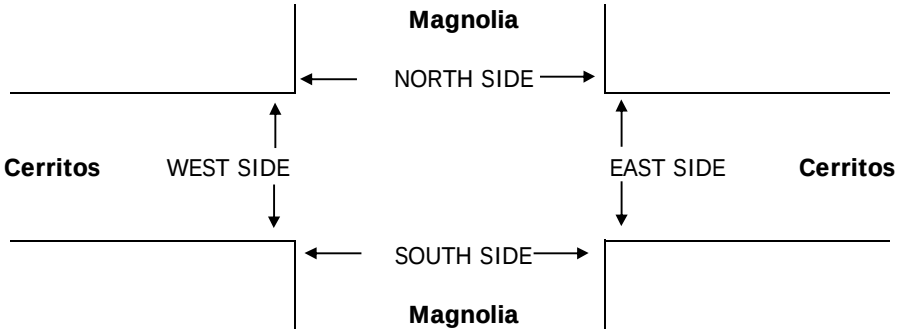
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:					
Tue, Dec 11, 18	LOCATION:	Stanton	PROJECT #:	SC2026	
	NORTH & SOUTH:	Magnolia	LOCATION #:	2	
	EAST & WEST:	Cerritos	CONTROL:	SIGNAL	

NOTES:

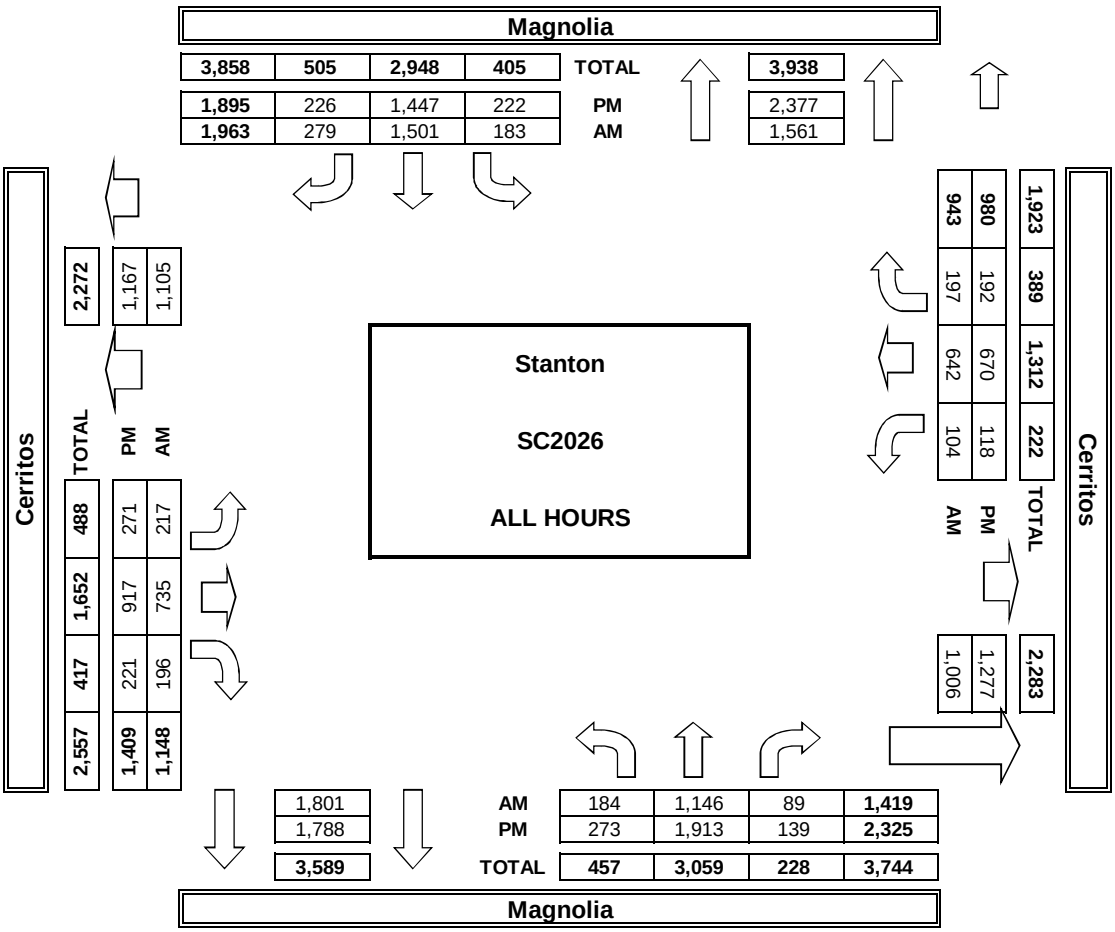
AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

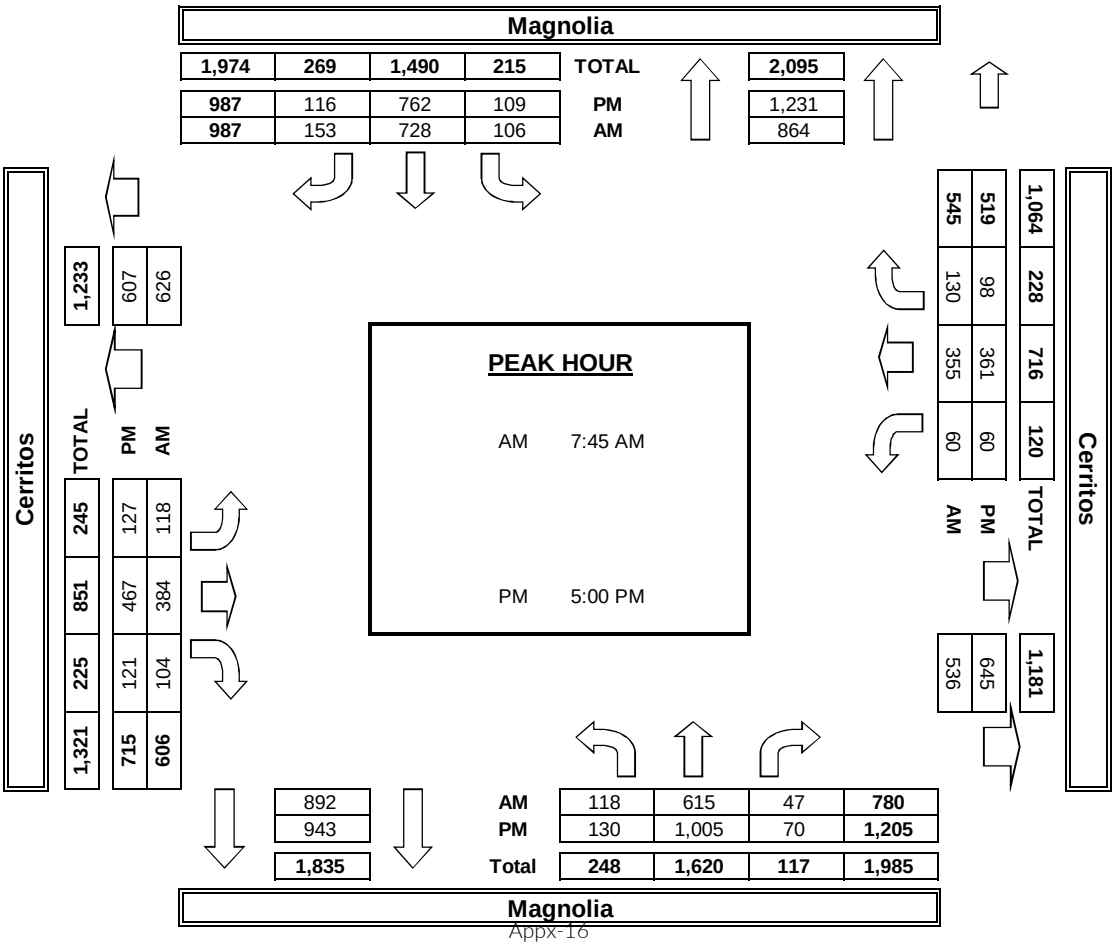
		NORTHBOUND Magnolia			SOUTHBOUND Magnolia			EASTBOUND Cerritos			WESTBOUND Cerritos			
	LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL
AM	7:00 AM	12	115	6	7	185	26	22	69	15	10	64	10	541
	7:15 AM	13	142	13	15	213	43	27	98	24	10	82	21	701
	7:30 AM	22	130	15	29	199	29	32	93	29	9	76	21	684
	7:45 AM	21	141	6	23	193	52	22	109	31	12	102	32	744
	8:00 AM	45	143	16	21	152	35	25	88	33	14	86	35	693
	8:15 AM	24	167	14	28	180	34	39	97	22	15	75	25	720
	8:30 AM	28	164	11	34	203	32	32	90	18	19	92	38	761
	8:45 AM	19	144	8	26	176	28	18	91	24	15	65	15	629
	VOLUMES	184	1,146	89	183	1,501	279	217	735	196	104	642	197	5,473
	APPROACH %	13%	81%	6%	9%	76%	14%	19%	64%	17%	11%	68%	21%	
	APP/DEPART	1,419	/	1,561	1,963	/	1,801	1,148	/	1,006	943	/	1,105	0
	BEGIN PEAK HR		7:45 AM											
	VOLUMES	118	615	47	106	728	153	118	384	104	60	355	130	2,918
	APPROACH %	15%	79%	6%	11%	74%	16%	19%	63%	17%	11%	65%	24%	
	PEAK HR FACTOR		0.951			0.917			0.935			0.914		0.959
	APP/DEPART	780	/	864	987	/	892	606	/	536	545	/	626	0
PM	4:00 PM	31	236	19	24	161	23	31	112	27	14	82	18	778
	4:15 PM	36	231	17	30	173	33	30	102	20	9	68	30	779
	4:30 PM	43	217	16	33	168	30	37	128	28	26	70	25	821
	4:45 PM	33	224	17	26	183	24	46	108	25	9	89	21	805
	5:00 PM	35	235	20	27	190	23	39	124	31	13	103	24	864
	5:15 PM	29	279	13	29	203	32	30	103	34	20	73	24	869
	5:30 PM	37	233	20	28	179	28	38	129	31	13	94	23	853
	5:45 PM	29	258	17	25	190	33	20	111	25	14	91	27	840
	VOLUMES	273	1,913	139	222	1,447	226	271	917	221	118	670	192	6,609
	APPROACH %	12%	82%	6%	12%	76%	12%	19%	65%	16%	12%	68%	20%	
	APP/DEPART	2,325	/	2,377	1,895	/	1,788	1,409	/	1,277	980	/	1,167	0
	BEGIN PEAK HR		5:00 PM											
	VOLUMES	130	1,005	70	109	762	116	127	467	121	60	361	98	3,426
	APPROACH %	11%	83%	6%	11%	77%	12%	18%	65%	17%	12%	70%	19%	
	PEAK HR FACTOR		0.938			0.935			0.903			0.927		0.986
	APP/DEPART	1,205	/	1,231	987	/	943	715	/	645	519	/	607	0



AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

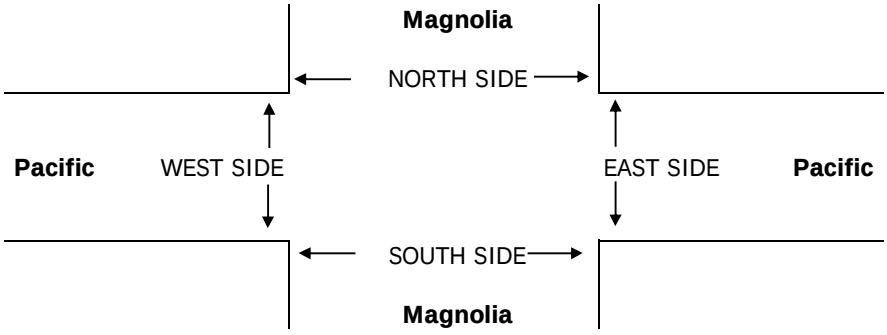
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Stanton	PROJECT #:	SC2026
Thu, Dec 13, 18	NORTH & SOUTH:	Magnolia	LOCATION #:	3
	EAST & WEST:	Pacific	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

		NORTHBOUND Magnolia			SOUTHBOUND Magnolia			EASTBOUND Pacific			WESTBOUND Pacific			
	LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL X	ET X	ER X	WL 1	WT 1	WR 0	TOTAL
AM	7:00 AM	2	126	9	1	176	2	0	0	0	11	1	3	331
	7:15 AM	4	153	3	2	220	4	0	0	0	16	2	10	414
	7:30 AM	3	159	2	3	269	3	0	0	0	18	3	14	474
	7:45 AM	5	181	7	6	251	5	0	0	0	17	1	8	481
	8:00 AM	6	173	15	4	248	6	0	0	0	12	2	6	472
	8:15 AM	6	165	10	7	210	5	0	0	0	11	3	8	425
	8:30 AM	4	123	10	3	226	4	0	0	0	10	2	6	388
	8:45 AM	3	113	5	4	184	4	0	0	0	4	1	5	323
	VOLUMES	33	1,193	61	30	1,784	33	0	0	0	99	15	60	3,308
	APPROACH %	3%	93%	5%	2%	97%	2%	0%	0%	0%	57%	9%	34%	
	APP/DEPART	1,287	/	1,253	1,847	/	1,883	0	/	91	174	/	81	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	20	678	34	20	978	19	0	0	0	58	9	36	1,852
	APPROACH %	3%	93%	5%	2%	96%	2%	0%	0%	0%	56%	9%	35%	
	PEAK HR FACTOR		0.943			0.925			0.000			0.736		0.963
	APP/DEPART	732	/	714	1,017	/	1,036	0	/	54	103	/	48	0
PM	4:00 PM	4	282	8	2	191	4	0	0	0	11	2	8	512
	4:15 PM	5	253	8	2	198	5	0	0	0	7	1	5	484
	4:30 PM	6	256	7	4	194	6	0	0	0	16	1	4	494
	4:45 PM	5	282	8	5	217	6	0	0	0	7	2	6	538
	5:00 PM	8	240	12	3	226	4	0	0	0	6	2	7	508
	5:15 PM	6	265	9	4	218	7	0	0	0	4	3	7	523
	5:30 PM	7	298	11	5	188	7	0	0	0	12	1	5	534
	5:45 PM	9	339	10	3	224	5	0	0	0	10	1	6	607
	VOLUMES	50	2,215	73	28	1,656	44	0	0	0	73	13	48	4,200
	APPROACH %	2%	95%	3%	2%	96%	3%	0%	0%	0%	54%	10%	36%	
	APP/DEPART	2,338	/	2,263	1,728	/	1,729	0	/	101	134	/	107	0
	BEGIN PEAK HR		5:00 PM											
	VOLUMES	30	1,142	42	15	856	23	0	0	0	32	7	25	2,172
	APPROACH %	2%	94%	3%	2%	96%	3%	0%	0%	0%	50%	11%	39%	
	PEAK HR FACTOR		0.848			0.959			0.000			0.889		0.895
	APP/DEPART	1,214	/	1,167	894	/	888	0	/	57	64	/	60	0



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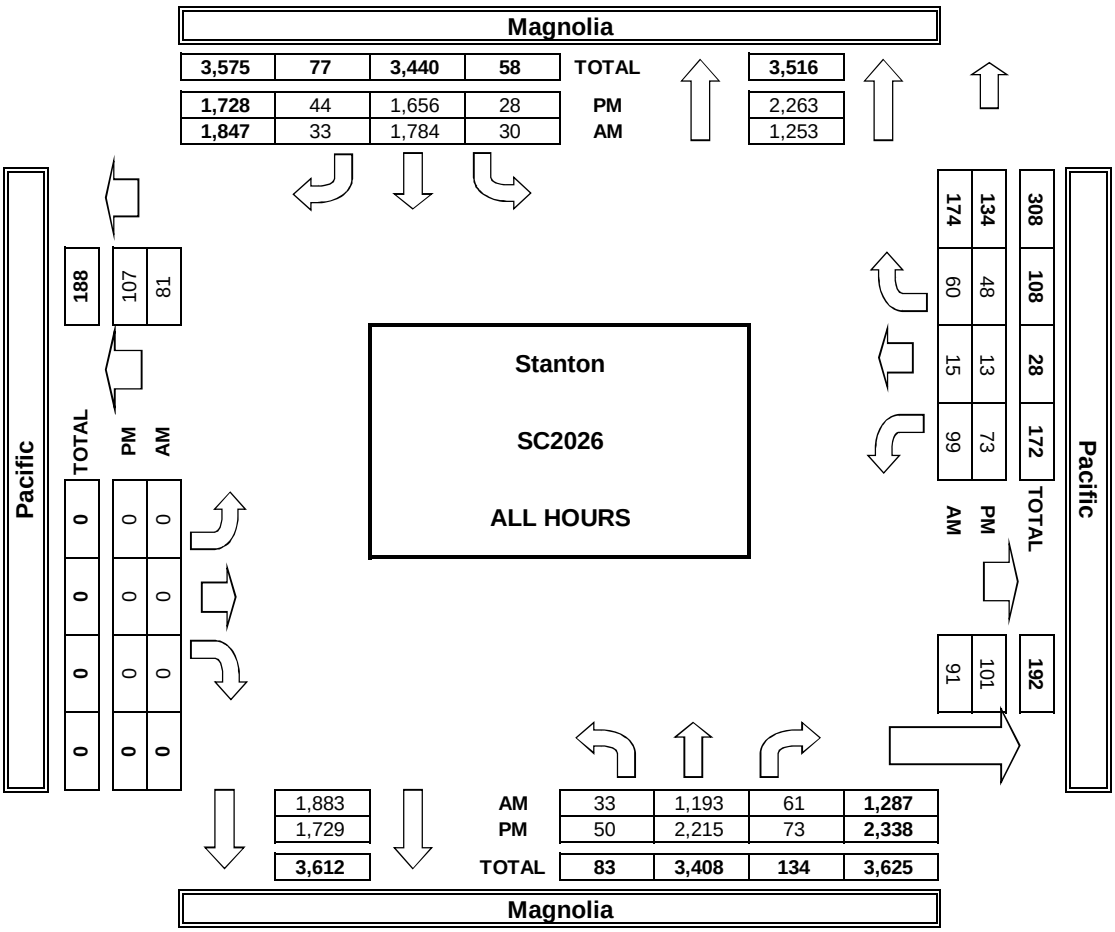
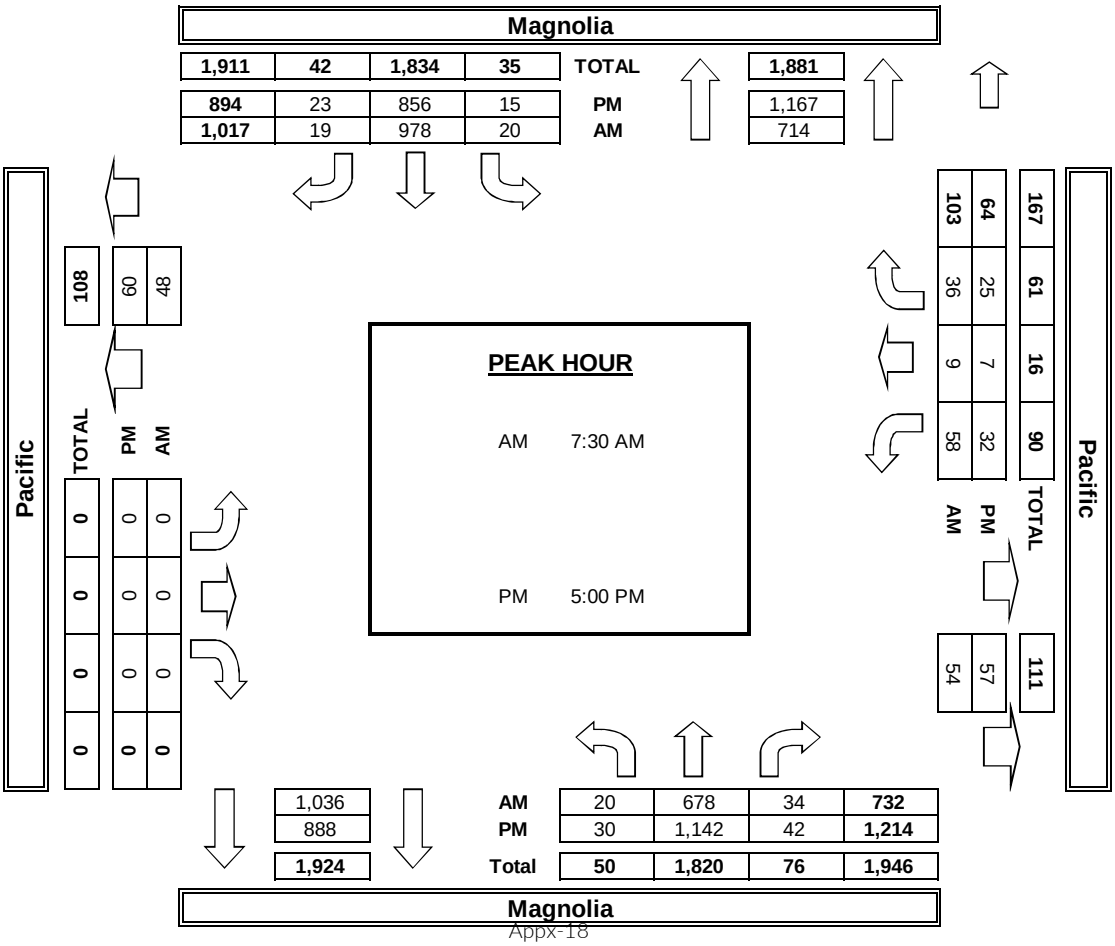
TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

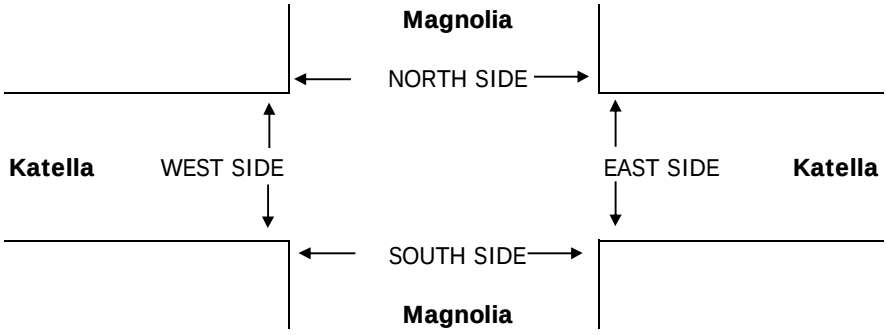
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:					
Thu, Dec 13, 18	LOCATION:	Stanton	PROJECT #:	SC2026
	NORTH & SOUTH:	Magnolia	LOCATION #:	4
	EAST & WEST:	Katella	CONTROL:	SIGNAL

NOTES:

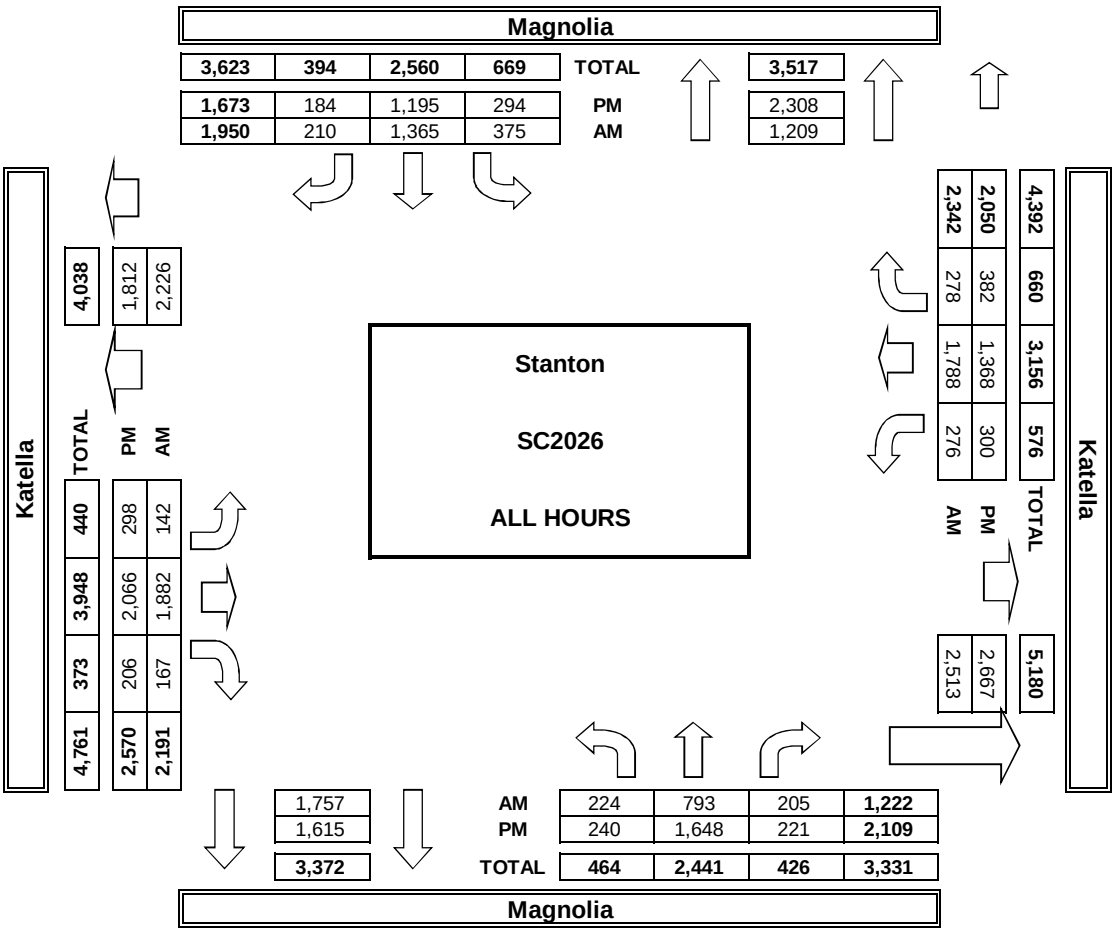
AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

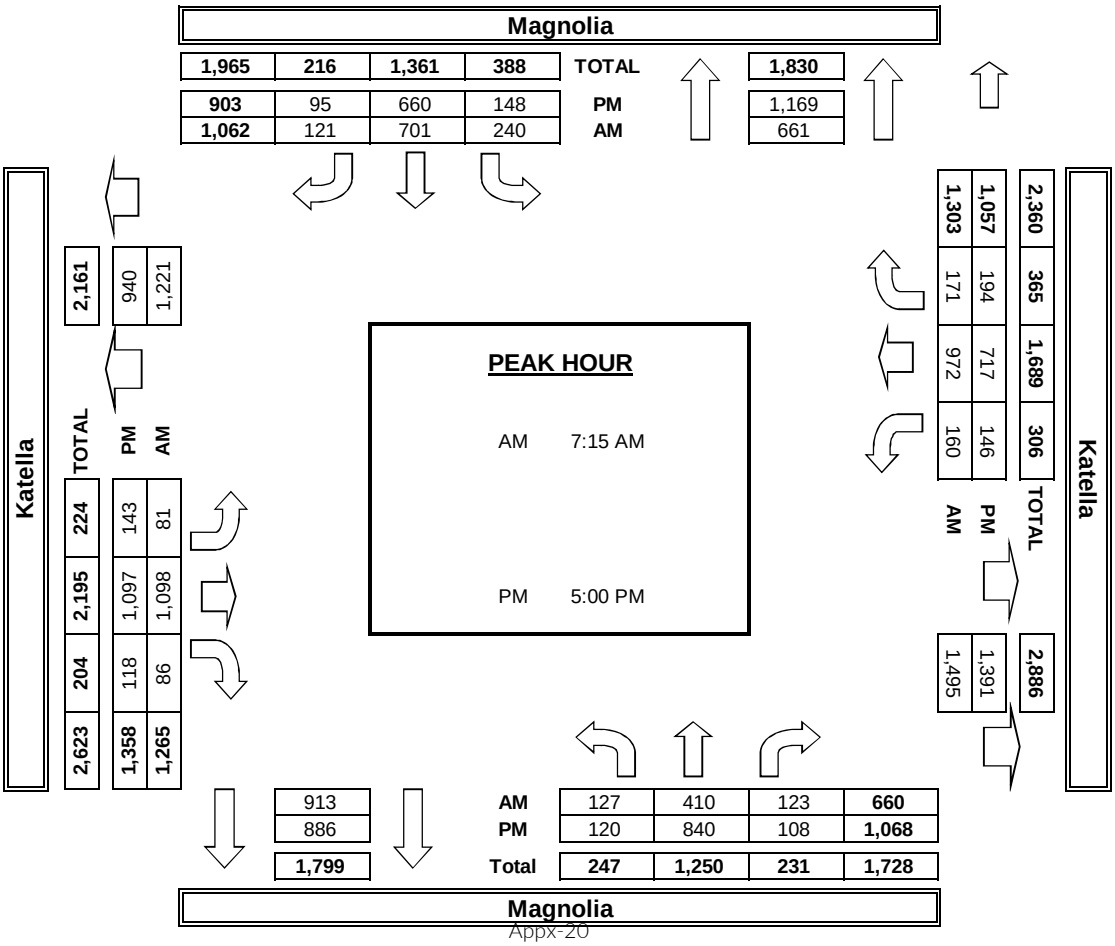
		NORTHBOUND Magnolia			SOUTHBOUND Magnolia			EASTBOUND Katella			WESTBOUND Katella			
	LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL 2	ET 3	ER 0	WL 2	WT 3	WR 1	TOTAL
AM	7:00 AM	20	104	17	25	199	29	17	195	11	16	175	20	828
	7:15 AM	29	102	19	38	181	33	23	224	15	34	215	21	934
	7:30 AM	45	105	24	61	169	33	22	282	16	27	278	38	1,100
	7:45 AM	26	98	42	79	179	29	16	314	34	54	266	60	1,197
	8:00 AM	27	105	38	62	172	26	20	278	21	45	213	52	1,059
	8:15 AM	30	99	25	42	159	23	17	198	27	33	241	37	931
	8:30 AM	21	86	18	35	165	18	12	203	25	35	225	29	872
	8:45 AM	26	94	22	33	141	19	15	188	18	32	175	21	784
	VOLUMES	224	793	205	375	1,365	210	142	1,882	167	276	1,788	278	7,705
	APPROACH %	18%	65%	17%	19%	70%	11%	6%	86%	8%	12%	76%	12%	
	APP/DEPART	1,222	/	1,209	1,950	/	1,757	2,191	/	2,513	2,342	/	2,226	0
	BEGIN PEAK HR		7:15 AM											
	VOLUMES	127	410	123	240	701	121	81	1,098	86	160	972	171	4,290
	APPROACH %	19%	62%	19%	23%	66%	11%	6%	87%	7%	12%	75%	13%	
	PEAK HR FACTOR		0.948			0.925			0.869			0.857		0.896
	APP/DEPART	660	/	661	1,062	/	913	1,265	/	1,495	1,303	/	1,221	0
PM	4:00 PM	25	191	28	30	138	20	26	194	18	34	149	36	889
	4:15 PM	40	182	29	41	133	17	40	252	24	31	149	51	989
	4:30 PM	29	219	28	38	120	23	35	266	23	47	179	50	1,057
	4:45 PM	26	216	28	37	144	29	54	257	23	42	174	51	1,081
	5:00 PM	27	196	28	33	170	29	43	255	27	32	186	47	1,073
	5:15 PM	29	225	25	42	158	24	41	264	31	32	138	51	1,060
	5:30 PM	28	211	24	31	149	17	29	299	37	48	194	48	1,115
	5:45 PM	36	208	31	42	183	25	30	279	23	34	199	48	1,138
	VOLUMES	240	1,648	221	294	1,195	184	298	2,066	206	300	1,368	382	8,402
	APPROACH %	11%	78%	10%	18%	71%	11%	12%	80%	8%	15%	67%	19%	
	APP/DEPART	2,109	/	2,308	1,673	/	1,615	2,570	/	2,667	2,050	/	1,812	0
	BEGIN PEAK HR		5:00 PM											
	VOLUMES	120	840	108	148	660	95	143	1,097	118	146	717	194	4,386
	APPROACH %	11%	79%	10%	16%	73%	11%	11%	81%	9%	14%	68%	18%	
	PEAK HR FACTOR		0.957			0.903			0.930			0.911		0.964
	APP/DEPART	1,068	/	1,169	903	/	886	1,358	/	1,391	1,057	/	940	0



AimTD LLC

TURNING MOVEMENT COUNTS





APPENDIX D

AVERAGE DAILY TRAFFIC VOLUMES

Average Daily Traffic Volumes

ID	Roadway	Segment	ADT (in 1,000's)					
			Existing	Project	Other Development	Existing Plus Project	Baseline + Cumul (EAC)	Baseline C+P (EACP)
1	Magnolia Ave	n/o Cerritos Ave	22.2	0.2	0.7	22.4	23.8	24.0
2	Magnolia Ave	Cerritos Ave to Pacific Ave	21.5	0.2	0.8	21.7	23.2	23.4
3	Magnolia Ave	Pacific Ave to Katella Ave	21.0	0.2	0.8	21.2	22.7	22.9
4	Magnolia Ave	s/o Katella Ave	19.9	0.2	0.4	20.1	21.1	21.3
5	Cerritos Ave	w/o Sherrill St	13.2	0.0	0.2	13.2	13.9	13.9
6	Cerritos Ave	Sherrill St to Magnolia Ave	13.2	0.0	0.5	13.2	14.2	14.2
7	Cerritos Ave	e/o Magnolia Ave	13.2	0.0	0.5	13.2	14.2	14.2
8	Katella Ave	w/o Magnolia Ave	22.9	0.0	1.3	22.9	25.1	25.1
9	Katella Ave	e/o Magnolia Ave	24.1	0.0	1.2	24.1	26.3	26.3

Notes:

For Project and Cumulative, use "Nom" where ADT = 0.0.

APPENDIX E

LEVEL OF SERVICE WORKSHEETS

EXISTING

Vistro File: G:\...\AM.vistro
Report File: G:\...\amE.pdf

Scenario 1 Existing
12/21/2018

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Sherrill St at Cerritos Ave	Two-way stop	HCM 6th Edition	NB Left	0.157	20.2	C
2	Magnolia Ave at Cerritos Ave	Signalized	ICU 1	SB Thru	0.546	-	A
3	Magnolia Ave at Pacific Ave	Signalized	ICU 1	SB Thru	0.384	-	A
4	Magnolia Ave at Katella Ave	Signalized	ICU 1	EB Right	0.610	-	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Sherrill St at Cerritos Ave

Control Type:	Two-way stop	Delay (sec / veh):	20.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.157

Intersection Setup

Name						
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		No		No	

Volumes

Name						
Base Volume Input [veh/h]	44	25	571	18	3	610
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	25	571	18	3	610
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	6	143	5	1	153
Total Analysis Volume [veh/h]	44	25	571	18	3	610
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.16	0.04	0.01	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	20.19	12.50	0.00	0.00	8.68	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.70	0.70	0.00	0.00	0.01	0.00
95th-Percentile Queue Length [ft/ln]	17.52	17.52	0.00	0.00	0.23	0.11
d_A, Approach Delay [s/veh]	17.41		0.00		0.04	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.97					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 2: Magnolia Ave at Cerritos Ave

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												
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												
Base Volume Input [veh/h]	118	615	47	106	728	153	118	384	104	60	355	130
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]	118	615	47	106	728	153	118	384	104	60	355	130
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]	30	154	12	27	182	38	30	96	26	15	89	33
Total Analysis Volume [veh/h]	118	615	47	106	728	153	118	384	104	60	355	130
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.18	0.03	0.06	0.21	0.09	0.07	0.14	0.14	0.04	0.14	0.14
Intersection LOS	A											
Intersection V/C	0.546											

Intersection Level Of Service Report
Intersection 3: Magnolia Ave at Pacific Ave

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.384

Intersection Setup

Name												
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												
Base Volume Input [veh/h]	20	678	34	20	978	19	0	0	0	58	9	36
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]	20	678	34	20	978	19	0	0	0	58	9	36
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]	5	170	9	5	245	5	0	0	0	15	2	9
Total Analysis Volume [veh/h]	20	678	34	20	978	19	0	0	0	58	9	36
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.20	0.02	0.01	0.29	0.01	0.00	0.00	0.00	0.03	0.03	0.03
Intersection LOS	A											
Intersection V/C	0.384											

Intersection Level Of Service Report
Intersection 4: Magnolia Ave at Katella Ave

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.610

Intersection Setup

Name												
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												
Base Volume Input [veh/h]	127	410	123	240	701	121	81	1098	86	160	972	171
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]	127	410	123	240	701	121	81	1098	86	160	972	171
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]	32	103	31	60	175	30	20	275	22	40	243	43
Total Analysis Volume [veh/h]	127	410	123	240	701	121	81	1098	86	160	972	171
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	0	1	6	0	3	8	0	7	4	4
Auxiliary Signal Groups												1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.12	0.07	0.14	0.21	0.07	0.02	0.23	0.23	0.05	0.19	0.00
Intersection LOS	B											
Intersection V/C	0.610											

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Report File: G:\...\pmE.pdf

Scenario 1 Existing
12/21/2018

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Sherrill St at Cerritos Ave	Two-way stop	HCM 6th Edition	NB Left	0.083	22.1	C
2	Magnolia Ave at Cerritos Ave	Signalized	ICU 1	NB Thru	0.619	-	B
3	Magnolia Ave at Pacific Ave	Signalized	ICU 1	NB Thru	0.414	-	A
4	Magnolia Ave at Katella Ave	Signalized	ICU 1	NB Thru	0.665	-	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Sherrill St at Cerritos Ave

Control Type:	Two-way stop	Delay (sec / veh):	22.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.083

Intersection Setup

Name						
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		No		No	

Volumes

Name						
Base Volume Input [veh/h]	19	19	709	29	8	566
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]	19	19	709	29	8	566
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]	5	5	177	7	2	142
Total Analysis Volume [veh/h]	19	19	709	29	8	566
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.03	0.01	0.00	0.01	0.01
d_M, Delay for Movement [s/veh]	22.06	12.09	0.00	0.00	9.21	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.38	0.38	0.00	0.00	0.03	0.01
95th-Percentile Queue Length [ft/ln]	9.47	9.47	0.00	0.00	0.70	0.35
d_A, Approach Delay [s/veh]	17.08		0.00		0.13	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.54					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 2: Magnolia Ave at Cerritos Ave

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.619

Intersection Setup

Name												
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												
Base Volume Input [veh/h]	130	1005	70	109	762	116	127	467	121	60	361	98
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]	130	1005	70	109	762	116	127	467	121	60	361	98
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]	33	251	18	27	191	29	32	117	30	15	90	25
Total Analysis Volume [veh/h]	130	1005	70	109	762	116	127	467	121	60	361	98
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.30	0.04	0.06	0.22	0.07	0.07	0.17	0.17	0.04	0.14	0.14
Intersection LOS	B											
Intersection V/C	0.619											

Intersection Level Of Service Report
Intersection 3: Magnolia Ave at Pacific Ave

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.414

Intersection Setup

Name												
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												
Base Volume Input [veh/h]	30	1142	42	15	856	23	0	0	0	32	7	25
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]	30	1142	42	15	856	23	0	0	0	32	7	25
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]	8	286	11	4	214	6	0	0	0	8	2	6
Total Analysis Volume [veh/h]	30	1142	42	15	856	23	0	0	0	32	7	25
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.34	0.02	0.01	0.25	0.01	0.00	0.00	0.00	0.02	0.02	0.02
Intersection LOS	A											
Intersection V/C	0.414											

Intersection Level Of Service Report
Intersection 4: Magnolia Ave at Katella Ave

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.665

Intersection Setup

Name												
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												
Base Volume Input [veh/h]	120	840	108	148	660	95	143	1097	118	146	717	194
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]	120	840	108	148	660	95	143	1097	118	146	717	194
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]	30	210	27	37	165	24	36	274	30	37	179	49
Total Analysis Volume [veh/h]	120	840	108	148	660	95	143	1097	118	146	717	194
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	0	1	6	0	3	8	0	7	4	4
Auxiliary Signal Groups												1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.25	0.06	0.09	0.19	0.06	0.04	0.24	0.24	0.04	0.14	0.03
Intersection LOS	B											
Intersection V/C	0.665											

EXISTING PLUS PROJECT

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Scenario 1 Existing Plus Project
12/21/2018

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Sherrill St at Cerritos Ave	Two-way stop	HCM 6th Edition	NB Left	0.168	20.4	C
2	Magnolia Ave at Cerritos Ave	Signalized	ICU 1	SB Thru	0.548	-	A
3	Magnolia Ave at Pacific Ave	Signalized	ICU 1	SB Thru	0.404	-	A
4	Magnolia Ave at Katella Ave	Signalized	ICU 1	EB Right	0.613	-	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Sherrill St at Cerritos Ave

Control Type:	Two-way stop	Delay (sec / veh):	20.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.168

Intersection Setup

Name						
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		No		No	

Volumes

Name						
Base Volume Input [veh/h]	44	25	571	18	3	610
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]	3	0	0	2	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]	47	25	571	20	3	610
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]	12	6	143	5	1	153
Total Analysis Volume [veh/h]	47	25	571	20	3	610
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.17	0.04	0.01	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	20.41	12.71	0.00	0.00	8.68	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.75	0.75	0.00	0.00	0.01	0.00
95th-Percentile Queue Length [ft/ln]	18.74	18.74	0.00	0.00	0.23	0.12
d_A, Approach Delay [s/veh]	17.74		0.00		0.04	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	1.02					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 2: Magnolia Ave at Cerritos Ave

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.548

Intersection Setup

Name												
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												
Base Volume Input [veh/h]	118	615	47	106	728	153	118	384	104	60	355	130
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	11	3	0	7	0	0	0	0	2	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]	118	626	50	106	735	153	118	384	104	62	355	130
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]	30	157	13	27	184	38	30	96	26	16	89	33
Total Analysis Volume [veh/h]	118	626	50	106	735	153	118	384	104	62	355	130
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.18	0.03	0.06	0.22	0.09	0.07	0.14	0.14	0.04	0.14	0.14
Intersection LOS	A											
Intersection V/C	0.548											

Intersection Level Of Service Report
Intersection 3: Magnolia Ave at Pacific Ave

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.404

Intersection Setup

Name												
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												
Base Volume Input [veh/h]	20	678	34	20	978	19	0	0	0	58	9	36
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]	7	0	0	0	0	9	14	0	13	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]	27	678	34	20	978	28	14	0	13	58	9	36
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]	7	170	9	5	245	7	4	0	3	15	2	9
Total Analysis Volume [veh/h]	27	678	34	20	978	28	14	0	13	58	9	36
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.20	0.02	0.01	0.29	0.02	0.01	0.00	0.02	0.03	0.03	0.03
Intersection LOS	A											
Intersection V/C	0.404											

Intersection Level Of Service Report
Intersection 4: Magnolia Ave at Katella Ave

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.613

Intersection Setup

Name												
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												
Base Volume Input [veh/h]	127	410	123	240	701	121	81	1098	86	160	972	171
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	6	0	2	9	2	0	0	0	0	0	1
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]	127	416	123	242	710	123	81	1098	86	160	972	172
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]	32	104	31	61	178	31	20	275	22	40	243	43
Total Analysis Volume [veh/h]	127	416	123	242	710	123	81	1098	86	160	972	172
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	0	1	6	0	3	8	0	7	4	4
Auxiliary Signal Groups												1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.12	0.07	0.14	0.21	0.07	0.02	0.23	0.23	0.05	0.19	0.00
Intersection LOS	B											
Intersection V/C	0.613											

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Scenario 1 Existing Plus Project
12/21/2018

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Sherrill St at Cerritos Ave	Two-way stop	HCM 6th Edition	NB Left	0.092	22.3	C
2	Magnolia Ave at Cerritos Ave	Signalized	ICU 1	NB Thru	0.622	-	B
3	Magnolia Ave at Pacific Ave	Signalized	ICU 1	NB Thru	0.426	-	A
4	Magnolia Ave at Katella Ave	Signalized	ICU 1	NB Thru	0.669	-	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Sherrill St at Cerritos Ave

Control Type:	Two-way stop	Delay (sec / veh):	22.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.092

Intersection Setup

Name						
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		No		No	

Volumes

Name						
Base Volume Input [veh/h]	19	19	709	29	8	566
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]	2	0	0	3	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]	21	19	709	32	8	566
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]	5	5	177	8	2	142
Total Analysis Volume [veh/h]	21	19	709	32	8	566
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.03	0.01	0.00	0.01	0.01
d_M, Delay for Movement [s/veh]	22.26	12.27	0.00	0.00	9.22	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.41	0.41	0.00	0.00	0.03	0.01
95th-Percentile Queue Length [ft/ln]	10.31	10.31	0.00	0.00	0.70	0.35
d_A, Approach Delay [s/veh]	17.51		0.00		0.13	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.57					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 2: Magnolia Ave at Cerritos Ave

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.622

Intersection Setup

Name												
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												
Base Volume Input [veh/h]	130	1005	70	109	762	116	127	467	121	60	361	98
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	8	2	0	12	0	0	0	0	3	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]	130	1013	72	109	774	116	127	467	121	63	361	98
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]	33	253	18	27	194	29	32	117	30	16	90	25
Total Analysis Volume [veh/h]	130	1013	72	109	774	116	127	467	121	63	361	98
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.30	0.04	0.06	0.23	0.07	0.07	0.17	0.17	0.04	0.14	0.14
Intersection LOS	B											
Intersection V/C	0.622											

Intersection Level Of Service Report
Intersection 3: Magnolia Ave at Pacific Ave

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.426

Intersection Setup

Name												
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												
Base Volume Input [veh/h]	30	1142	42	15	856	23	0	0	0	32	7	25
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]	13	0	0	0	0	15	10	0	12	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]	43	1142	42	15	856	38	10	0	12	32	7	25
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]	11	286	11	4	214	10	3	0	3	8	2	6
Total Analysis Volume [veh/h]	43	1142	42	15	856	38	10	0	12	32	7	25
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.34	0.02	0.01	0.25	0.02	0.01	0.00	0.01	0.02	0.02	0.02
Intersection LOS	A											
Intersection V/C	0.426											

Intersection Level Of Service Report
Intersection 4: Magnolia Ave at Katella Ave

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.669

Intersection Setup

Name												
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												
Base Volume Input [veh/h]	120	840	108	148	660	95	143	1097	118	146	717	194
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	11	0	1	10	1	0	0	0	0	0	2
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]	120	851	108	149	670	96	143	1097	118	146	717	196
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]	30	213	27	37	168	24	36	274	30	37	179	49
Total Analysis Volume [veh/h]	120	851	108	149	670	96	143	1097	118	146	717	196
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	0	1	6	0	3	8	0	7	4	4
Auxiliary Signal Groups												1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.25	0.06	0.09	0.20	0.06	0.04	0.24	0.24	0.04	0.14	0.03
Intersection LOS	B											
Intersection V/C	0.669											

OPENING YEAR (2022) WITHOUT PROJECT

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Scenario 2 Opening Year (2022) Without Project
1/25/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Sherrill St at Cerritos Ave	Two-way stop	HCM 6th Edition	NB Left	0.178	21.9	C
2	Magnolia Ave at Cerritos Ave	Signalized	ICU 1	SB Thru	0.574	-	A
3	Magnolia Ave at Pacific Ave	Signalized	ICU 1	SB Thru	0.402	-	A
4	Magnolia Ave at Katella Ave	Signalized	ICU 1	EB Thru	0.639	-	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Sherrill St at Cerritos Ave

Control Type:	Two-way stop	Delay (sec / veh):	21.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.178

Intersection Setup

Name						
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		No		No	

Volumes

Name						
Base Volume Input [veh/h]	44	25	571	18	3	610
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	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	4	4	0	4	7
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]	46	30	598	19	7	641
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]	12	8	150	5	2	160
Total Analysis Volume [veh/h]	46	30	598	19	7	641
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.18	0.04	0.01	0.00	0.01	0.01
d_M, Delay for Movement [s/veh]	21.85	13.19	0.00	0.00	8.78	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.83	0.83	0.00	0.00	0.02	0.01
95th-Percentile Queue Length [ft/ln]	20.79	20.79	0.00	0.00	0.55	0.28
d_A, Approach Delay [s/veh]	18.43		0.00		0.09	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	1.09					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 2: Magnolia Ave at Cerritos Ave

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.574

Intersection Setup

Name												
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												
Base Volume Input [veh/h]	118	615	47	106	728	153	118	384	104	60	355	130
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	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	15	0	1	17	1	0	7	1	0	8	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]	125	655	49	111	774	160	123	406	109	62	377	135
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]	31	164	12	28	194	40	31	102	27	16	94	34
Total Analysis Volume [veh/h]	125	655	49	111	774	160	123	406	109	62	377	135
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.19	0.03	0.07	0.23	0.09	0.07	0.15	0.15	0.04	0.15	0.15
Intersection LOS	A											
Intersection V/C	0.574											

Intersection Level Of Service Report
Intersection 3: Magnolia Ave at Pacific Ave

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.402

Intersection Setup

Name												
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												
Base Volume Input [veh/h]	20	678	34	20	978	19	0	0	0	58	9	36
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	1.04	1.04	1.04	1.04	1.04	1.04	1.00	1.00	1.00	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	17	0	0	18	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]	21	722	35	21	1035	20	0	0	0	60	9	37
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]	5	181	9	5	259	5	0	0	0	15	2	9
Total Analysis Volume [veh/h]	21	722	35	21	1035	20	0	0	0	60	9	37
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.21	0.02	0.01	0.30	0.01	0.00	0.00	0.00	0.04	0.03	0.03
Intersection LOS	A											
Intersection V/C	0.402											

Intersection Level Of Service Report
Intersection 4: Magnolia Ave at Katella Ave

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.639

Intersection Setup

Name												
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												
Base Volume Input [veh/h]	127	410	123	240	701	121	81	1098	86	160	972	171
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	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	5	3	5	6	7	7	15	2	3	14	5
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]	134	431	131	255	735	133	91	1157	91	169	1025	183
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]	34	108	33	64	184	33	23	289	23	42	256	46
Total Analysis Volume [veh/h]	134	431	131	255	735	133	91	1157	91	169	1025	183
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	0	1	6	0	3	8	0	7	4	4
Auxiliary Signal Groups												1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.13	0.08	0.15	0.22	0.08	0.03	0.24	0.24	0.05	0.20	0.00
Intersection LOS	B											
Intersection V/C	0.639											

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Scenario 2 Opening Year (2022) Without Project
1/25/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Sherrill St at Cerritos Ave	Two-way stop	HCM 6th Edition	NB Left	0.097	24.2	C
2	Magnolia Ave at Cerritos Ave	Signalized	ICU 1	NB Thru	0.653	-	B
3	Magnolia Ave at Pacific Ave	Signalized	ICU 1	NB Thru	0.436	-	A
4	Magnolia Ave at Katella Ave	Signalized	ICU 1	NB Thru	0.707	-	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Sherrill St at Cerritos Ave

Control Type:	Two-way stop	Delay (sec / veh):	24.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.097

Intersection Setup

Name						
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		No		No	

Volumes

Name						
Base Volume Input [veh/h]	19	19	709	29	8	566
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	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	5	9	0	6	8
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]	20	25	746	30	14	597
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]	5	6	187	8	4	149
Total Analysis Volume [veh/h]	20	25	746	30	14	597
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.10	0.04	0.01	0.00	0.02	0.01
d_M, Delay for Movement [s/veh]	24.22	12.65	0.00	0.00	9.38	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.47	0.47	0.00	0.00	0.05	0.03
95th-Percentile Queue Length [ft/ln]	11.84	11.84	0.00	0.00	1.28	0.64
d_A, Approach Delay [s/veh]	17.79		0.00		0.21	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.65					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 2: Magnolia Ave at Cerritos Ave

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.653

Intersection Setup

Name												
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												
Base Volume Input [veh/h]	130	1005	70	109	762	116	127	467	121	60	361	98
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	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	24	0	1	24	1	1	8	5	0	10	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]	138	1069	73	114	816	122	133	494	131	62	385	102
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]	35	267	18	29	204	31	33	124	33	16	96	26
Total Analysis Volume [veh/h]	138	1069	73	114	816	122	133	494	131	62	385	102
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.31	0.04	0.07	0.24	0.07	0.08	0.18	0.18	0.04	0.14	0.14
Intersection LOS	B											
Intersection V/C	0.653											

Intersection Level Of Service Report
Intersection 3: Magnolia Ave at Pacific Ave

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												
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												
Base Volume Input [veh/h]	30	1142	42	15	856	23	0	0	0	32	7	25
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	1.04	1.04	1.04	1.04	1.04	1.04	1.00	1.00	1.00	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	27	0	0	29	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]	31	1215	44	16	919	24	0	0	0	33	7	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]	8	304	11	4	230	6	0	0	0	8	2	7
Total Analysis Volume [veh/h]	31	1215	44	16	919	24	0	0	0	33	7	26
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.36	0.03	0.01	0.27	0.01	0.00	0.00	0.00	0.02	0.02	0.02
Intersection LOS	A											
Intersection V/C	0.436											

Intersection Level Of Service Report
Intersection 4: Magnolia Ave at Katella Ave

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.707

Intersection Setup

Name												
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												
Base Volume Input [veh/h]	120	840	108	148	660	95	143	1097	118	146	717	194
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	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	7	8	13	7	9	9	23	2	6	25	11
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]	127	881	120	167	693	108	158	1164	125	158	771	213
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]	32	220	30	42	173	27	40	291	31	40	193	53
Total Analysis Volume [veh/h]	127	881	120	167	693	108	158	1164	125	158	771	213
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	0	1	6	0	3	8	0	7	4	4
Auxiliary Signal Groups												1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.26	0.07	0.10	0.20	0.06	0.05	0.25	0.25	0.05	0.15	0.03
Intersection LOS	C											
Intersection V/C	0.707											

OPENING YEAR (2022) WITH PROJECT

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Scenario 2 Opening Year (2022) With Project
1/25/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Sherrill St at Cerritos Ave	Two-way stop	HCM 6th Edition	NB Left	0.190	22.1	C
2	Magnolia Ave at Cerritos Ave	Signalized	ICU 1	SB Thru	0.576	-	A
3	Magnolia Ave at Pacific Ave	Signalized	ICU 1	SB Thru	0.422	-	A
4	Magnolia Ave at Katella Ave	Signalized	ICU 1	EB Thru	0.642	-	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Sherrill St at Cerritos Ave

Control Type:	Two-way stop	Delay (sec / veh):	22.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.190

Intersection Setup

Name						
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		No		No	

Volumes

Name						
Base Volume Input [veh/h]	44	25	571	18	3	610
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	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	4	6	0	4	7
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]	49	30	600	19	7	641
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]	12	8	150	5	2	160
Total Analysis Volume [veh/h]	49	30	600	19	7	641
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.19	0.04	0.01	0.00	0.01	0.01
d_M, Delay for Movement [s/veh]	22.15	13.45	0.00	0.00	8.79	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.89	0.89	0.00	0.00	0.02	0.01
95th-Percentile Queue Length [ft/ln]	22.23	22.23	0.00	0.00	0.55	0.28
d_A, Approach Delay [s/veh]	18.85		0.00		0.09	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	1.15					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 2: Magnolia Ave at Cerritos Ave

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.576

Intersection Setup

Name												
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												
Base Volume Input [veh/h]	118	615	47	106	728	153	118	384	104	60	355	130
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	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	26	3	1	24	1	0	7	3	2	8	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]	125	666	52	111	781	160	123	406	111	64	377	135
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]	31	167	13	28	195	40	31	102	28	16	94	34
Total Analysis Volume [veh/h]	125	666	52	111	781	160	123	406	111	64	377	135
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.20	0.03	0.07	0.23	0.09	0.07	0.15	0.15	0.04	0.15	0.15
Intersection LOS	A											
Intersection V/C	0.576											

Intersection Level Of Service Report
Intersection 3: Magnolia Ave at Pacific Ave

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.422

Intersection Setup

Name												
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												
Base Volume Input [veh/h]	20	678	34	20	978	19	0	0	0	58	9	36
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	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	7	17	0	0	18	11	14	0	13	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]	28	722	35	21	1035	31	14	0	13	60	9	37
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]	7	181	9	5	259	8	4	0	3	15	2	9
Total Analysis Volume [veh/h]	28	722	35	21	1035	31	14	0	13	60	9	37
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.21	0.02	0.01	0.30	0.02	0.01	0.00	0.02	0.04	0.03	0.03
Intersection LOS	A											
Intersection V/C	0.422											

Intersection Level Of Service Report
Intersection 4: Magnolia Ave at Katella Ave

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.642

Intersection Setup

Name												
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												
Base Volume Input [veh/h]	127	410	123	240	701	121	81	1098	86	160	972	171
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	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	11	3	7	15	9	7	15	2	3	14	6
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]	134	437	131	257	744	135	91	1157	91	169	1025	184
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]	34	109	33	64	186	34	23	289	23	42	256	46
Total Analysis Volume [veh/h]	134	437	131	257	744	135	91	1157	91	169	1025	184
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	0	1	6	0	3	8	0	7	4	4
Auxiliary Signal Groups												1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.13	0.08	0.15	0.22	0.08	0.03	0.24	0.24	0.05	0.20	0.00
Intersection LOS	B											
Intersection V/C	0.642											

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Report File: G:\...\pmOYP.pdf

Scenario 2 Opening Year (2022) With Project
1/25/2019

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Sherrill St at Cerritos Ave	Two-way stop	HCM 6th Edition	NB Left	0.107	24.5	C
2	Magnolia Ave at Cerritos Ave	Signalized	ICU 1	NB Thru	0.657	-	B
3	Magnolia Ave at Pacific Ave	Signalized	ICU 1	NB Thru	0.449	-	A
4	Magnolia Ave at Katella Ave	Signalized	ICU 1	NB Thru	0.710	-	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Sherrill St at Cerritos Ave

Control Type:	Two-way stop	Delay (sec / veh):	24.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.107

Intersection Setup

Name						
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		No		No	

Volumes

Name						
Base Volume Input [veh/h]	19	19	709	29	8	566
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	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	5	12	0	6	8
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]	22	25	749	30	14	597
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]	6	6	187	8	4	149
Total Analysis Volume [veh/h]	22	25	749	30	14	597
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.04	0.01	0.00	0.02	0.01
d_M, Delay for Movement [s/veh]	24.51	12.88	0.00	0.00	9.39	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.51	0.51	0.00	0.00	0.05	0.03
95th-Percentile Queue Length [ft/ln]	12.86	12.86	0.00	0.00	1.28	0.64
d_A, Approach Delay [s/veh]	18.32		0.00		0.22	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.69					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 2: Magnolia Ave at Cerritos Ave

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.657

Intersection Setup

Name												
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												
Base Volume Input [veh/h]	130	1005	70	109	762	116	127	467	121	60	361	98
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	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	32	2	1	36	1	1	8	8	3	10	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]	138	1077	75	114	828	122	133	494	134	65	385	102
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]	35	269	19	29	207	31	33	124	34	16	96	26
Total Analysis Volume [veh/h]	138	1077	75	114	828	122	133	494	134	65	385	102
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.32	0.04	0.07	0.24	0.07	0.08	0.18	0.18	0.04	0.14	0.14
Intersection LOS	B											
Intersection V/C	0.657											

Intersection Level Of Service Report
Intersection 3: Magnolia Ave at Pacific Ave

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.449

Intersection Setup

Name												
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												
Base Volume Input [veh/h]	30	1142	42	15	856	23	0	0	0	32	7	25
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	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	13	27	0	0	29	18	10	0	12	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]	44	1215	44	16	919	42	10	0	12	33	7	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]	11	304	11	4	230	11	3	0	3	8	2	7
Total Analysis Volume [veh/h]	44	1215	44	16	919	42	10	0	12	33	7	26
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.36	0.03	0.01	0.27	0.02	0.01	0.00	0.01	0.02	0.02	0.02
Intersection LOS	A											
Intersection V/C	0.449											

Intersection Level Of Service Report
Intersection 4: Magnolia Ave at Katella Ave

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.710

Intersection Setup

Name												
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												
Base Volume Input [veh/h]	120	840	108	148	660	95	143	1097	118	146	717	194
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	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	18	8	14	17	10	9	23	2	6	25	13
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]	127	892	120	168	703	109	158	1164	125	158	771	215
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]	32	223	30	42	176	27	40	291	31	40	193	54
Total Analysis Volume [veh/h]	127	892	120	168	703	109	158	1164	125	158	771	215
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	0	1	6	0	3	8	0	7	4	4
Auxiliary Signal Groups												1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.26	0.07	0.10	0.21	0.06	0.05	0.25	0.25	0.05	0.15	0.03
Intersection LOS	C											
Intersection V/C	0.710											

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