APPENDIX F
Traffic Impact Analysis and VMT Analysis

PANATTONI PROJECT TRAFFIC IMPACT ANALYSIS

City of Carson

June 3, 2020

ganddini

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

PANATTONI PROJECT
TRAFFIC IMPACT ANALYSIS

City of Carson

June 3, 2020

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 Panattoni Project and to identify measures necessary to mitigate potentially significant traffic impacts. The traffic issues related to the proposed land use and development have been evaluated in the context of the California Environmental Quality Act (CEQA). The City of Carson is the lead agency responsible for evaluation of potential environmental impacts associated with the proposed project. This report analyzes traffic impacts for the anticipated project opening year in 2021.

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 technical terms related to transportation engineering.

PROJECT DESCRIPTION

The 14.8-acre project site is located south of Interstate 405 (I-405) between Wilmington Avenue and Alameda Street at 2112 East 223rd Street in the City of Carson, California. The project site is currently zoned for manufacturing land use. The project site is currently undeveloped and vacant.

The proposed project consists of developing the project site with three new industrial buildings totaling 292,400 square feet. The proposed project includes two land use options:

- Option A: 165,200 square feet of warehousing and 127,200 square feet of manufacturing land uses.
- Option B: 292,400 square feet of warehousing land uses.

The building footprints and exterior improvements would remain the same under both development options. Of the two options, a mix of warehouse and manufacturing uses (Option A) is forecast to generate more trips and therefore is the land use scenario considered throughout this analysis. Vehicular access is proposed via three driveways at East 223rd Street. The proposed project is anticipated to be constructed and fully operational by Year 2021.

EXISTING CONDITIONS

The study intersections currently operate within acceptable Levels of Service (D or better) during the peak hours for Existing conditions (see Table 1).

PROJECT TRIPS

The proposed project is forecast to generate a total maximum of approximately 788 daily vehicle trips, including 108 vehicles trips during the AM peak hour and 117 vehicle trips during the PM peak hour. In Passenger Car Equivalent (PCE) trips, the proposed project is forecast to generate a total maximum of approximately 1,018 daily PCE trips, including 165 PCE trips during the AM peak hour and 160 PCE trips during the PM peak hour.

FUTURE CONDITIONS

Existing Plus Project Conditions

The study intersections are forecast to operate within acceptable Levels of Service (D or better) during the peak hours for Existing Plus Project conditions (see Table 6). The proposed project is forecast to result in no

significant traffic impacts at the study intersections for Existing Plus Project conditions based on the City-established thresholds of significance (see Table 7).

Opening Year (2021) Without Project

The study intersections are projected to operate within acceptable Levels of Service (D or better) during the peak hours for Opening Year (2021) Without Project conditions (see Table 8).

Opening Year (2021) With Project

The study intersections are projected to operate within acceptable Levels of Service (D or better) during the peak hours for Opening Year (2021) With Project conditions (see Table 9). The proposed project is forecast to result in no significant traffic impacts at the study intersections for Opening Year (2021) With Project conditions based on the City-established thresholds of significance (see Table 10).

STATE HIGHWAY ANALYSIS

The proposed project is forecast to result in no significant traffic impacts at the State highway study intersections and freeway off-ramps for the scenarios analyzed based on the Caltrans-established thresholds of significance (see Table 12 and Table 13).

MITIGATION MEASURES

No off-site mitigation measure improvements were identified since the proposed project is forecast to result in no significant traffic impacts at the study intersections for the scenarios analyzed.

1. INTRODUCTION

This section describes the purpose of this traffic impact analysis, project location, proposed development, and study area. Figure 1 shows the regional vicinity map and Figure 2 shows the project location map. Figure 3 shows the project site plan.

PURPOSE AND OBJECTIVES

The purpose of this traffic impact analysis is to provide an assessment of traffic operations resulting from development of the proposed Panattoni Project and to identify measures necessary to mitigate potentially significant traffic impacts. The traffic issues related to the proposed land use and development have been evaluated in the context of the California Environmental Quality Act (CEQA). The City of Carson is the lead agency responsible for evaluation of potential environmental impacts associated with the proposed project. This report analyzes traffic impacts for the anticipated project opening year in 2021.

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 technical terms related to transportation engineering.

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The proposed project consists of developing the project site with three new industrial buildings totaling 292,400 square feet. The proposed project includes two land use options:

- Option A: 165,200 square feet of warehousing and 127,200 square feet of manufacturing land uses.
- Option B: 292,400 square feet of warehousing land uses.

The building footprints and exterior improvements would remain the same under both development options. Of the two options, a mix of warehouse and manufacturing uses (Option A) is forecast to generate more trips and therefore is the land use scenario considered throughout this analysis. Vehicular access is proposed via three driveways at East 223rd Street. The proposed project is anticipated to be constructed and fully operational by Year 2021.

STUDY AREA

As specified in the City of Carson application review letter, the study area shall consist of the following study intersection:

Study Intersections	Jurisdiction[1]
1. Wilmington Avenue at I-405 Northbound Ramps	Carson / Caltrans
2. Wilmington Avenue at I-405 Southbound Ramps	Carson / Caltrans
3. Wilmington Avenue at 223rd Street	Carson
4. Alameda Street at I-405 Northbound Ramps	Carson / Caltrans
5. I-405 Southbound Ramps at 223rd Street	Carson / Caltrans

Study Intersections	Jurisdiction[1]
6. Alameda Street (Connector) at 223rd Street	Carson
7. East Project Driveway at 223rd Street	Carson
8. Center Project Driveway at 223rd Street	Carson
9. West Project Driveway at 223rd Street	Carson

Notes: (1) Caltrans = California Department of Transportation

ANALYSIS SCENARIOS

The following analysis scenarios are evaluated for typical weekday AM and PM peak hour conditions:

- Existing
- Existing Plus Project
- Opening Year (2021) Without Project
- Opening Year (2021) With Project

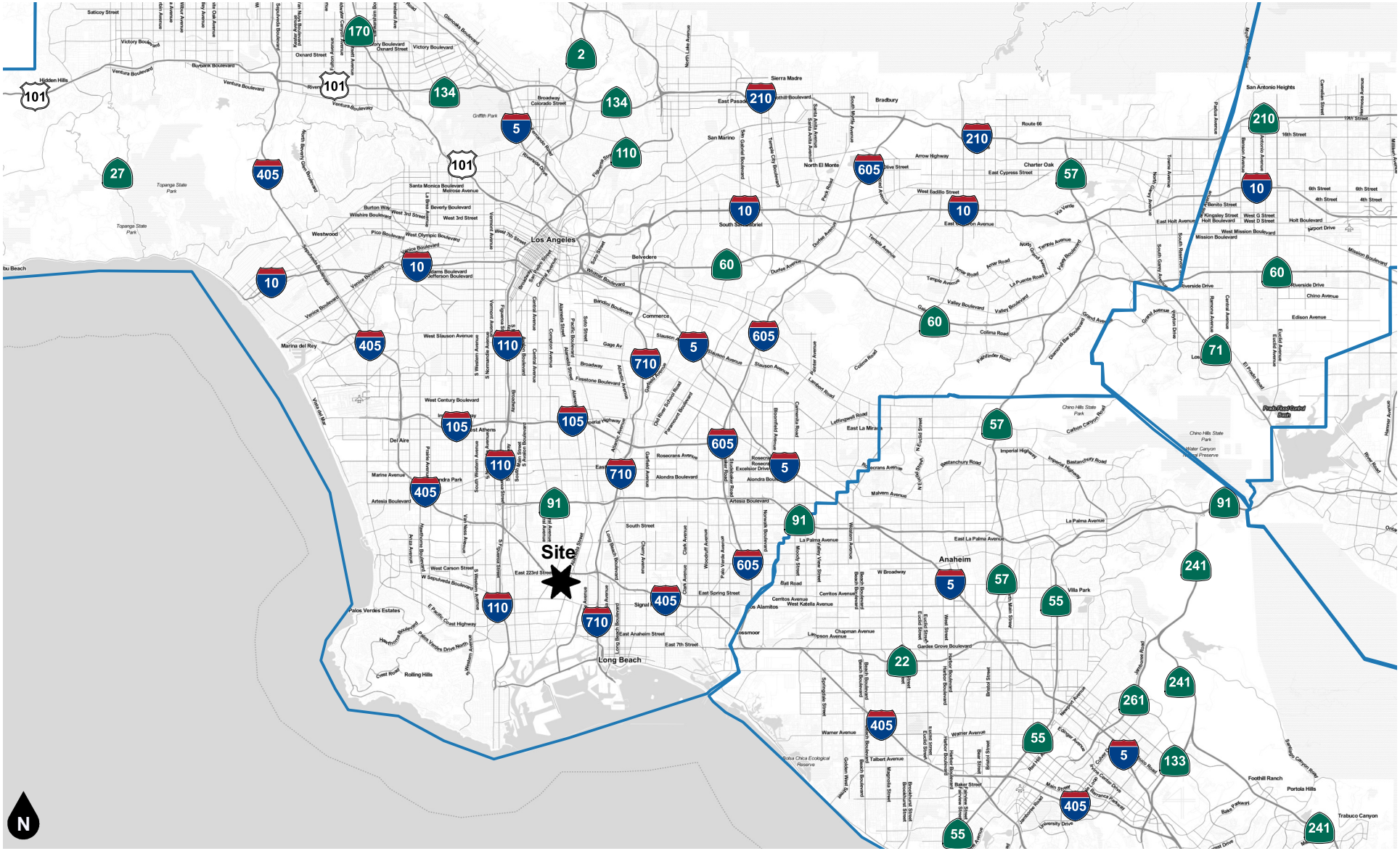
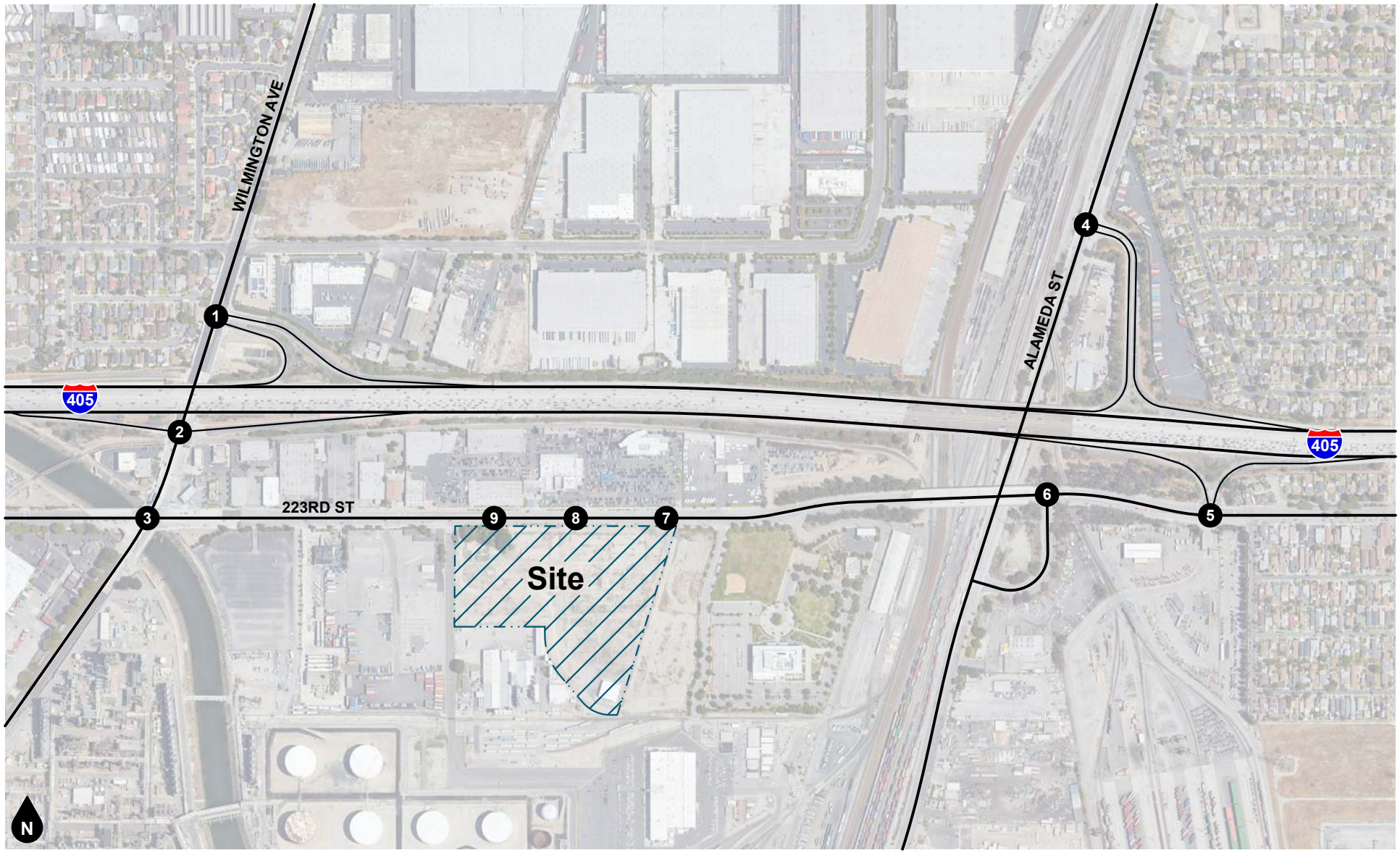


Figure 1
Regional Vicinity



Legend

Study Intersection

Figure 2
Project Location Map

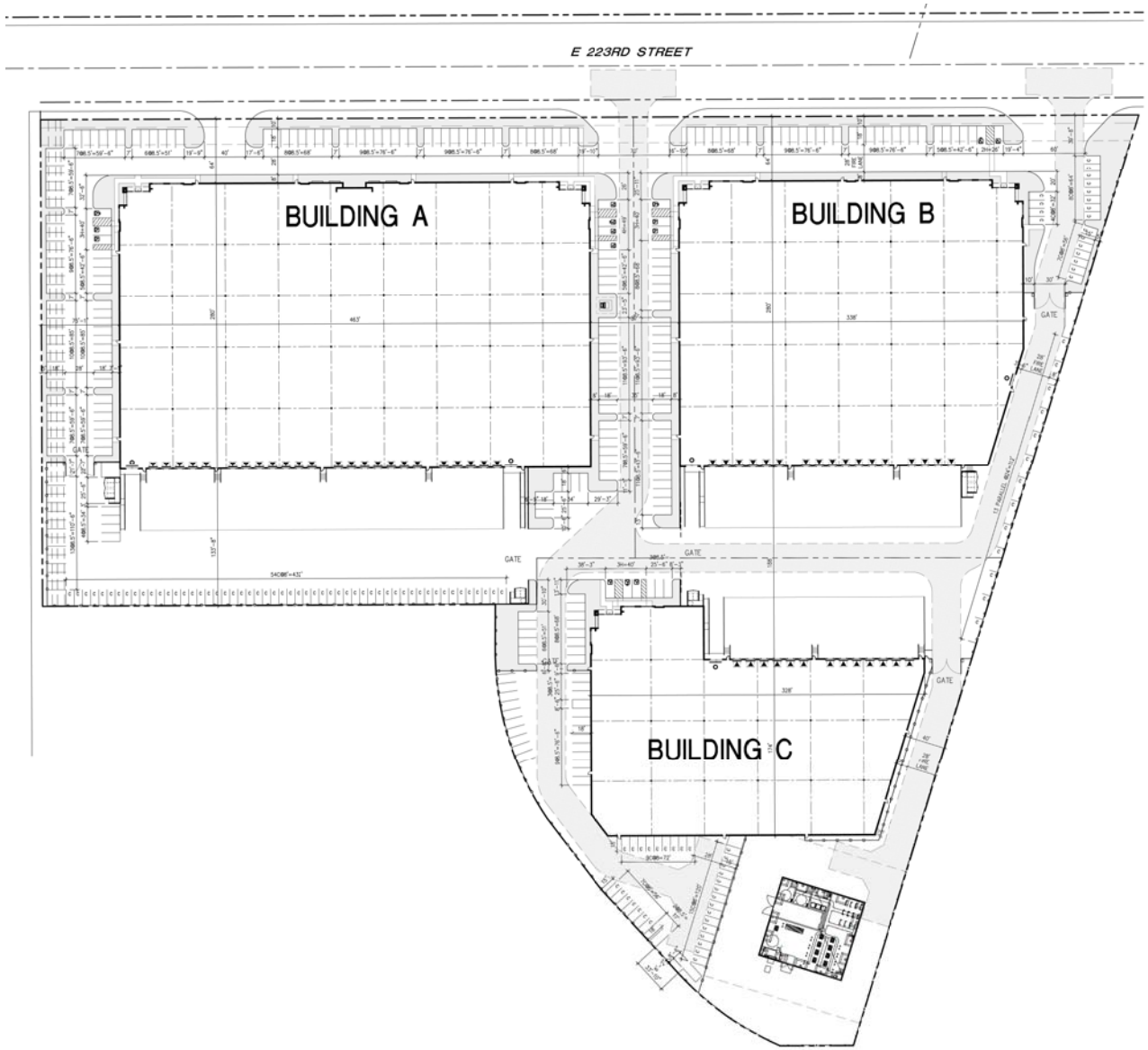


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Figure 3
Site Plan

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

The City of Carson measures intersection performance using the Intersection Capacity Utilization (ICU) methodology in accordance with the parameters established by the County of Los Angeles Traffic Impact Analysis Report Guidelines (December 2013). The ICU methodology compares the volume of traffic using the intersection to the capacity of the intersection. The resulting volume-to-capacity (V/C) ratio represents that portion of the total hourly capacity required to provide sufficient capacity to accommodate all intersection traffic if all approaches operate at capacity.

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/Capacity Ratio
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: Transportation Research Board, Interim Materials on Highway Capacity, Transportation Research Circular No. 212, January 1980.

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). ICU analysis was performed using the Vistro (Version 6.00-00) software.

Consistent with City of Carson requirements, this analysis uses the following input parameters for the ICU analysis: capacity of individual lanes be used in the ICU calculations is 1,600 vehicles per hour per lane for through and turn lanes, 2,880 vehicles per hour for dual left-turn lanes, and a total clearance adjustment of 10 percent (i.e., 0.10 added to critical Volume/Capacity).

INTERSECTION DELAY METHODOLOGY

Unsignalized intersections within City of Carson and Caltrans jurisdiction are analyzed using the intersection delay methodology based on 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 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)	
	Signalized Intersection	Unsignalized Intersection
A	≤ 10.0	≤ 10.0
B	> 10.0 to ≤ 20.0	> 10.0 to ≤ 15.0
C	> 20.0 to ≤ 35.0	> 15.0 to ≤ 25.0
D	> 35.0 to ≤ 55.0	> 25.0 to ≤ 35.0
E	> 55.0 to ≤ 80.0	> 35.0 to ≤ 50.0
F	> 80.0	> 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 using default values recommended in the Highway Capacity Manual.

PERFORMANCE STANDARDS

City of Carson

The City of Carson General Plan has established the following minimum acceptable Level of Service (LOS) D for roadway segment and peak hour intersection operations with the exception that the County of Los Angeles Congestion Management Program network may operate up to LOS E.

California Department of Transportation

As stated in the Guide for the Preparation of Traffic Impact Studies (State of California, 2002), "California Department of Transportation endeavors to maintain a target LOS [Level of Service] at the transition between LOS "C" and LOS "D" on State highway facilities". The California Department of Transportation acknowledges this may not always be feasible and recommends consultation with the California Department of Transportation to determine the appropriate target Level of Service. For consistency with local requirements, this analysis defines Level of Service D as the minimum acceptable Level of Service for State Highway facilities.

THRESHOLDS OF SIGNIFICANCE

City of Carson

Based on the County of Los Angeles guidelines, a project traffic impact at a signalized intersection is considered significant if the project related increase in the volume to capacity ratio equals or exceeds the thresholds shown below:

Pre-Project Conditions		Project Increase in V/C
LOS	V/C	
C	0.71 to 0.80	0.04 or more
D	0.81 to 0.90	0.02 or more
E/F	0.91 or more	0.01 or more

Unsignalized Intersections: It should be noted that many jurisdictions, including the City of Carson, and County of Los Angeles, do not have established significant impact thresholds for unsignalized intersections. For unsignalized intersections operating at Level of Service E or F, a signal warrant analysis shall be conducted.

California Department of Transportation

Based on the California Department of Transportation established performance standards, a potentially significant traffic impact is defined to occur if the addition of project generated trips is forecast to cause the performance of a State Highway study intersection to change from acceptable Level of Service (D or better) to unacceptable Level of Service (E or F).

MITIGATION REQUIREMENTS

If a project is forecast to cause a significant impact, feasible mitigation measures that will reduce the impact to a less than significant level are identified. 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 for a significantly impacted facility, the impact will remain significant and unavoidable and a statement of overriding considerations will be required.

To mitigate a significant project impact at facilities with acceptable Level of Service under pre-project conditions, the project shall provide or contribute to improvements that would, at a minimum, provide Level of Service D for the City of Carson.

To mitigate a significant project impact at facilities with unacceptable Level of Service under pre-project conditions, the project shall provide or contribute to improvements that would, at a minimum, provide Level of Service that is equal to or better than pre-project conditions.

3. EXISTING CONDITIONS

EXISTING ROADWAY SYSTEM

Figure 4 shows 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 I-405 north of the project site. The key north-south roadways providing local circulation include Wilmington Avenue and Alameda Street. The key east-west roadway providing local circulation is 223rd Street.

I-405 is a 12-lane freeway in the project vicinity providing north-south regional access from its southerly terminus in Irvine to its northern terminus near San Fernando. I-405 freeway access is provided via grade separated interchanges at Wilmington Avenue and Alameda Street. It currently carries approximately 258,000 to 281,000 vehicles per day in the project vicinity.

Wilmington Avenue is a four- to six-lane divided roadway trending in a north-south direction in the study area. Wilmington Avenue is classified as a Major Highway and designated truck route in the City of Carson General Plan Circulation Element. On-street vehicle parking is prohibited on Wilmington Avenue and the posted speed limit is 40 miles per hour in the project vicinity.

Alameda Street is a four- to six-lane divided roadway trending in a north-south direction in the study area. Alameda Street is classified as a Major Highway and designated truck route in the City of Carson General Plan Circulation Element. On-street vehicle parking is generally prohibited on Alameda Street and the posted speed limit is 45 miles per hour in the project vicinity.

223rd Street is a four-lane divided roadway with a two-way left turn painted median trending in an east-west direction in the study area. 223rd Street is classified as a Major Highway and designated truck route in the City of Carson General Plan Circulation Element. On-street vehicle parking is generally permitted on both sides of 223rd Street and the posted speed limit is 45 miles per hour in the project vicinity.

PEDESTRIAN FACILITIES

Existing pedestrian facilities in the project vicinity are shown on Figure 5. As shown on Figure 5, a pedestrian sidewalk is currently provided along the project site frontage.

TRANSIT FACILITIES

Figure 6 shows the existing Los Angeles Metro bus and rail transit routes available in the project vicinity. As shown in Figure 6, the study area is currently served by Route 202 along Alameda Street.

GENERAL PLAN CONTEXT

Figure 7 shows the City of Carson General Plan Circulation Element 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. The City of Carson standard roadway cross-sections are illustrated on Figure 8.

Bicycle Routes

There are no dedicated bicycle routes planned for the study area roadways. The City of Carson General Plan Bike Routes is depicted on Figure 9.

EXISTING ROADWAY VOLUMES

Figure 10 shows the Existing average daily traffic volumes. The Existing average daily traffic volumes have been obtained from the 2017 Traffic Volumes on California State Highways by the California Department of Transportation and factored from peak hour intersection turning movement volumes using the following formula for each intersection leg:

Evening Peak Hour (Approach Volume + Exit Volume) x 10 = Leg Volume.

Existing peak hour intersection turning movement volumes are based upon AM peak period and PM peak period intersection turning movement counts obtained in February 2020 during typical weekday conditions. The weekday AM peak period was counted between 7:00 AM and 9:00 AM, the weekday 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.

To account for truck volumes, the peak hour intersection volume counts were collected by vehicle classification and converted into Passenger Car Equivalent (PCE) trips in accordance with PCE factors recommended by the San Bernardino Association of Governments (SANBAG) Congestion Management Program (1.5 PCEs for 2-axle trucks, 2.0 PCEs for 3-axle trucks, and 3.0 PCEs for trucks with 4 or more axles).

Figure 11 and Figure 12 show the existing AM and PM peak hour intersection turning movement volumes (in PCE). All subsequent figures showing roadway and intersection volumes are in PCE.

EXISTING INTERSECTION LEVEL OF SERVICE

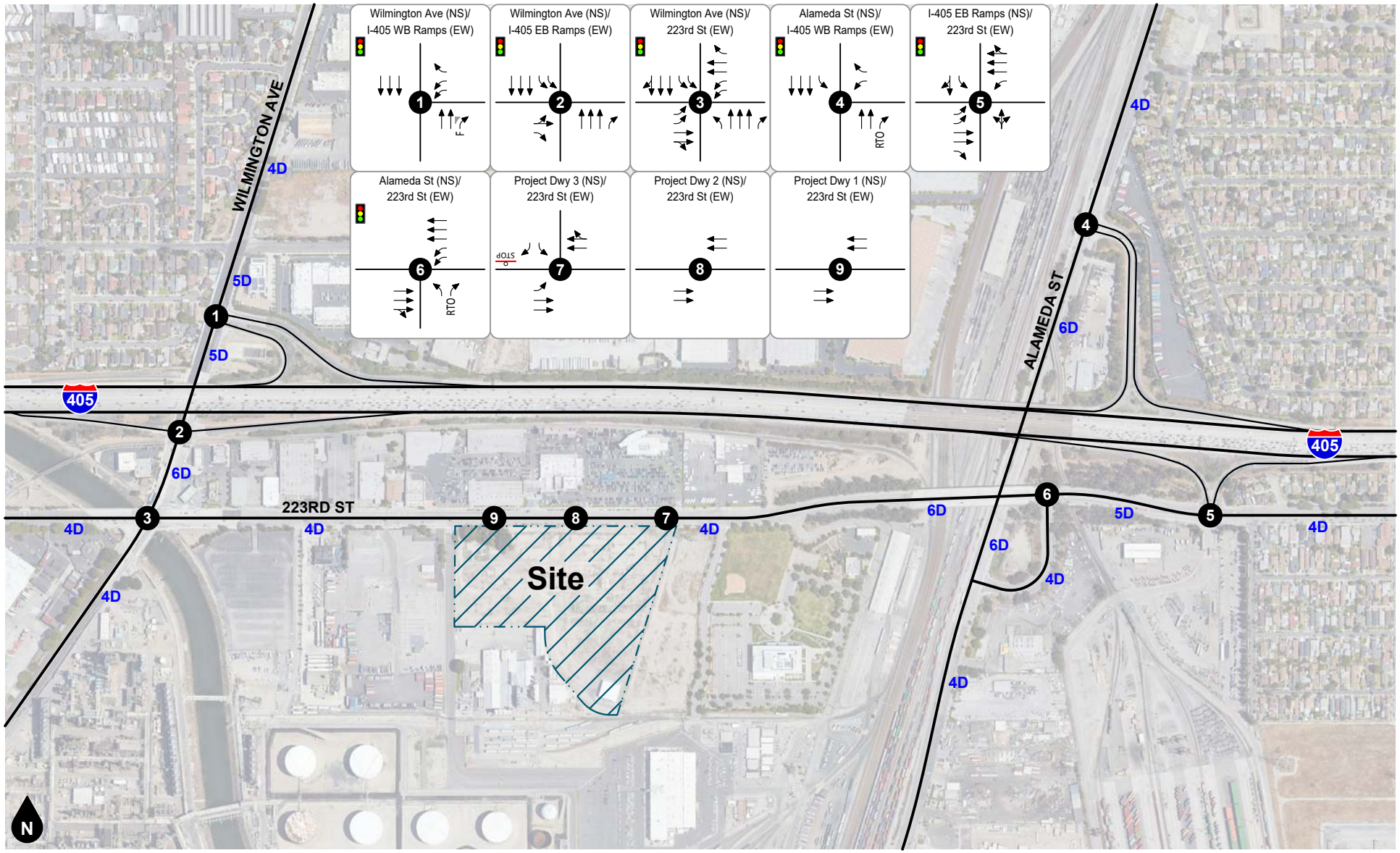
The study intersection Levels of Service for Existing conditions are shown in Table 1. Existing Level of Service worksheets are provided in Appendix D.

As shown in Table 1, the study intersections currently operate within acceptable Levels of Service (D or better) during the peak hours for Existing conditions.

Table 1
Existing Intersection Levels of Service

ID	Study Intersection	Traffic Control[1]	AM Peak Hour		PM Peak Hour	
			V/C[2]	LOS[3]	V/C	LOS
1.	Wilmington Ave at I-405 NB Ramps	TS	0.639	B	0.714	C
2.	Wilmington Ave at I-405 SB Ramps	TS	0.870	D	0.761	C
3.	Wilmington Ave at 223rd St	TS	0.710	C	0.722	C
4.	Alameda St at I-405 NB Ramps	TS	0.568	A	0.829	D
5.	223rd St at I-405 SB Ramps	TS	0.547	A	0.558	A
6.	Alameda St (Connector) at 223rd St	TS	0.565	A	0.840	D

Notes:
(1) TS = Traffic Signal
(2) V/C = Volume/Capacity
(3) LOS = Level of Service



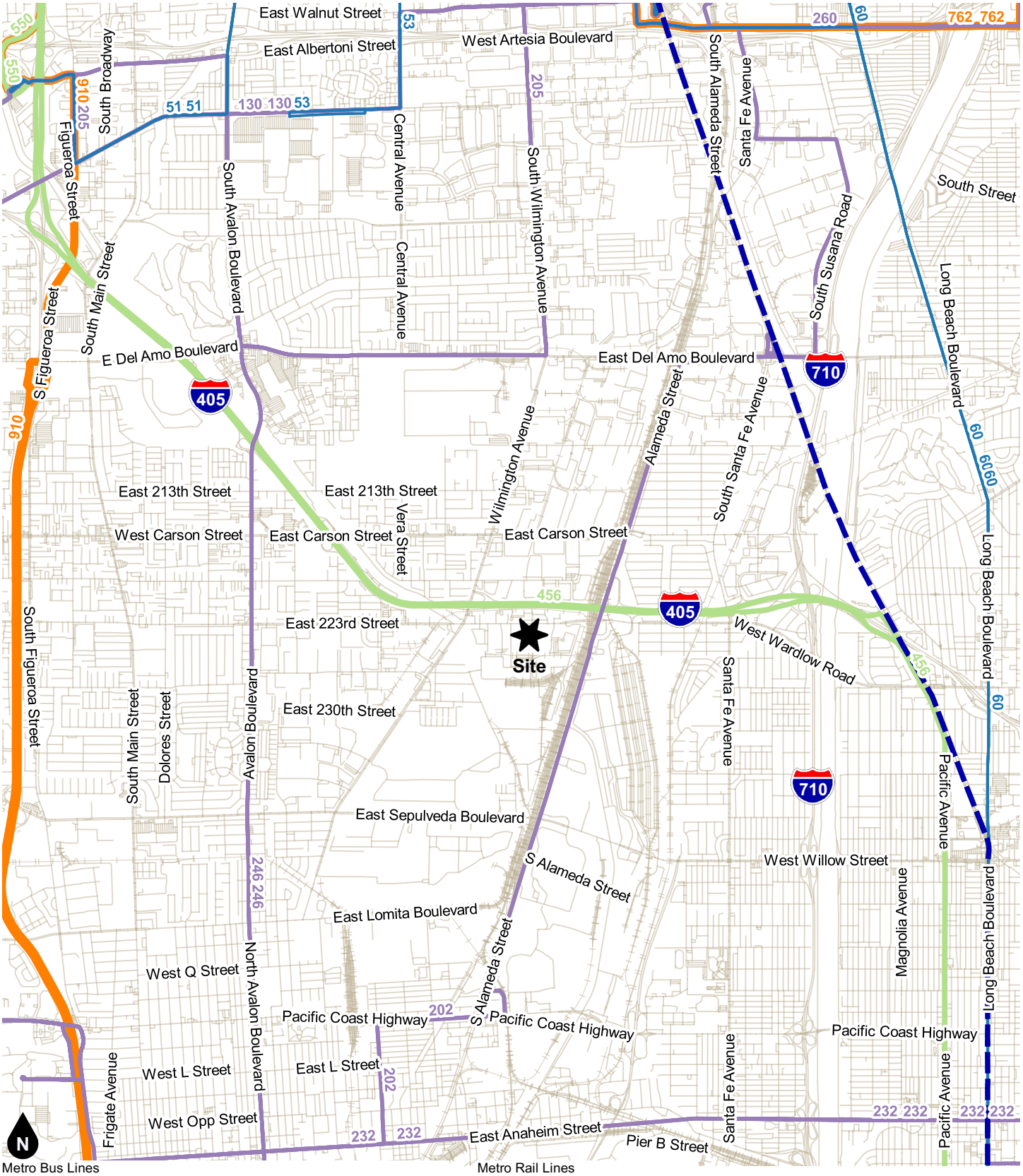
Legend

- Traffic Signal
- #D #-Lane Divided Roadway
- Existing Lane
- RTO Right Turn Overlap
- F Free Right Turn Lane

Figure 4
Existing Lane Geometry and Intersection Traffic Controls

Legend
- Sidewalk
- Cross Walk

Figure 5
Existing Pedestrian Facilities



Source: L.A. Metro

Figure 6
City of Carson Transit Routes

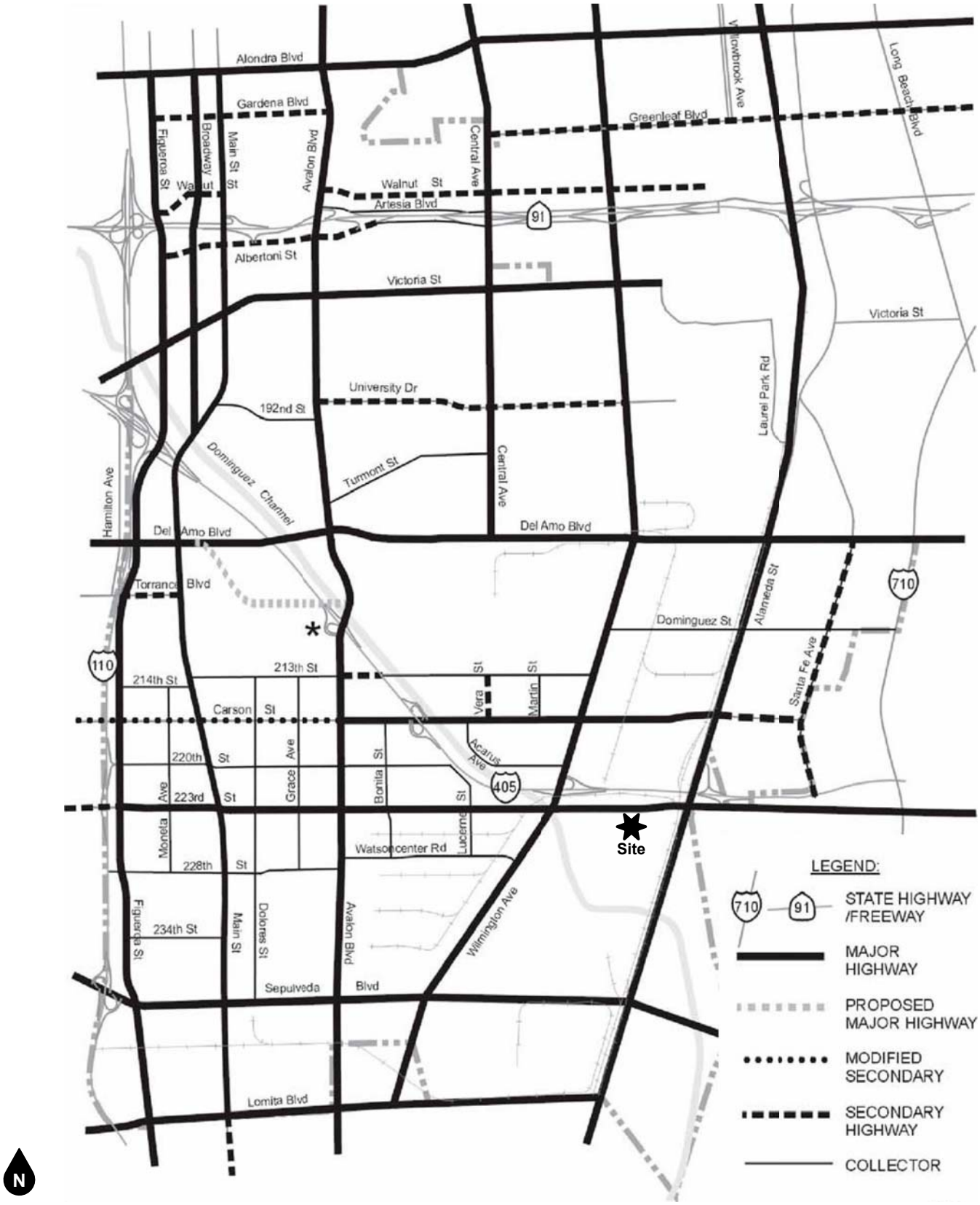


Figure 7
City of Carson General Plan Circulation Element

Source: City of Carson

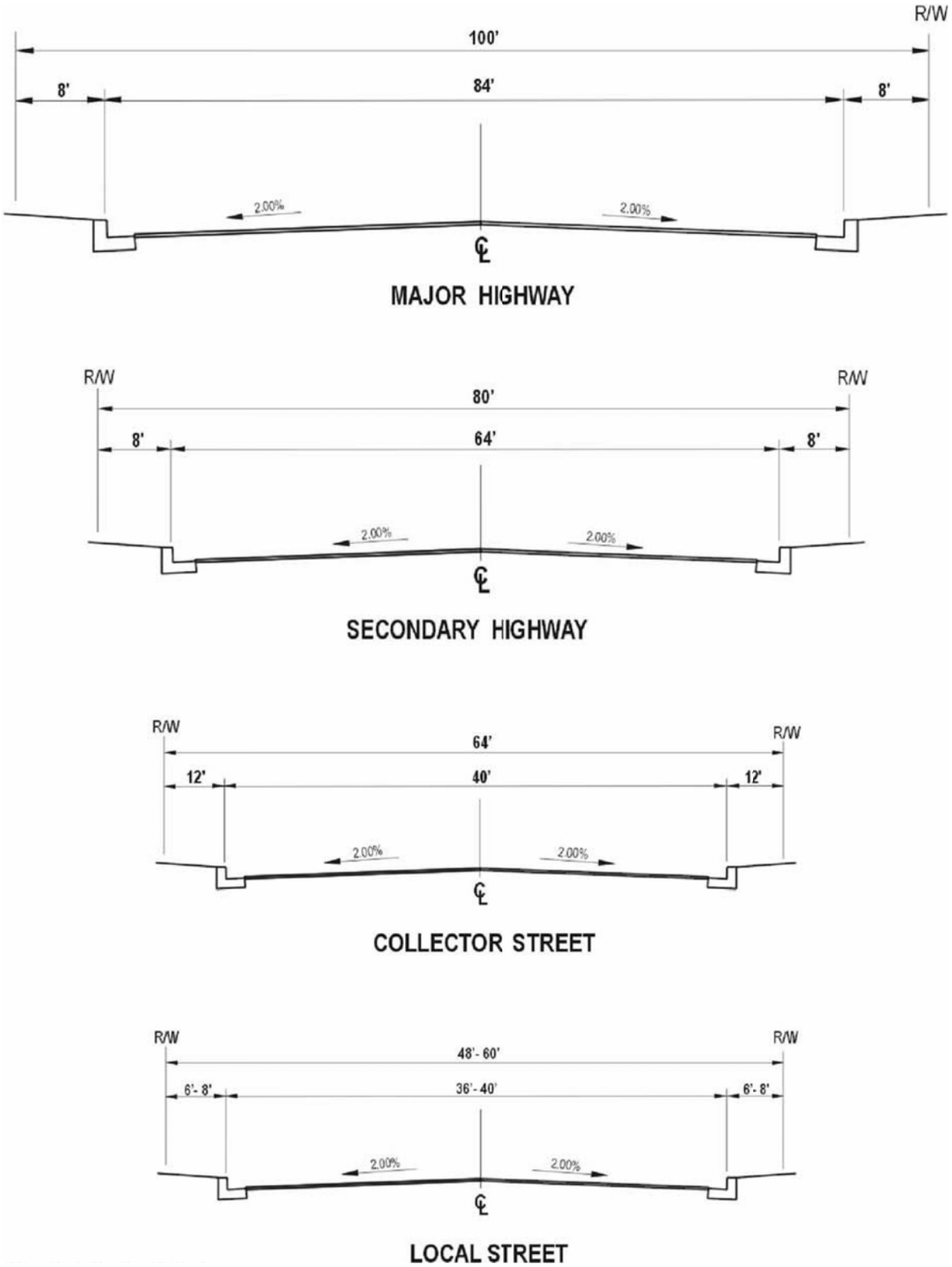


Figure 8
City of Carson General Plan Roadway Cross-Sections

Source: City of Carson

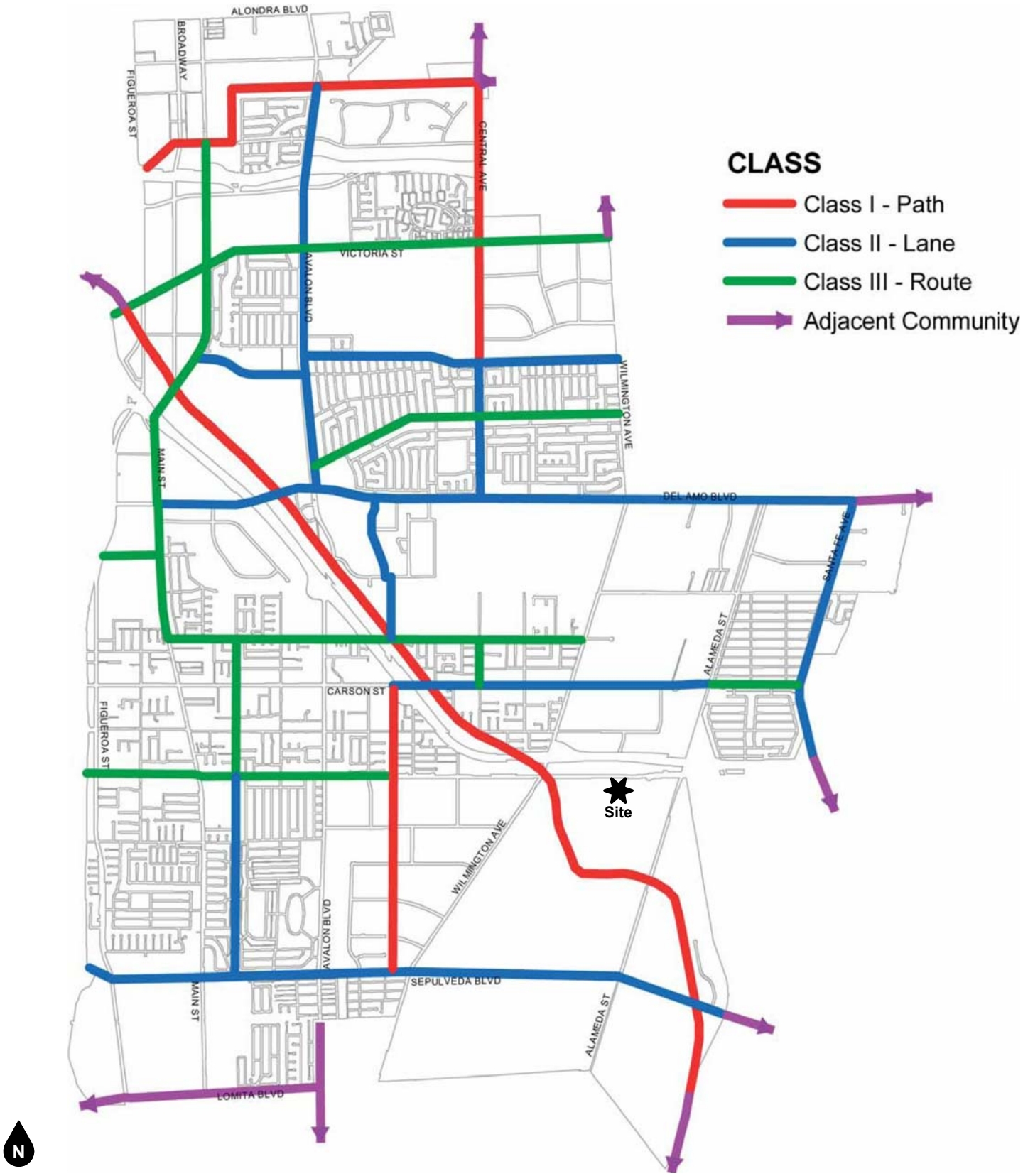
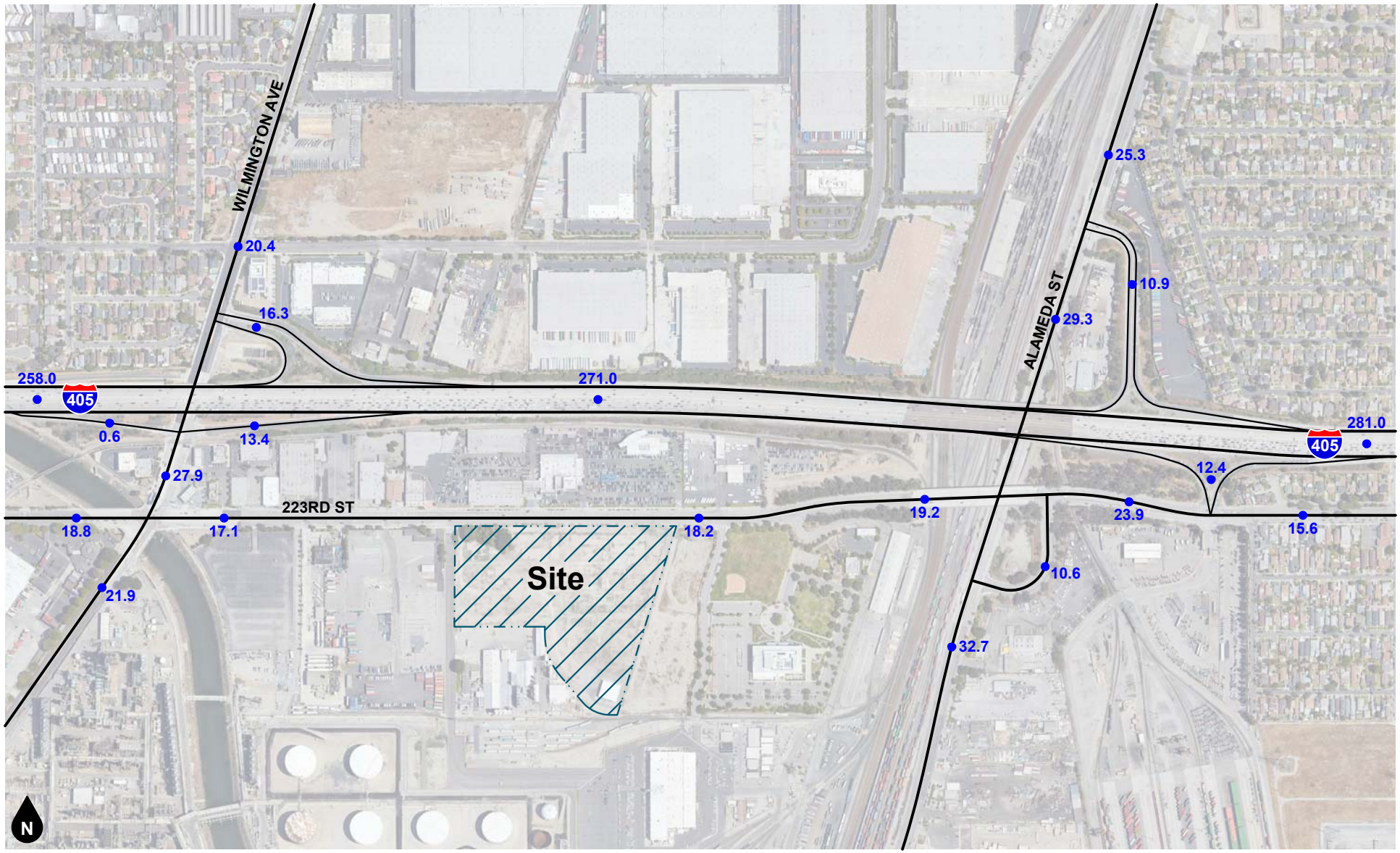


Figure 9
City of Carson General Plan Bike Routes

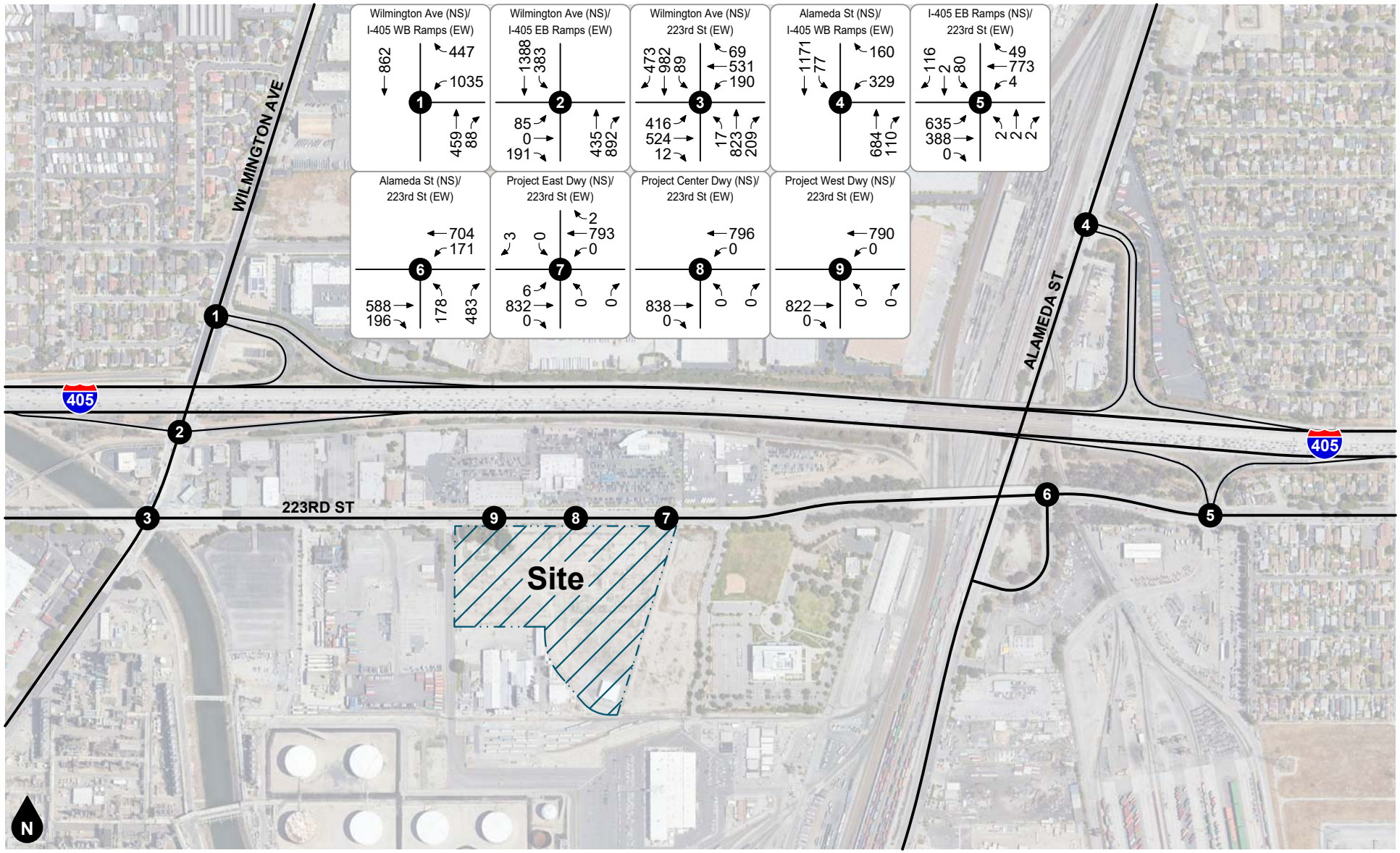
Source: City of Carson



Legend

●## Vehicles Per Day (1,000's)

Figure 10
Existing Average Daily Traffic Volumes



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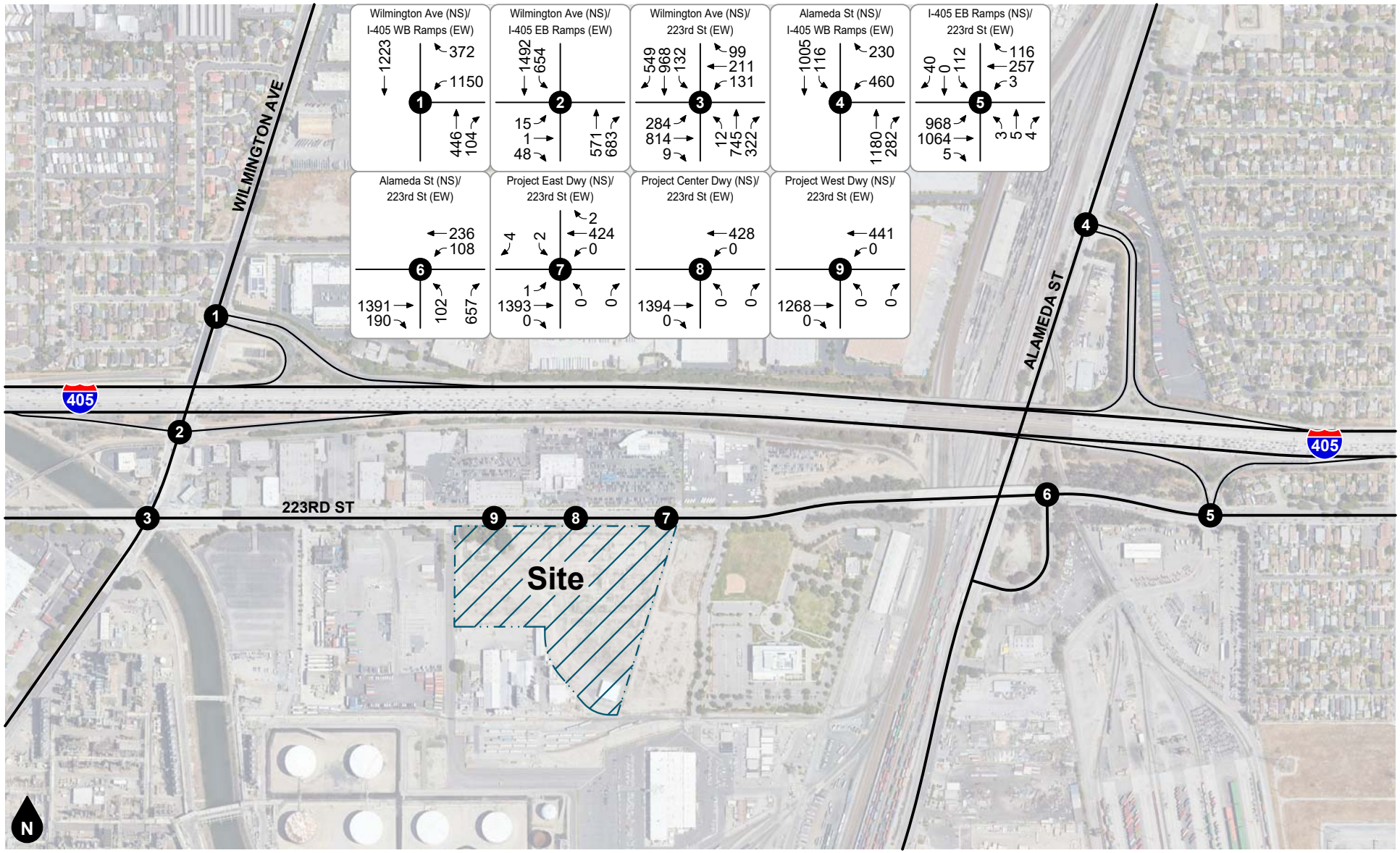
(#) Study Intersection

Figure 11
Existing AM Peak Hour Intersection Turning Movement Volumes



Legend

(#) Study Intersection

Figure 12
Existing PM Peak Hour Intersection Turning Movement Volumes

4. PROJECT TRIP 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.

TRIP GENERATION

Table 2 and Table 3 show the project trip generation for each land use option based upon trip generation rates obtained from the Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Edition, 2017) Land Use Codes 130 and 150. The total number of vehicle trips forecast to be generated by the proposed project is determined by multiplying the trip generation rates by the land use quantities.

Table 2 and Table 3 also show the project-generated vehicle trips separated into passenger cars and trucks (by number of axles) and converted to Passenger Car Equivalent (PCE) trips. The total percentage of truck trips for warehousing land use was obtained from the City of Fontana Truck Trip Generation Study (August 2003) for the heavy warehouse land use. The total percentage of truck trips for manufacturing land use was obtained from the City of Fontana Truck Trip Generation Study for the light industrial land use. The total number of truck trips are converted into PCE trips based on PCE factors recommended by the County of San Bernardino Congestion Management Program (1.5 PCEs for 2-axle trucks, 2.0 PCEs for 3-axle trucks, and 3.0 PCEs for trucks with 4 or more axles).

Option A (Warehouse and Manufacturing)

As shown in Table 2, Option A is forecast to generate a total of approximately 788 daily vehicle trips, including 108 vehicles trips during the AM peak hour and 117 vehicle trips during the PM peak hour. As also shown in Table 2, Option A is forecast to generate a total of approximately 1,018 daily PCE trips, including 165 PCE trips during the AM peak hour and 160 PCE trips during the PM peak hour.

Option B (Warehouse Only)

As shown in Table 3, Option B is forecast to generate approximately 509 daily vehicle trips, including 50 vehicles trips during the AM peak hour and 56 vehicle trips during the PM peak hour. As also shown in Table 3, Option B is forecast to generate approximately 669 daily PCE trips, including 78 PCE trips during the AM peak hour and 85 PCE trips during the PM peak hour.

Trip Generation Comparison

Table 4 shows the trip generation for both options in vehicles and PCE. Of the two options, a mix of warehouse and manufacturing uses (Option A) is forecast to generate more trips and therefore is the land use scenario considered throughout this analysis. Any potential impacts and mitigation identified under Option A (Warehouse and Manufacturing) would also be mitigated for Option B (Warehouse Only) since this Option B is forecast to generate fewer trips.

TRIP DISTRIBUTION & ASSIGNMENT

Figure 13 and Figure 14 show the forecast directional distribution patterns for the project-generated car and truck trips. Passenger car trips are generally more localized with residential or commercial origin/destination points, whereas truck trips generally have a more regional distribution travelling to/from other industrial uses or ports/terminals via the freeway system. The project trip distribution patterns were determined in consultation with City staff based on review of existing traffic data, surrounding land uses, and the local and regional roadway facilities in the project vicinity.

Based on the identified project trip generation and distributions, project average daily traffic volumes have been calculated and shown on Figure 15. The project AM peak hour and PM peak hour intersection turning movement volumes for are shown on Figure 16 and Figure 17. All volumes are shown in PCE.

PROJECT CONSTRUCTION TRIPS

Compared to the project trip generation, construction activity is expected to be relatively minor and temporary. Temporary traffic controls are required by State law in accordance with the standards set forth in the California Manual of Uniform Traffic Control Devices (2014). Site development would require the use of haul trucks during site clearing and excavation and the use of a variety of other construction vehicles throughout the construction work at the site. Use of oversized vehicles will require the appropriate transportation permit.

A construction work site traffic control plan shall be submitted to the City for review and approval prior to the issuance of a grading permit or start of any construction work. The plan shall identify any roadway, sidewalk, bike route, or bus stop closures and detours as well as haul routes and hours of operation. All construction related trips shall be restricted to off-peak hours to the extent possible.

Table 2
Project Trip Generation for Option A (Warehouse and Manufacturing)

Land Use/Vehicle Type	Source[1]	Trip Generation Rates per TSF[2]						
		AM Peak Hour			PM Peak Hour			Daily
		% In	% Out	Total	% In	% Out	Total	
Warehouse	ITE 150	77%	23%	0.17	27%	73%	0.19	1.74
Percent Cars	[a]	--	--	62.86%	--	--	64.38%	79.57%
Percent Trucks	[a]	--	--	37.14%	--	--	35.62%	20.43%
Car Trips per TSF		0.082	0.025	0.107	0.033	0.089	0.122	1.385
Truck Trips per TSF		0.049	0.015	0.064	0.018	0.049	0.067	0.355
Manufacturing	ITE 130	77%	23%	0.62	31%	69%	0.67	3.93
Percent Cars	[b]	--	--	60.53%	--	--	76.83%	78.60%
Percent Trucks	[b]	--	--	39.47%	--	--	23.17%	21.40%
Car Trips per TSF		0.289	0.086	0.375	0.160	0.355	0.515	3.089
Truck Trips per TSF		0.188	0.056	0.244	0.048	0.107	0.155	0.841

Vehicle Trips Generated									
Land Use/Vehicle Type	Quantity (TSF)[3]	Land use in Buildings	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Warehouse	165.200	1, 2 & 3							
Cars			14	4	18	5	15	20	229
Trucks			8	3	11	3	8	11	59
Manufacturing	127.200	1, 2 & 3							
Cars			37	11	48	20	46	66	393
Trucks			24	7	31	6	14	20	107
TOTAL VEHICLE TRIPS GENERATED			**83**	**25**	**108**	**34**	**83**	**117**	**788**

Passenger Car Equivalent (PCE) Trips Generated									
Land Use/Vehicle Type	Quantity (TSF)	Truck Percent[4]	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Warehouse	165.200								
Cars			14	4	18	5	15	20	229
Trucks	PCE Factor[5]								
2-Axle Trucks	1.5	16.95%	2	1	3	1	2	3	15
3-Axle Trucks	2.0	22.71%	4	1	5	1	4	5	26
4+ Axle Trucks	3.0	60.34%	15	4	19	5	15	20	105
Subtotal Trucks	--		21	6	27	7	21	28	146
Manufacturing	127.200								
Cars			37	11	48	20	46	66	393
Trucks	PCE Factor[4]								
2-Axle Trucks	1.5	32.70%	12	3	15	3	7	10	53
3-Axle Trucks	2.0	17.90%	9	2	11	2	5	7	38
4+ Axle Trucks	3.0	49.40%	35	11	46	9	20	29	159
Subtotal Trucks	--		56	16	72	14	32	46	250
Subtotal Cars			51	15	66	25	61	86	622
Subtotal Trucks			77	22	99	21	53	74	396
TOTAL PCE TRIPS GENERATED			**128**	**37**	**165**	**46**	**114**	**160**	**1,018**

Notes:

(1) Source: Institute of Transportation Engineers, Trip Generation Manual, 10th Edition, 2017, Land Use Code ###.

[a] City of Fontana, Truck Trip Generation Study, August 2003. Heavy warehouse values used for car to truck and truck by axle percentages.

[b] City of Fontana, Truck Trip Generation Study, August 2003. Light industrial values used for car to truck and truck by axle percentages.

(2) TSF = Thousand Square Feet

(3) Source: Site Plan A1.1; dated November 19, 2019

(4) Truck by axle percentages obtained from City of Fontana, Truck Trip Generation Study, August 2003.

(5) Passenger Car Equivalent (PCE) factors have been obtained from the County of San Bernardino Congestion Management Program. PCE factor of 1.0 is used for passenger cars (such as employee vehicles); light duty trucks use a PCE factor of 1.5; medium duty trucks with 3 axles use a PCE factor of 2.0; and heavy duty trucks with 4 or more axles use a PCE factor of 3.0.

Table 3
Project Trip Generation for Option B (Warehouse Only)

Land Use/Vehicle Type	Source[1]	Trip Generation Rates per TSF[2]						
		AM Peak Hour			PM Peak Hour			Daily
		% In	% Out	Total	% In	% Out	Total	
Warehouse	ITE 150	77%	23%	0.17	27%	73%	0.19	1.74
Percent Cars	[a]	--	--	62.86%	--	--	64.38%	79.57%
Percent Trucks	[a]	--	--	37.14%	--	--	35.62%	20.43%
Car Trips per TSF		0.082	0.025	0.107	0.033	0.089	0.122	1.385
Truck Trips per TSF		0.049	0.015	0.064	0.018	0.049	0.067	0.355

Vehicle Trips Generated									
Land Use/Vehicle Type	Quantity (TSF)[3]	Land use in Building	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Warehouse	292.400	1, 2 & 3							
Cars			24	7	31	10	26	36	405
Trucks			14	5	19	5	15	20	104
TOTAL VEHICLE TRIPS GENERATED			**38**	**12**	**50**	**15**	**41**	**56**	**509**

Passenger Car Equivalent (PCE) Trips Generated									
Land Use/Vehicle Type	Quantity (TSF)	Truck Percent[4]	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Warehouse	292.400								
Cars			24	7	31	10	26	36	405
Trucks	PCE Factor[5]								
2-Axle Trucks	1.5	16.95%	4	1	5	1	4	5	27
3-Axle Trucks	2.0	22.71%	7	1	8	2	7	9	48
4+ Axle Trucks	3.0	60.34%	26	8	34	10	25	35	189
Subtotal Trucks	--		37	10	47	13	36	49	264
Subtotal Cars			24	7	31	10	26	36	405
Subtotal Trucks			37	10	47	13	36	49	264
TOTAL PCE TRIPS GENERATED			**61**	**17**	**78**	**23**	**62**	**85**	**669**

Notes:

(1) Source: Institute of Transportation Engineers, Trip Generation Manual, 10th Edition, 2017, Land Use Code ###.

[a] City of Fontana, Truck Trip Generation Study, August 2003. Heavy warehouse values used for car to truck and truck by axle percentages.

(2) TSF = Thousand Square Feet

(3) Source: Site Plan A1.1; dated November 19, 2019, and Project Description for Option 2 warehouse only.

(4) Truck by axle percentages obtained from City of Fontana, Truck Trip Generation Study, August 2003.

(5) Passenger Car Equivalent (PCE) factors have been obtained from the County of San Bernardino Congestion Management Program. PCE factor of 1.0 is used for passenger cars (such as employee vehicles); light duty trucks use a PCE factor of 1.5; medium duty trucks with 3 axles use a PCE factor of 2.0; and heavy duty trucks with 4 or more axles use a PCE factor of 3.0.

Table 4
Trip Generation Comparison

Alternative	Land Use/Vehicle Type	Quantity (TSF)[2]	Vehicle Percent[3 4]	Trip Generation[1] 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
Option A	Warehouse [a]	165.200		22	7	29	8	23	31	288
	Manufacturing [b]	127.200		61	18	79	26	60	86	500
	Subtotal Cars		61.1%	51	15	66	25	61	86	622
	Subtotal Truck PCE (Single-unit 2 or 3 axle)		13.0%	27	7	34	7	18	25	132
	Subtotal Truck PCE (Semi-trailer 4 or more axle)		25.9%	50	15	65	14	35	49	264
	TOTAL PCE TRIPS GENERATED	**292.400**		**128**	**37**	**165**	**46**	**114**	**160**	**1,018**
Option B	Warehouse	292.400		38	12	50	15	41	56	509
	Subtotal Cars		60.5%	24	7	31	10	26	36	405
	Subtotal Truck PCE (Single-unit 2 or 3 axle)		11.2%	11	2	13	3	11	14	75
	Subtotal Truck PCE (Semi-trailer 4 or more axle)		28.3%	26	8	34	10	25	35	189
	TOTAL PCE TRIPS GENERATED	**292.400**		**61**	**17**	**78**	**23**	**62**	**85**	**669**

Notes:

(1) Source: Institute of Transportation Engineers, Trip Generation Manual, 10th Edition, 2017, Land Use Code ###.

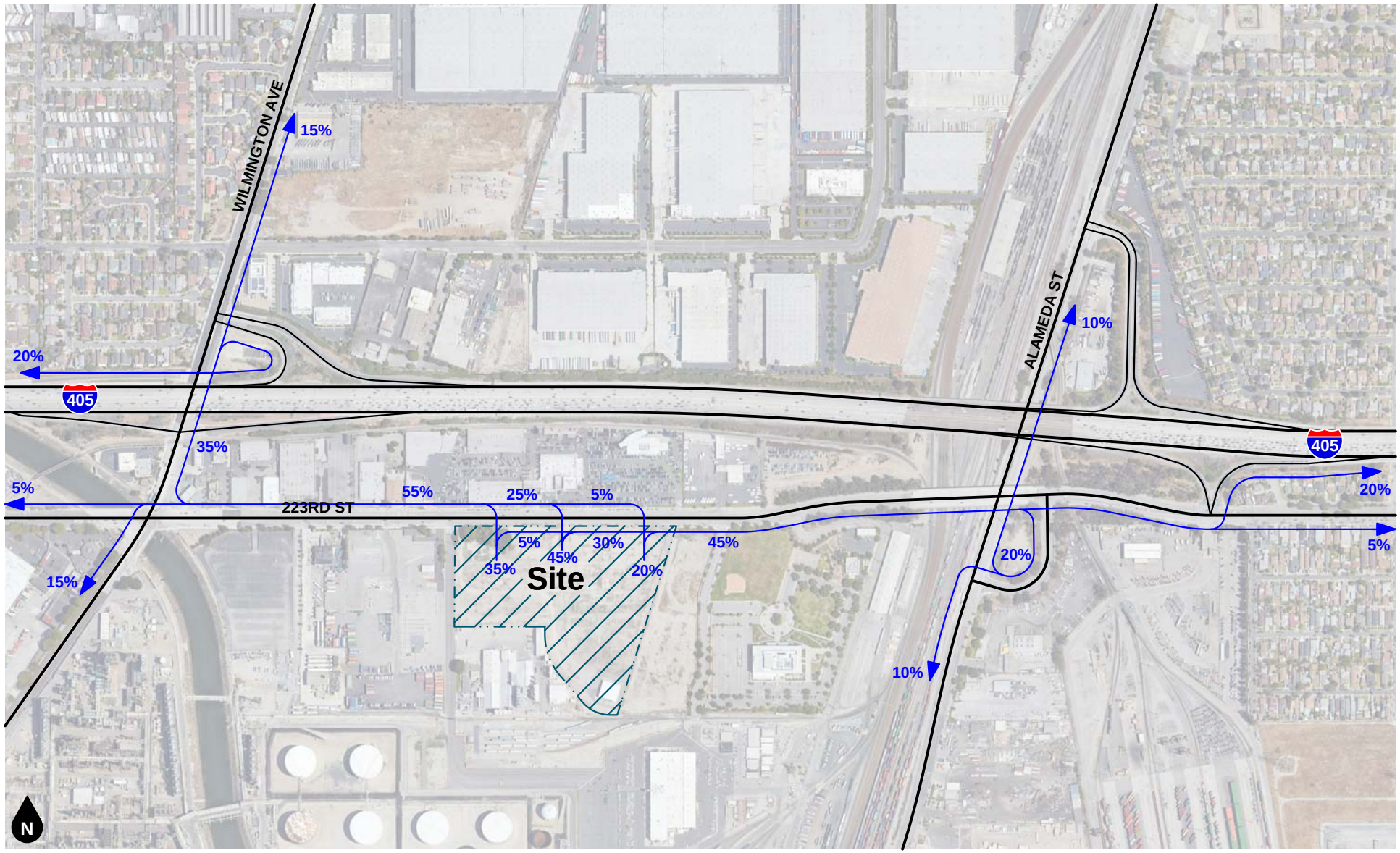
(2) TSF = Thousand Square Feet

(3) Industrial trips are in passenger car equivalent (PCE) trips to provide a more conservative analysis of trips.

(4) Total Vehicle composition percentage. See Tables 1 and 2 for computational breakdown of cars to trucks and trucks by axle.

[a] City of Fontana, Truck Trip Generation Study, August 2003. Heavy warehouse values used for car to truck and truck by axle percentages.

[b] City of Fontana, Truck Trip Generation Study, August 2003. Light industrial values used for car to truck and truck by axle percentages.



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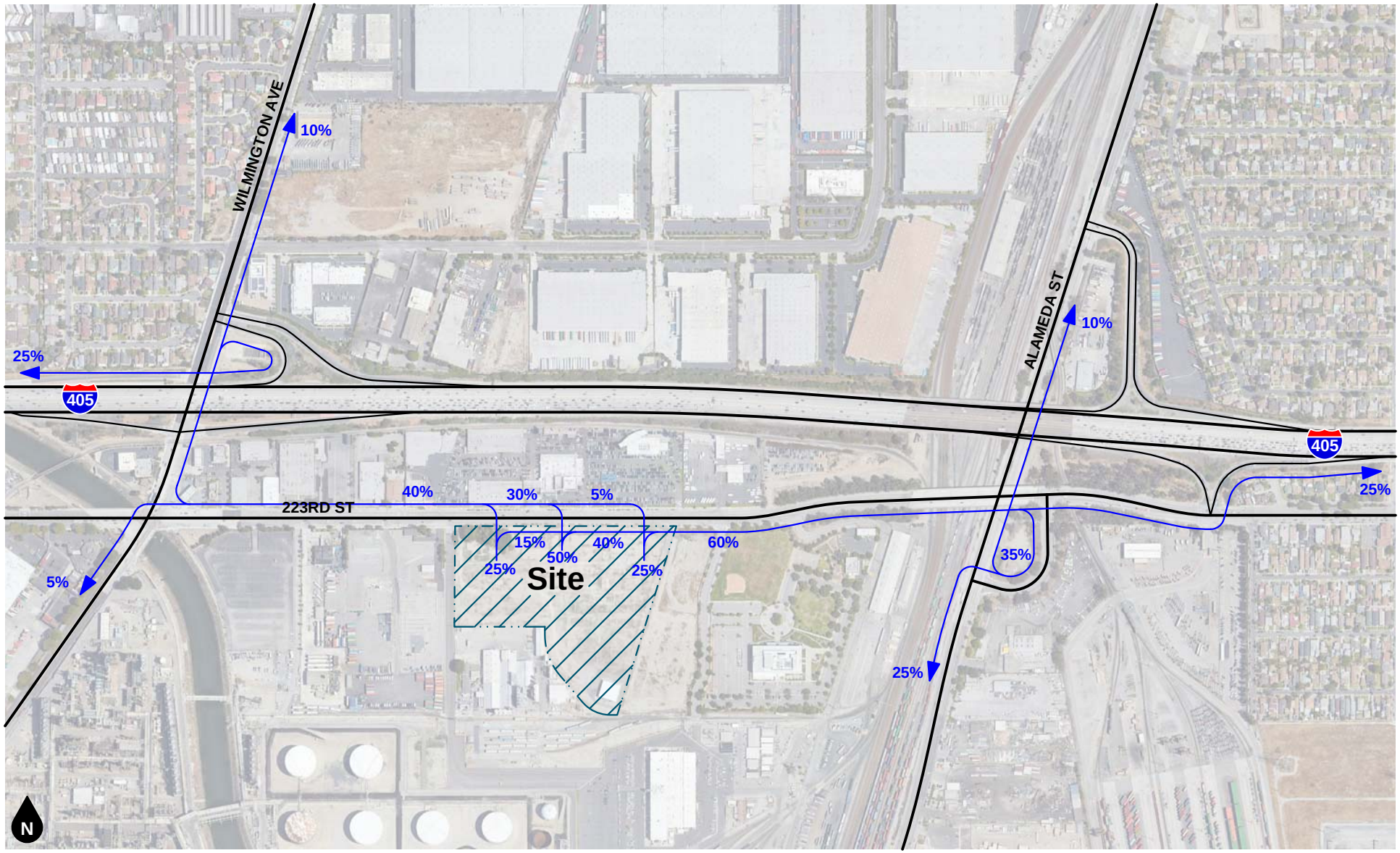
10% Percent To/From Project

Figure 13
Project Trip Distribution (Cars)



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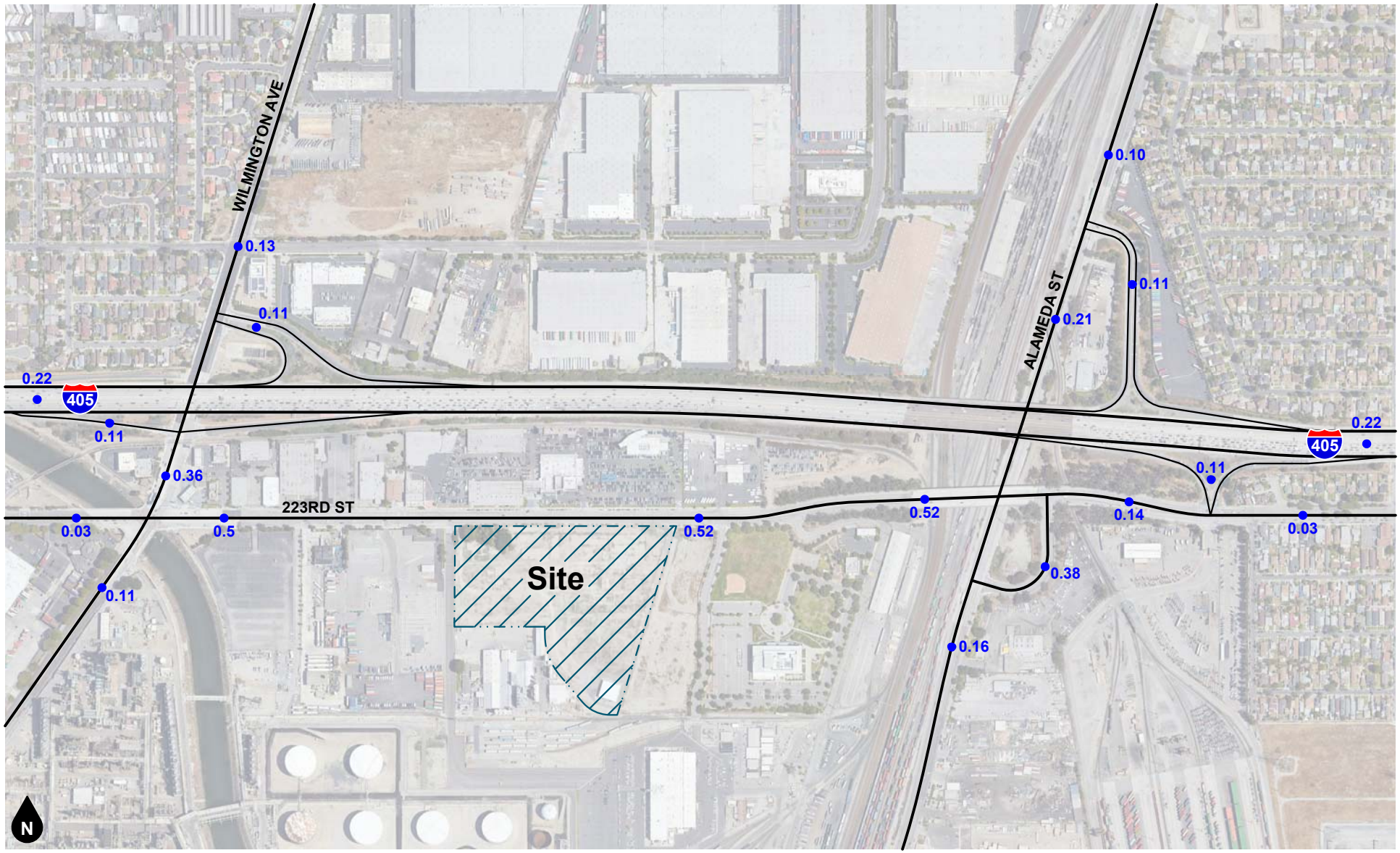
10% Percent To/From Project

Figure 14
Project Trip Distribution (Trucks)



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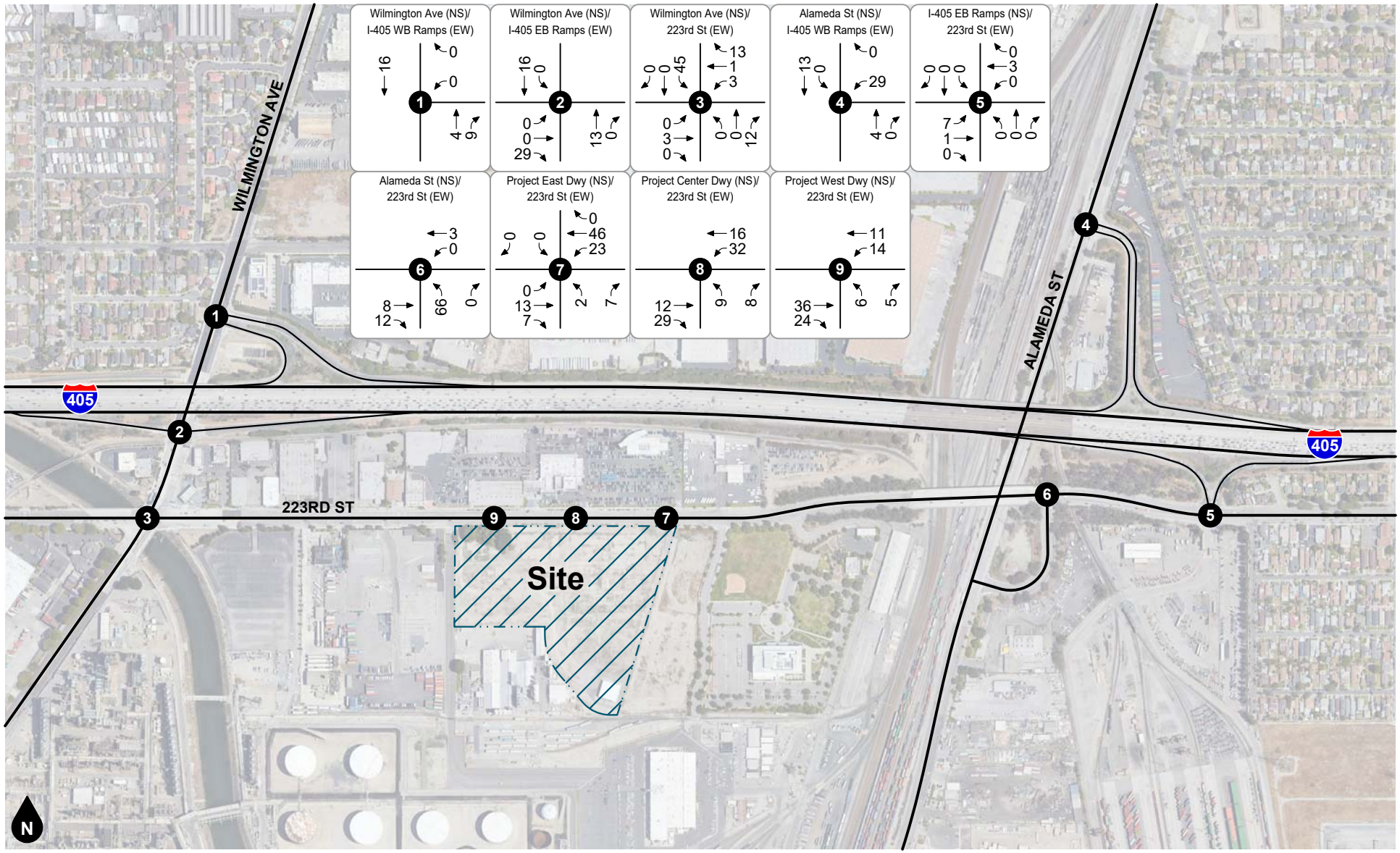
●## Vehicles Per Day (1,000's)

Figure 15
Project Average Daily Traffic Volumes



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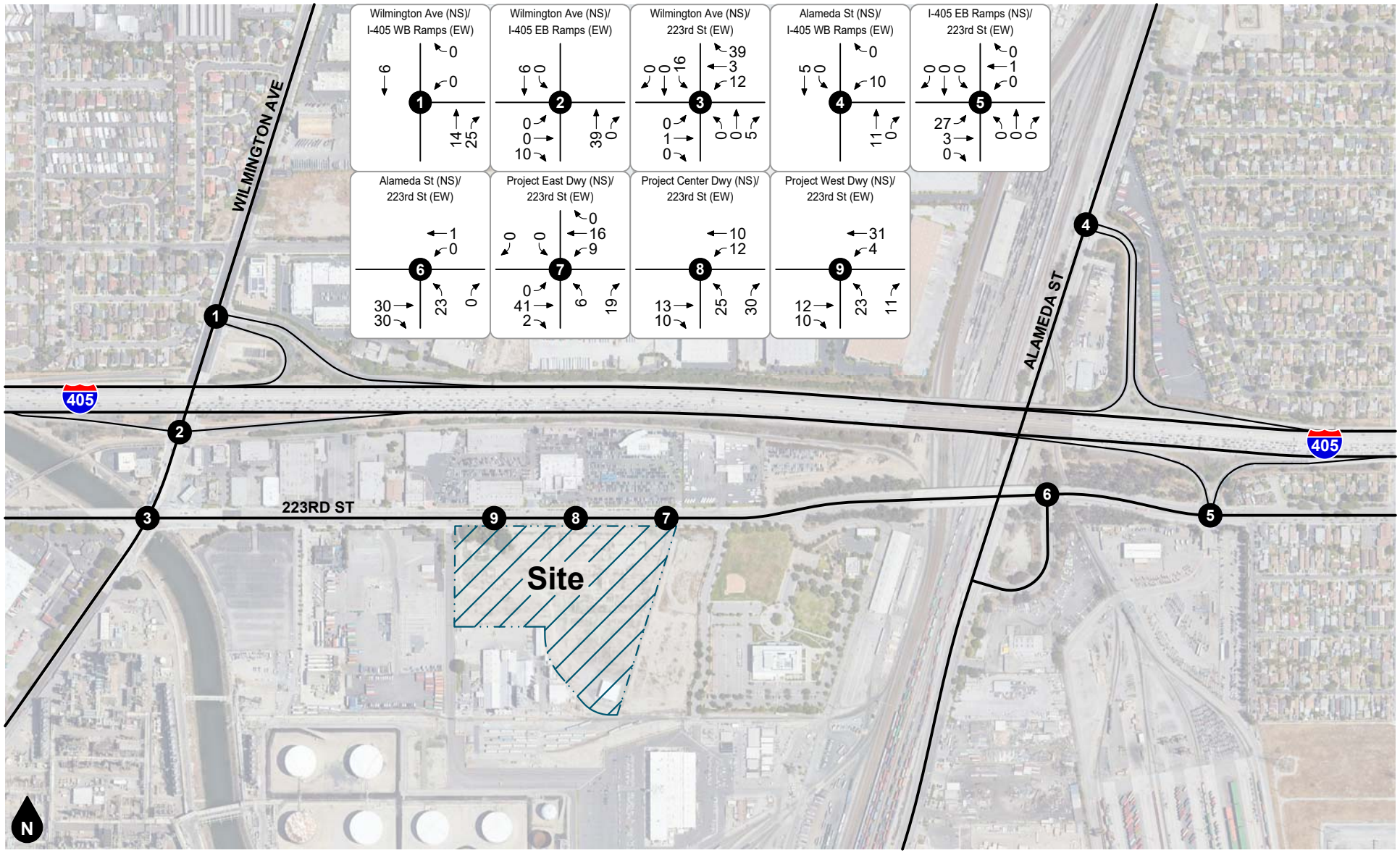
(#) Study Intersection

Figure 16
Project AM Peak Hour Intersection Turning Movement Volumes



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(#) Study Intersection

Figure 17
Project PM Peak Hour Intersection Turning Movement Volumes

5. FUTURE VOLUME FORECASTS

This section describes and illustrates the future volume forecasts for each analysis scenario. All roadway and intersection volume figures are in shown in PCE.

METHOD OF PROJECTION

To assess future conditions, existing roadway volumes is combined with project trips, ambient growth, and other development trips. The project completion year for analysis purposes in this report is 2021.

Ambient Growth

To account for ambient growth on roadways, existing traffic volumes were increased by one-half percent (0.5%) per year over a one (1) year period. The ambient growth factor was derived from the modeled traffic growth factors contained in the Los Angeles County 2010 Congestion Management Program (Exhibit D-1) for the Regional Statistical Area (RSA) for the City. This is a conservative assumption since the ambient growth was applied to all movements at the study intersections.

Other Developments

Other pending or approved developments within a 1.5-mile radius were identified and included in the trip generation summary shown in Table 5. The regional ambient growth is assumed to account for any additional trips generated by other developments outside the 1.5-mile radius not specifically identified in Table 5. Figure 18 shows the other development location map.

Other developments average daily traffic volumes are shown on Figure 19. Figure 20, and Figure 21 show the forecast AM peak hour and PM peak hour intersection turning movement volumes for trips generated by other developments.

FUTURE TRAFFIC VOLUMES

Existing Plus Project

The Existing Plus Project volume forecast was developed by adding project-generated trips to existing roadway and intersection volumes. Existing Plus Project average daily traffic volumes are shown on Figure 22. Existing Plus Project AM peak hour and PM peak hour intersection turning movement volumes are shown on Figure 23, and Figure 24.

Opening Year (2021) Without Project

The Opening Year (2021) Without Project volume forecast was developed by applying the ambient growth factor to existing roadway and intersection volumes and adding trips generated by other developments. Opening Year (2021) Without Project average daily traffic volumes are shown on Figure 25. Opening Year (2021) Without Project AM peak hour and PM peak hour intersection turning movement volumes are shown on Figure 26 and Figure 27.

Opening Year (2021) With Project

The Opening Year (2021) With Project volume forecast was developed by adding project-generated trips to Opening Year (2021) Without Project roadway and intersection volumes. Opening Year (2021) With Project average daily traffic volumes are shown on Figure 28. Opening Year (2021) With Project AM peak hour and PM peak hour intersection turning movement volumes are shown on Figure 29 and Figure 30.

Table 5 (1 of 2)
Other Developmet Trip Generation

ID	Other Development Name/Address	Land Use	Quantity	Units[2]	Source[1]	Trips Generated						
						AM Peak Hour			PM Peak Hour			Daily
						In	Out	Total	In	Out	Total	
City of Carson												
C1	Warehouse Project (No. 14-014) / 2254 E 223rd Street	Warehousing	120.650	TSF								
		- Passenger Cars	-	-	[a]	25	7	31	8	25	34	374
		- Trucks (PCE)	-	-	[a]	11	3	14	4	11	15	168
		Subtotal	-	-	[a]	36	10	46	12	36	49	541
C2	AL2 420k Warehouse / 21900 S Wilminton Avenue	High Cube Warehouse	420.000	TSF								
		- Passenger Cars	-	-	[b]	23	10	33	10	23	33	437
		- Trucks (PCE)	-	-	[b]	22	9	31	13	29	42	670
		Subtotal	-	-	[b]	45	19	64	23	52	75	1,107
C3	Vera Lane / 21801 Vera Street[3]	Multi-Family Residential	5	DU	ITE 220	1	1	2	2	1	3	37
C4	Carson Truck Operations Project 223rd Street to 236th Street	Truck Trailer Parking	565	Stalls								
		- Trucks (PCE)	-	-	[c]	50	50	100	50	50	100	1,750
C5	Highline Truck Yard Project / 20915 Lamberton Ave	Truck Yard Facility	2.8	AC								
		- Passenger Cars	-	-	[d]	6	2	8	3	6	9	119
		- Trucks (PCE)	-	-	[d]	5	19	24	11	12	23	367
		Subtotal	-	-	[d]	11	21	32	14	18	32	486
C6	Shippers Transport Express Container Storage / 2149 East Sepulveda Blvd	Container Storage	20.0	AC								
		- Passenger Cars	-	-	[e]	5	5	10	15	5	20	150
		- Trucks (PCE)	-	-	[e]	30	40	70	60	50	110	900
		Existing Displaced Site	-60.0	AC								
		- Passenger Cars	-	-	[e]	-15	-10	-25	-42	-22	-64	-445
		- Trucks (PCE)	-	-	[e]	-76	-110	-186	-176	-162	-338	-2,620
		Subtotal	-	-	[e]	-56	-75	-131	-143	-129	-272	-2,015
C7	Inland Star Distribution Center / 2132 E Dominguez Street	- Passenger Cars	-	-	[f]	17	0	17	0	17	17	34
		- Trucks (PCE)	-	-	[f]	15	15	30	38	37	75	275
		Subtotal	-	-	[f]	32	15	47	38	54	92	309
C8	Tesoro Tank Farm[5] / 1150 E Sepulveta Blvd	Refinery	6,000	bbl/day								
		- Trucks (PCE)	-	-	[g]	0	1	1	1	0	1	10
C9	Bella Vita Residential / 402 E Sepulveda Blvd	Senior Attached Housing	65	DU	[h]	5	8	13	9	8	17	224
		Specialty Retail	3.000	TSF	[h]	4	5	9	10	11	21	133
		Subtotal			[h]	9	13	22	19	19	38	357
C10	Jefferson on Avalon[6] / Avalon Blvd & 213 th Street	Multi-Family Residential	1,048	DU	ITE 220	111	371	482	370	217	587	7,671
		Hotel	150	RM	ITE 310	42	29	71	46	44	90	1,254
		Food Pavillion	10.000	TSF	ITE 932	55	44	99	61	37	98	1,122
		Coffee/Donut Shop	2.500	TSF	ITE 937	113	109	222	54	54	108	2,051
		Internal Capture	-	-	*ITE Hbk*	*-45*	*-43*	*-88*	*-46*	*-29*	*-75*	*-163*
		Pass-by	-	-	*ITE Hbk*	-	-	-	*-26*	*-16*	*-42*	*-1,825*
		Subtotal	-	-		276	510	786	459	307	766	10,110

Table 5 (2 of 2)
Other Developmet Trip Generation

ID	Other Development Name/Address	Land Use	Quantity	Units[2]	Source[1]	Trips Generated						
						AM Peak Hour			PM Peak Hour			Daily
						In	Out	Total	In	Out	Total	
City of Los Angeles												
LA1	Southern California International Gateway	Rail Intermodal Facility	-	-	[i]	70	300	370	120	65	185	8,155
Total Other Development Trips						474	865	1,338	595	473	1,069	20,848

Notes:
(1) Sources:

ITE = Institute of Transportation Engineers Trip Generation Manual (10th Edition, 2017); ### = Land Use Code.
[a] = Warehouse Project (No. 14-014) Traffic Impact Analysis, (Arch Beach Consulting, June 6, 2014).
[b] = AL2 Carson Warehouse Traffic Impact Analysis, (Urban Crossroads, July 22, 2016).
[c] = Traffic Impact Study Carson Truck Operations Project for Linear Properties (Kimley-Horn, June, 2018).
[d] = Highline Truck Yard Trip Generation Analysis Technical Memorandum (Dudek, August, 2019).
[e] = Shippers Transport Express Container Storage Project Technical Memorandum (Iteris, Inc. October 3, 2019)
[f] = Inland Star Draft Transportation Impact Analysis (Fehr & Peers May 18, 2018).
[g] = Tesoro LA Refinery Environmental Impact Report (Environmental Audit, Inc. May 2017)
[h] = Sepulveda and Panama Mixed Use Project Traffic Impact Analysis (RBF Baker, March 25, 2015).
[i] = Southern California International Gateway; City of Los Angeles Related Projects CLAT Listing, February 18, 2020.
Hbk = ITE Trip Generation Handbook (3rd Edition, 2017).

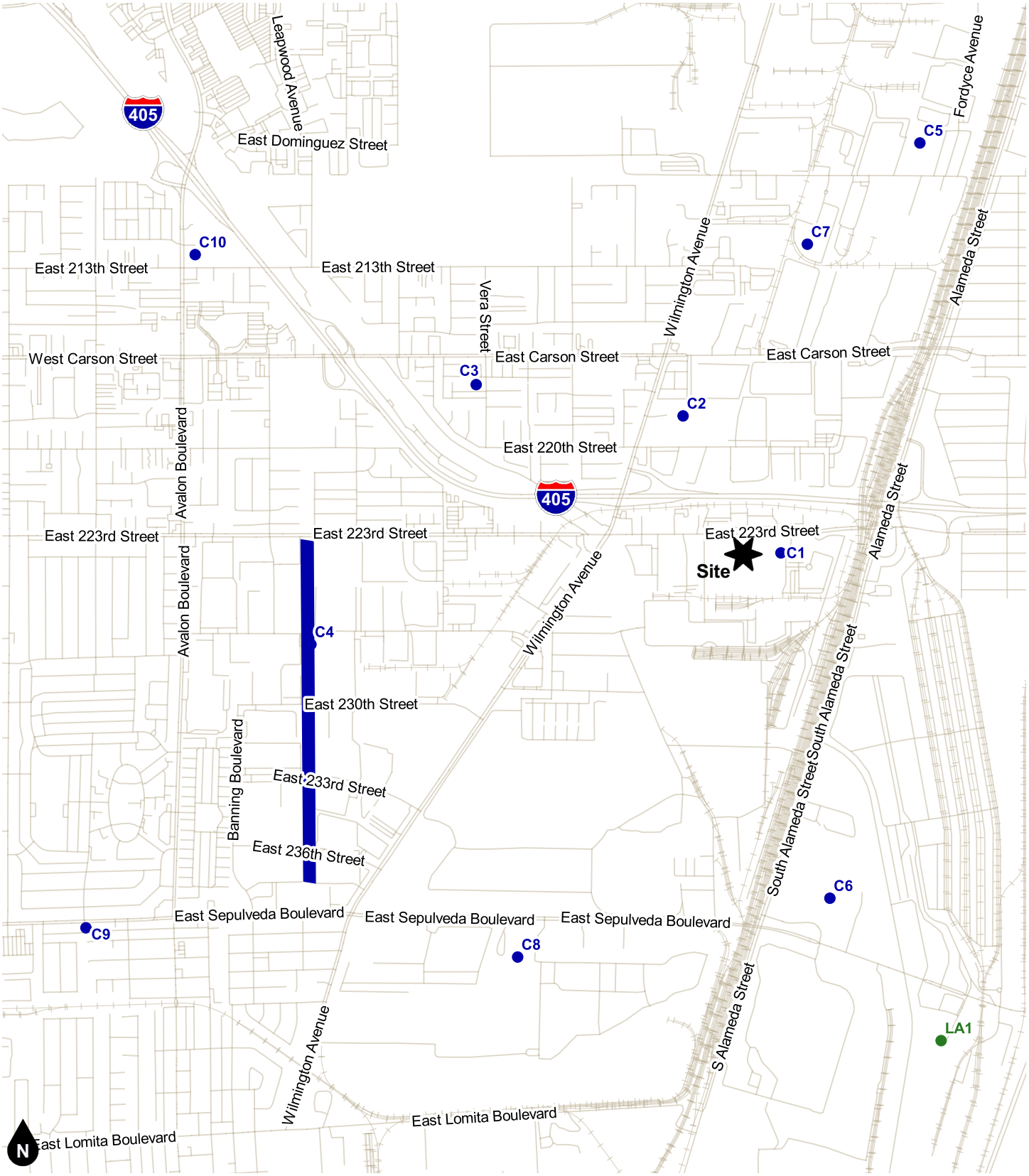
(2) DU = Dwelling Units; TSF = Thousand Square Feet; RM = Hotel Rooms; bbl = barrel

(3) Vera Lane, 18-unit condominium complex, construction complete. The number of dwelling units and trips are reduced to an estimated 75% occupancy.

(4) Shippers Transport Express Container Storage daily trips calculated from peak hour rates listed in the report.

(5) The Tesoro Refinery operations are forecast to increase by 10 daily trips. It is conservatively assumed that one inbound or outbound trip occurs during the peak hours.

(6) Land use and quantities based on Site Plan SD-1 Master Project Summary, dated 2019.07.23.



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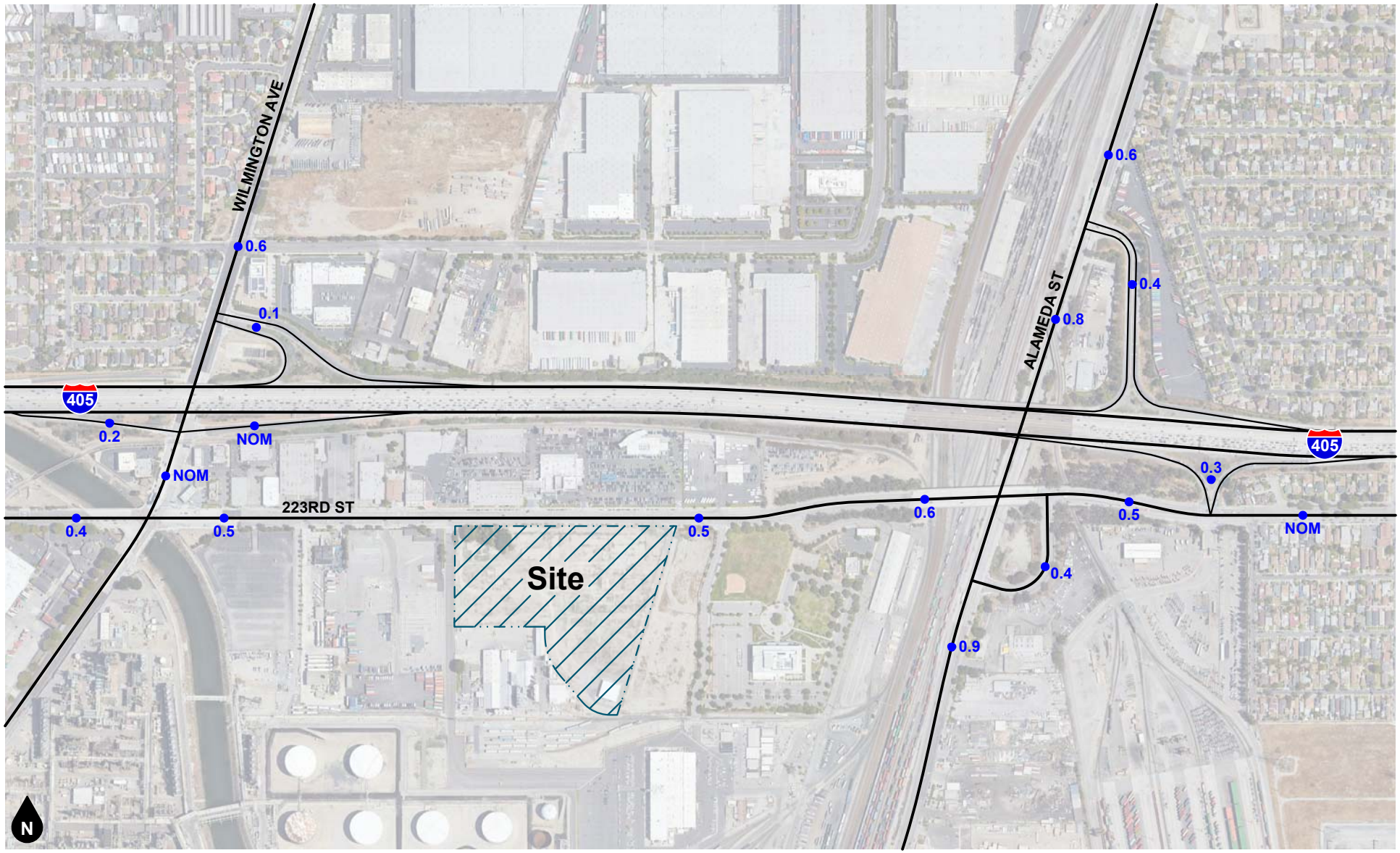
\# Other Development ID in:

- City of Carson (C)
- City of Los Angeles (LA)
- Carson Truck Operations Project for Linear Properties

Figure 18
Other Development Location Map



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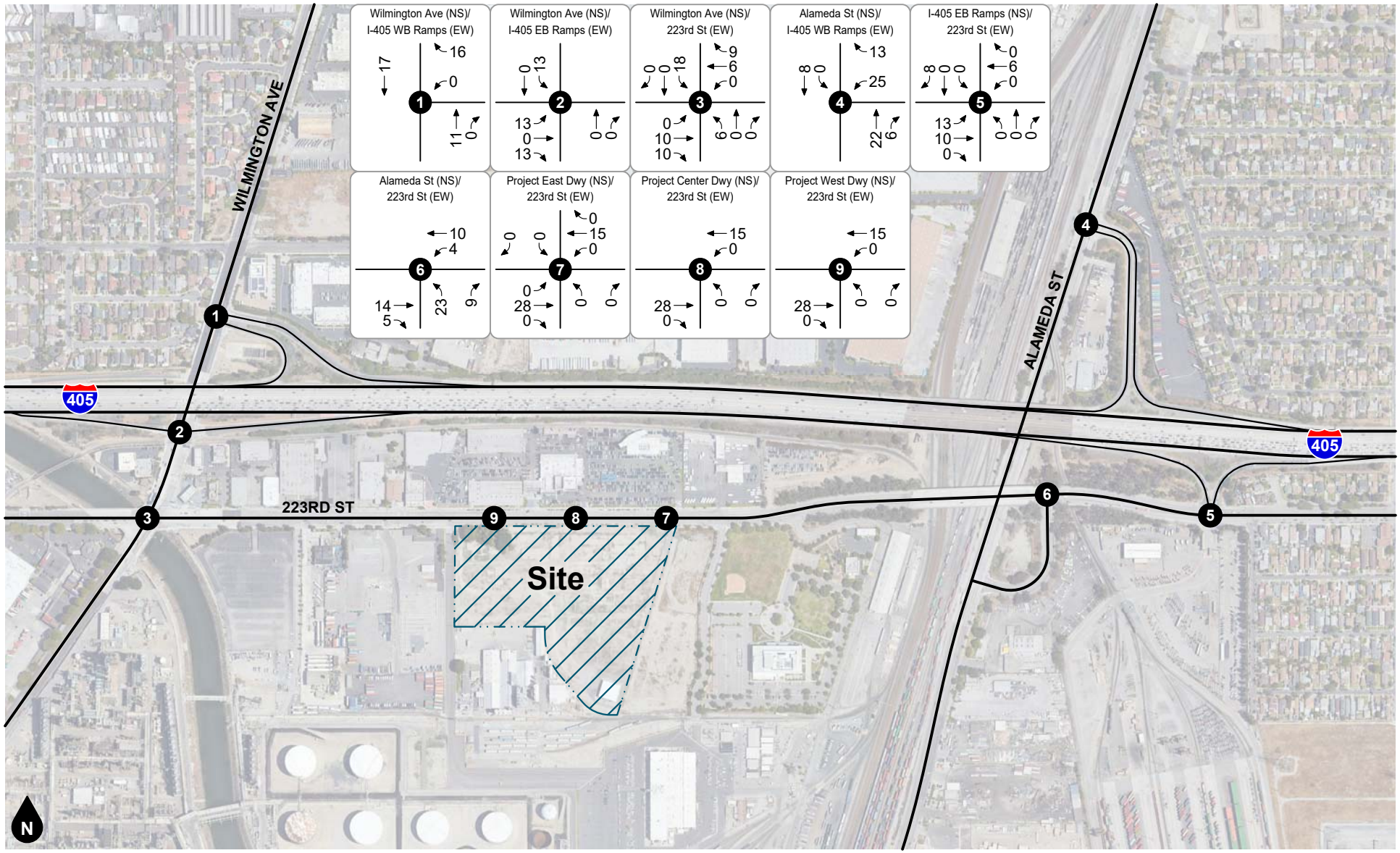
● ## Vehicles Per Day (1,000's)

NOM Nominal; Less Than 50 Vehicles Per Day

Figure 19

Other Development Average Daily Traffic Volumes



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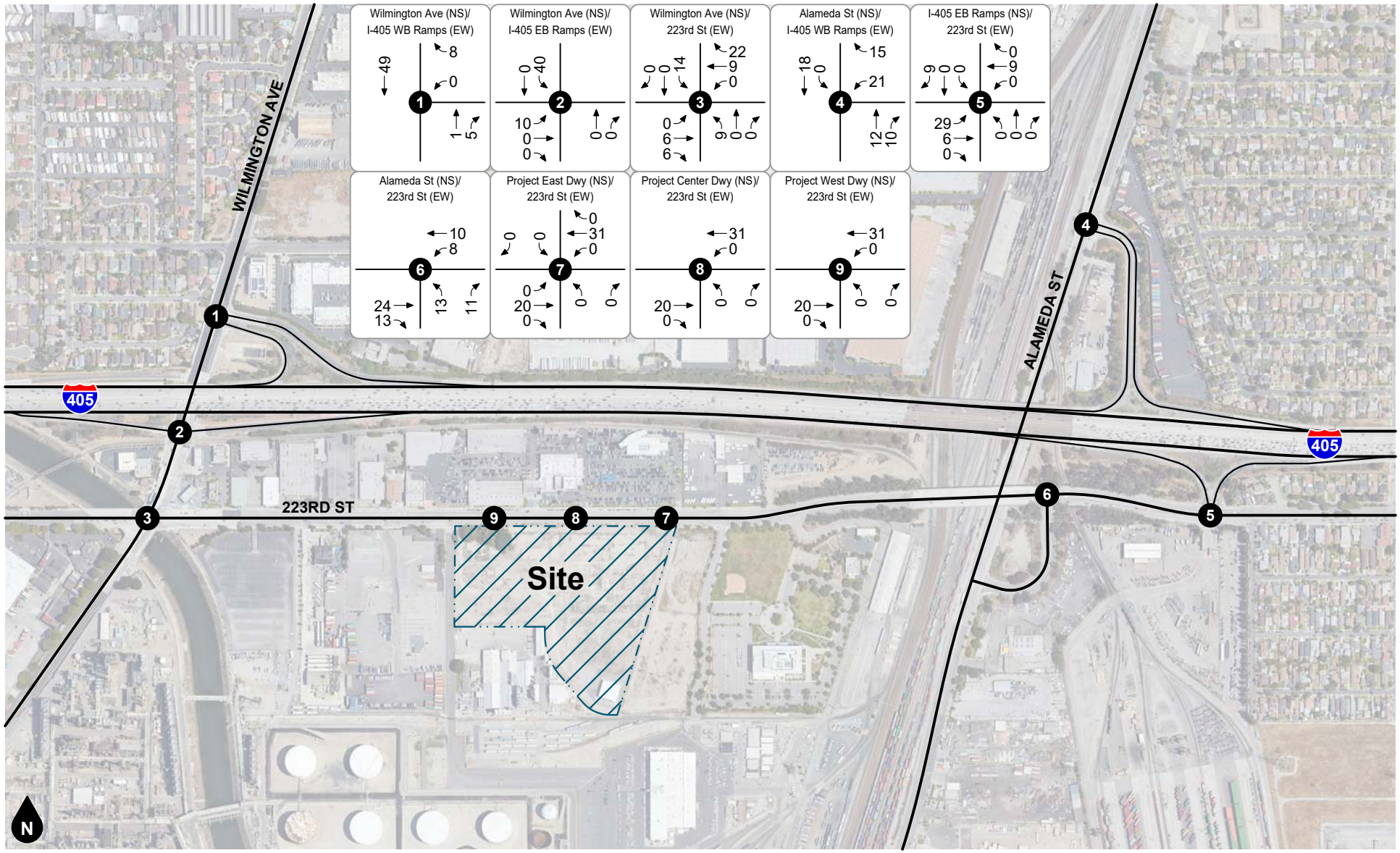
Study Intersection

Figure 20
Other Development
AM Peak Hour Intersection Turning Movement Volumes



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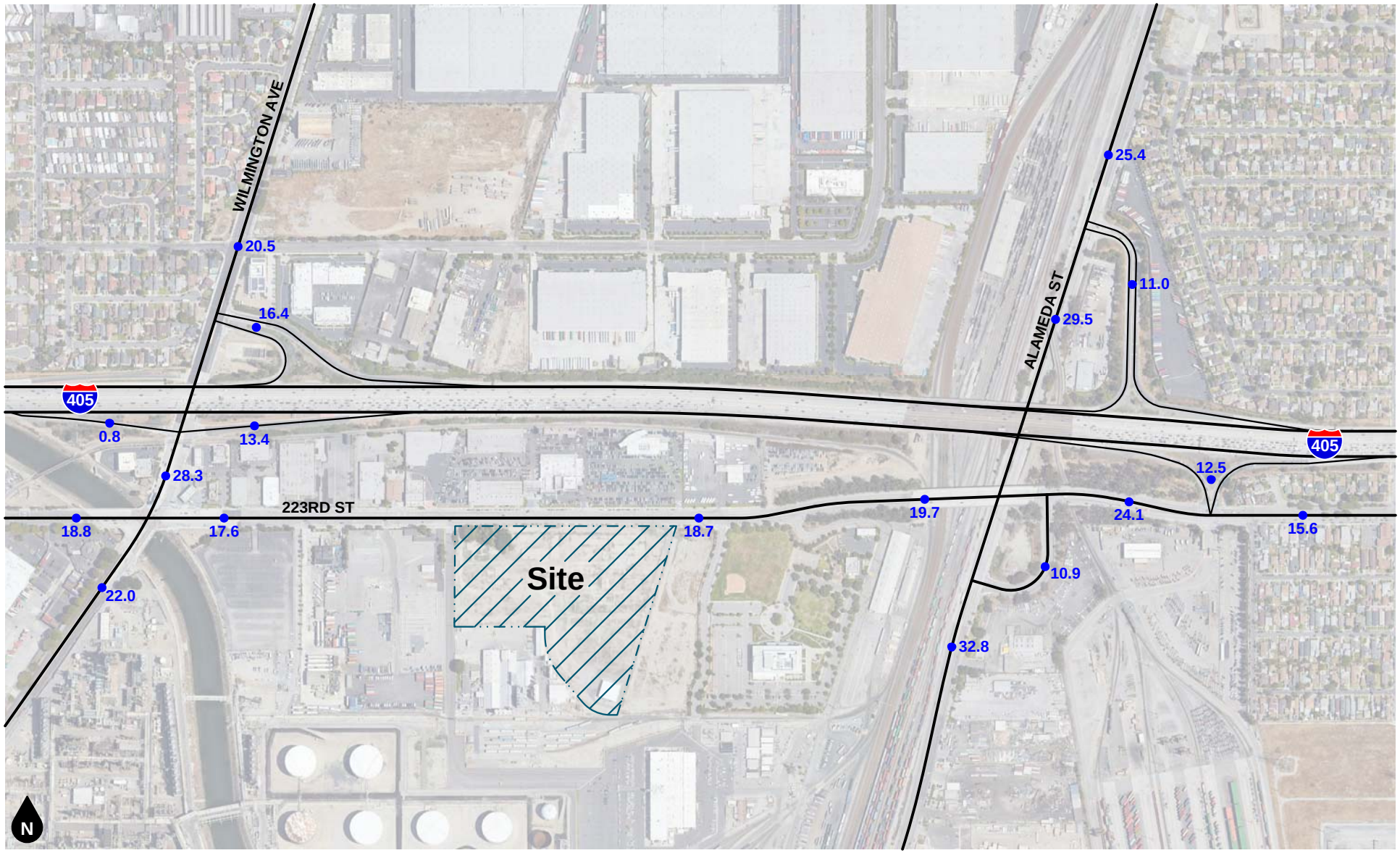
Study Intersection

Figure 21
Other Development
PM Peak Hour Intersection Turning Movement Volumes



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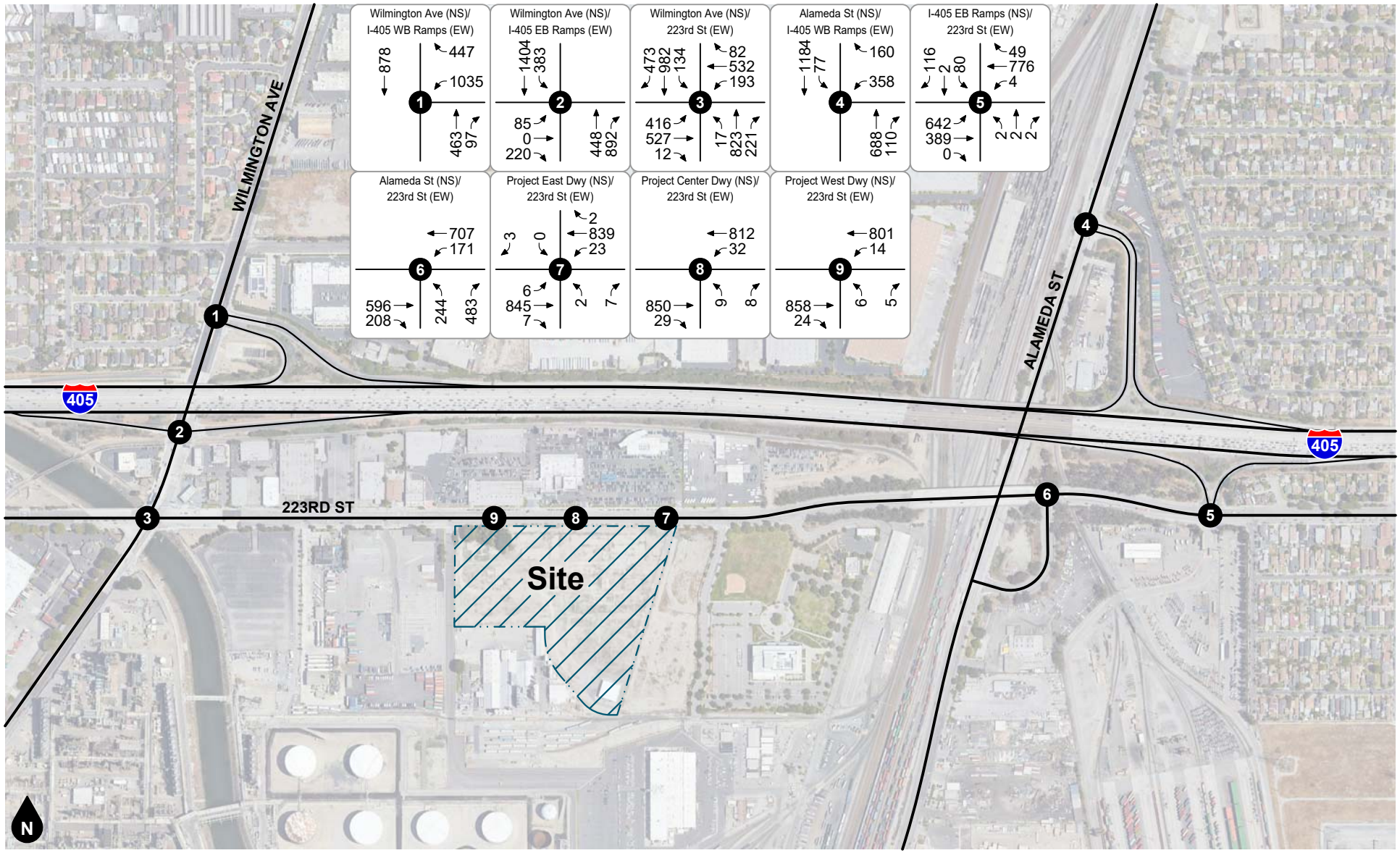
●## Vehicles Per Day (1,000's)

Figure 22
Existing Plus Project Average Daily Traffic Volumes



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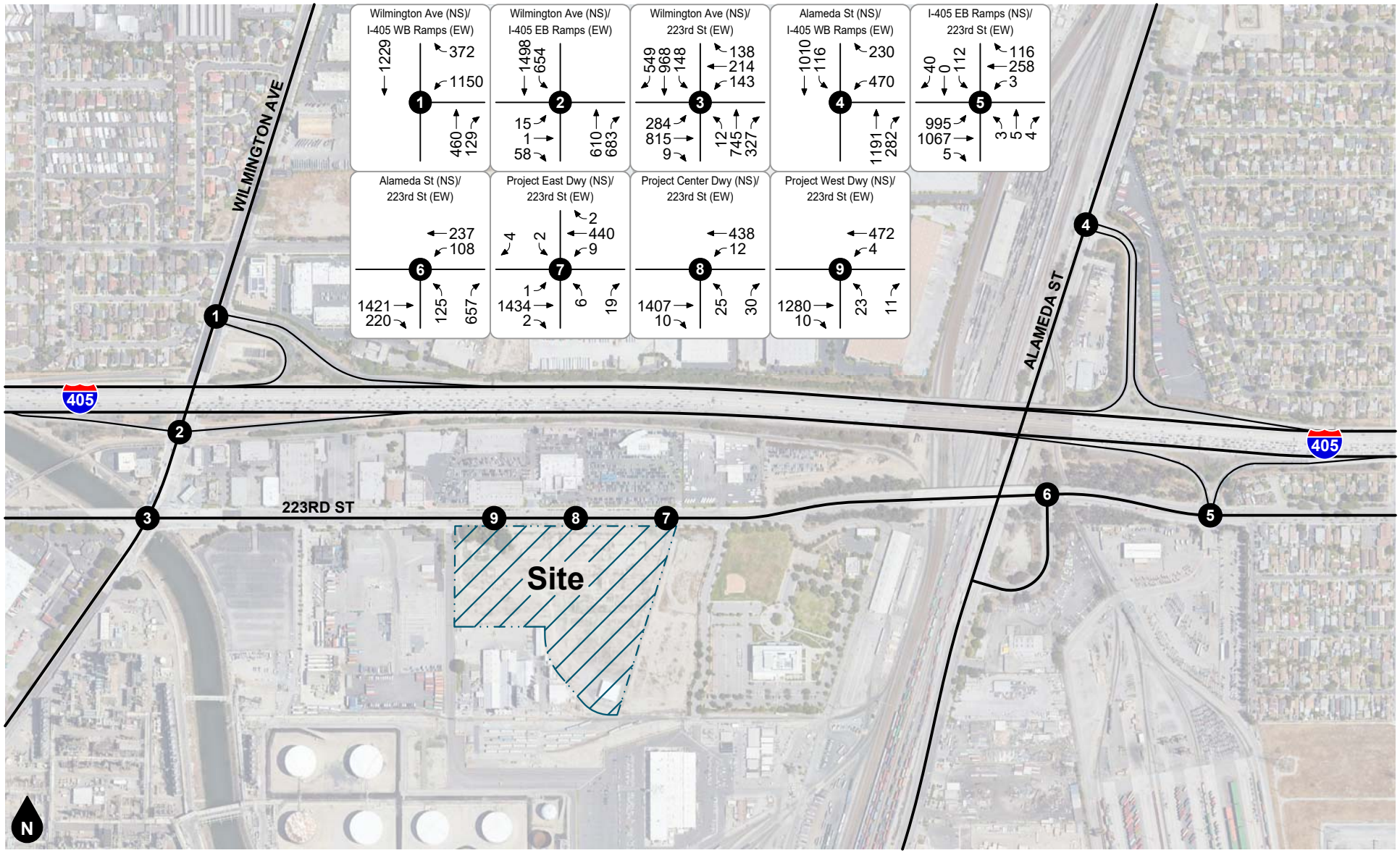
(#) Study Intersection

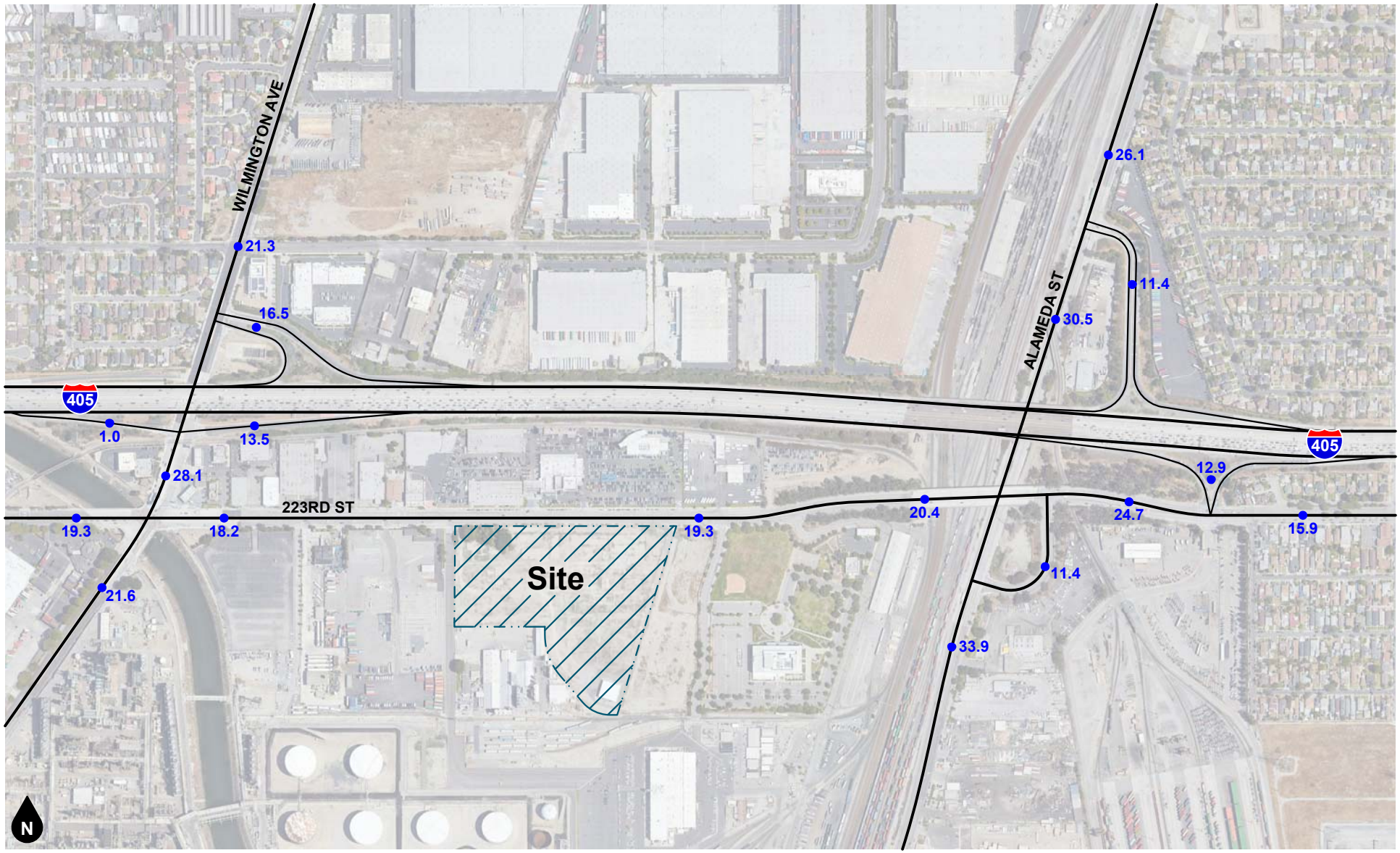
Figure 23
Existing Plus Project
AM Peak Hour Intersection Turning Movement Volumes



Legend

Study Intersection

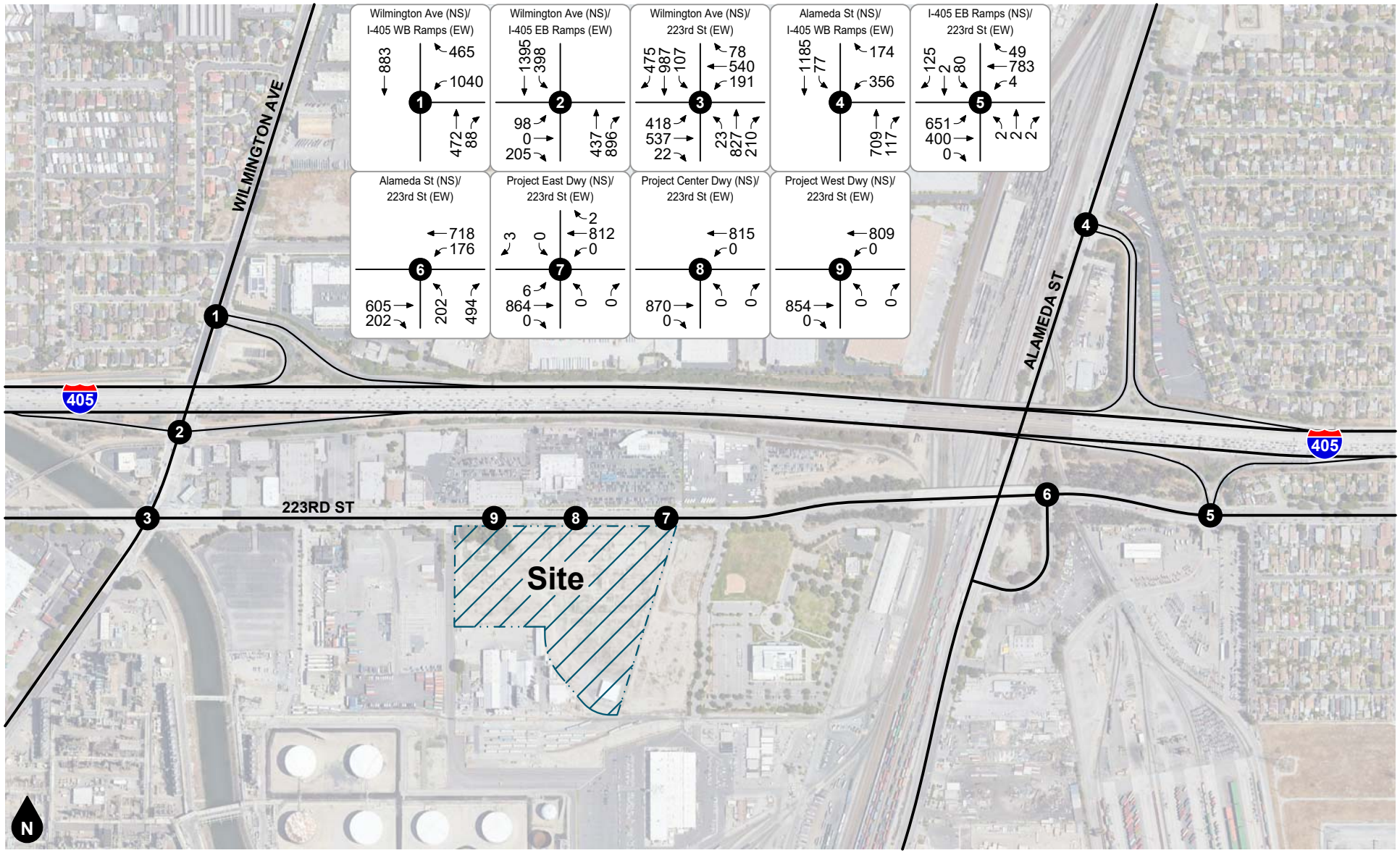
Figure 24
Existing Plus Project
PM Peak Hour Intersection Turning Movement Volumes



Legend

●## Vehicles Per Day (1,000's)

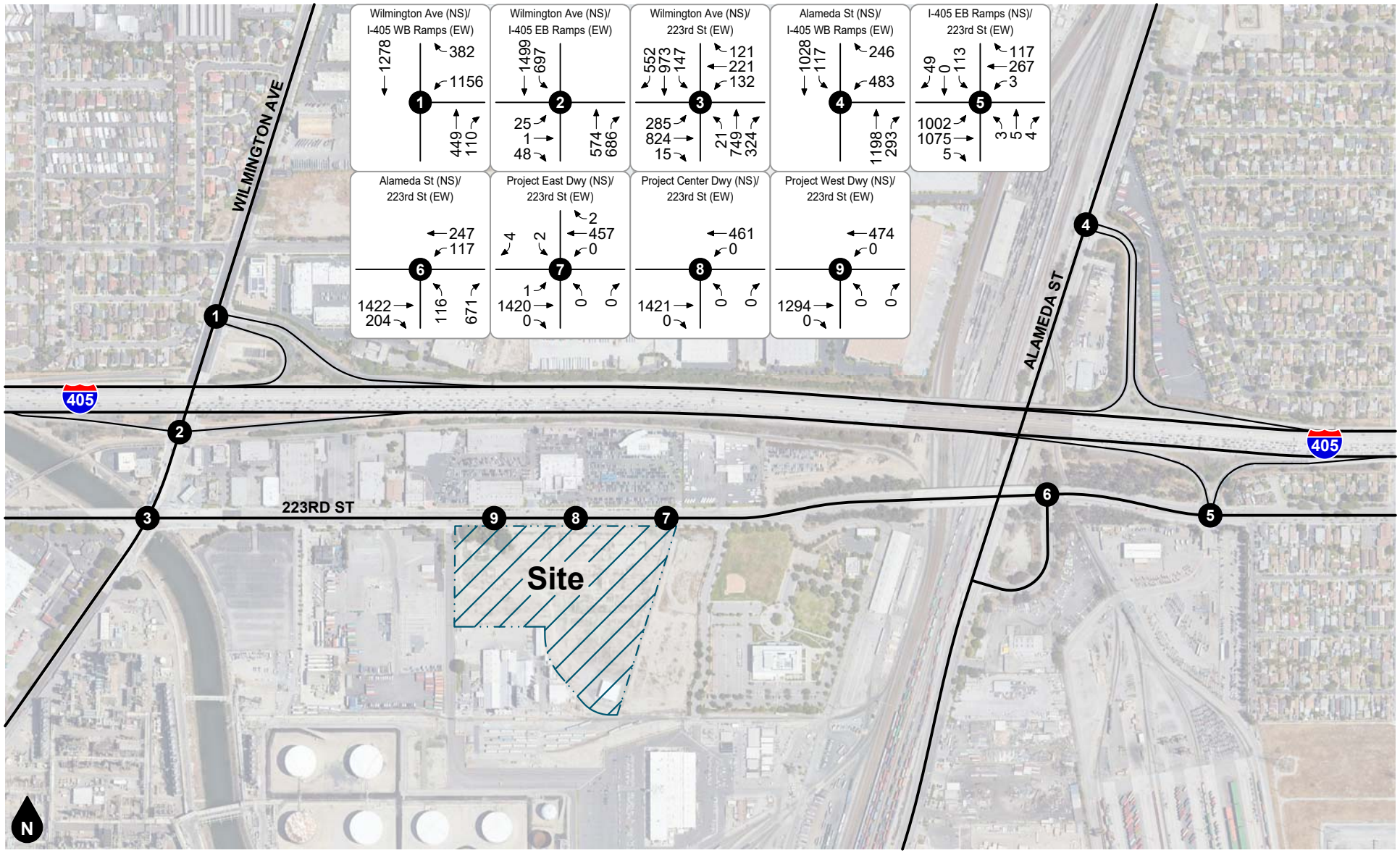
Figure 25
Opening Year (2021) Without Project Average Daily Traffic Volumes



Legend

(#) Study Intersection

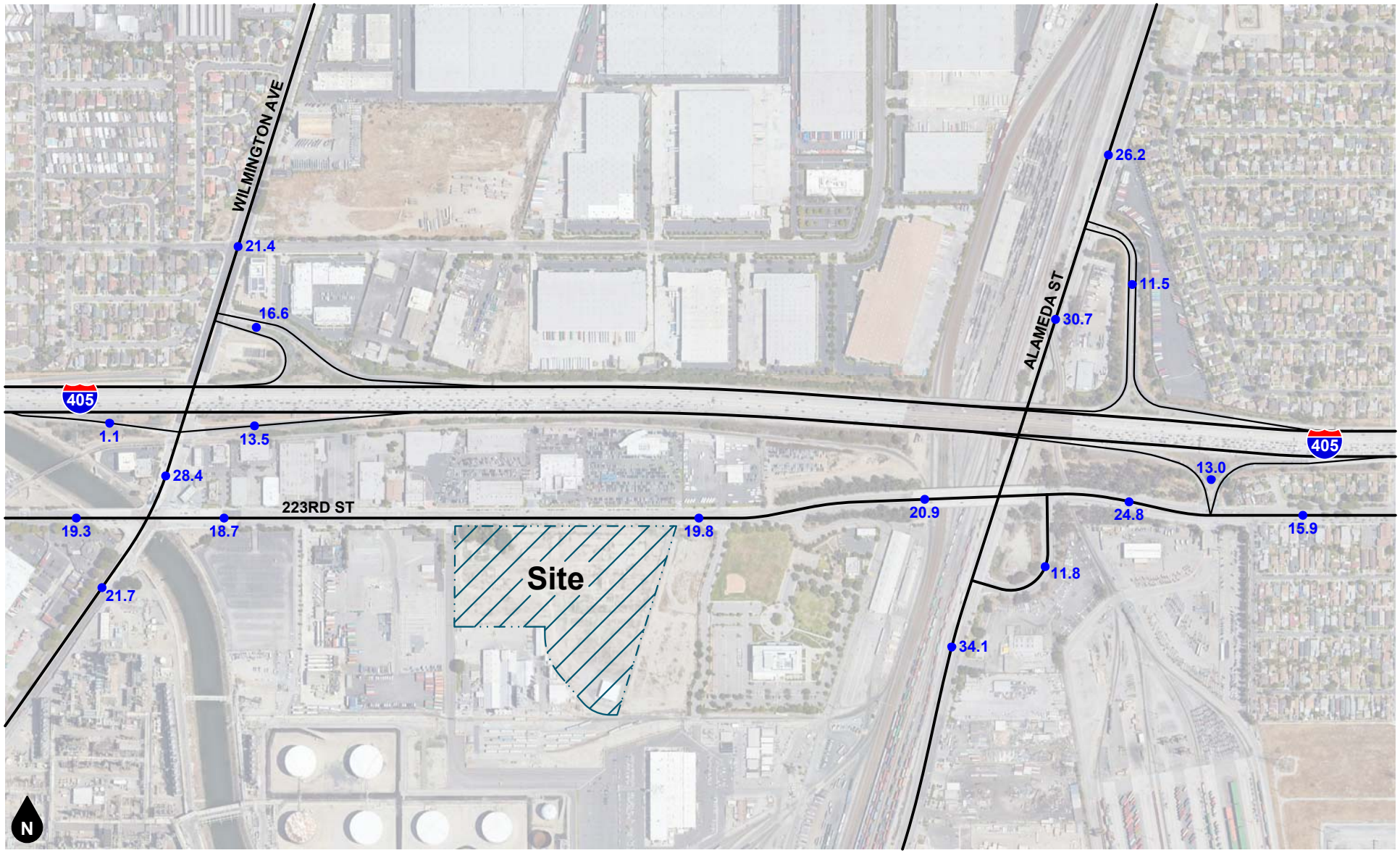
Figure 26
Opening Year (2021) Without Project
AM Peak Hour Intersection Turning Movement Volumes



Legend

Study Intersection

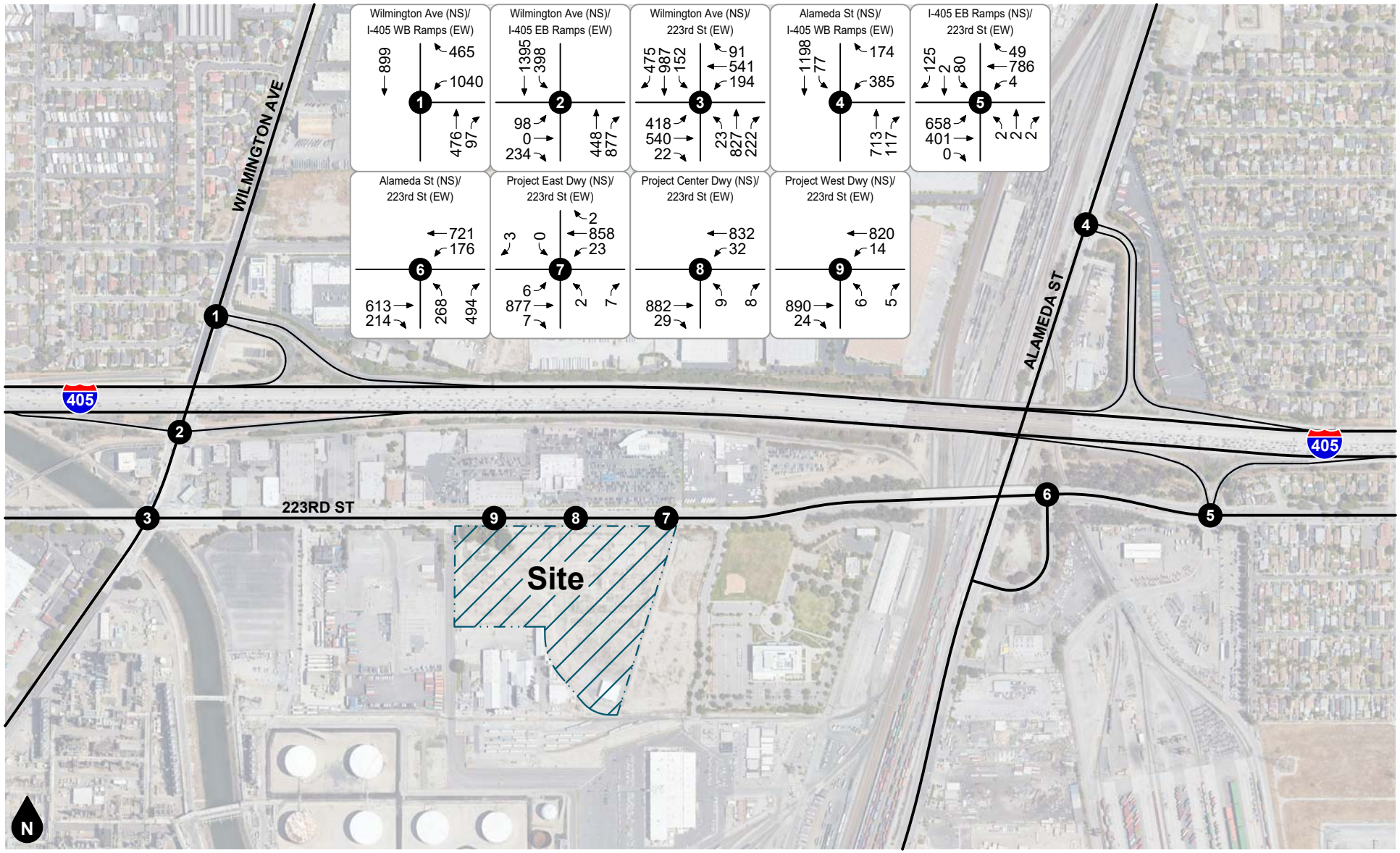
Figure 27
Opening Year (2021) Without Project
PM Peak Hour Intersection Turning Movement Volumes



Legend

●## Vehicles Per Day (1,000's)

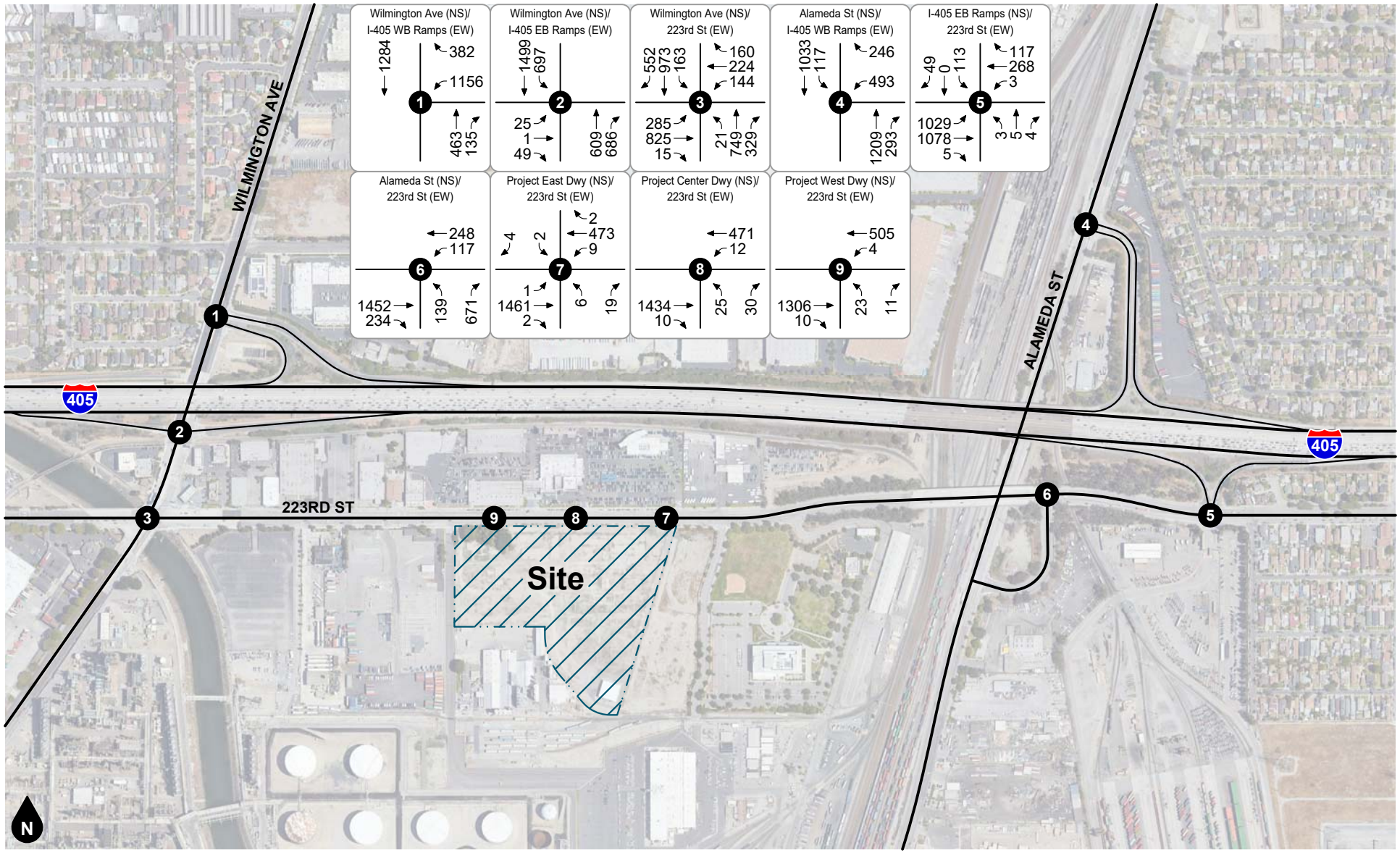
Figure 28
Opening Year (2021) With Project Average Daily Traffic Volumes



Legend

Study Intersection

Figure 29
Opening Year (2021) With Project
AM Peak Hour Intersection Turning Movement Volumes



Legend

Study Intersection

Figure 30
Opening Year (2021) 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 D.

EXISTING PLUS PROJECT

The intersection Levels of Service for Existing Plus Project conditions are shown in Table 6. As shown in Table 6, the study intersections are forecast to operate within acceptable Levels of Service (D or better) during the peak hours for Existing Plus Project conditions.

Table 7 evaluates the project impact at the study intersections for Existing Plus Project conditions. As shown in Table 7, the proposed project is forecast to result in no significant traffic impacts at the study intersections for Existing Plus Project conditions based on the City-established thresholds of significance.

OPENING YEAR (2021) WITHOUT PROJECT

The intersection Levels of Service for Opening Year (2021) Without Project conditions are shown in Table 8. As shown in Table 8, the study intersections are projected to operate within acceptable Levels of Service (D or better) during the peak hours for Opening Year (2021) Without Project conditions.

OPENING YEAR (2021) WITH PROJECT

The intersection Levels of Service for Opening Year (2021) With Project conditions are shown in Table 9. As shown in Table 9, the study intersections are projected to operate within acceptable Levels of Service (D or better) during the peak hours for Opening Year (2021) With Project conditions.

Table 10 evaluates the project impact at the study intersections for Opening Year conditions. As shown in Table 10, the proposed project is forecast to result in no significant traffic impacts at the study intersections for Opening Year (2021) With Project conditions based on the City-established thresholds of significance.

Table 6
Existing Plus Project Intersection Levels of Service

ID	Study Intersection	Traffic Control[1]	AM Peak Hour V/C or [Delay][2]	AM Peak Hour LOS[3]	PM Peak Hour V/C or [Delay]	PM Peak Hour LOS
1.	Wilmington Ave at I-405 NB Ramps	TS	0.642	B	0.715	C
2.	Wilmington Ave at I-405 SB Ramps	TS	0.888	D	0.768	C
3.	Wilmington Ave at 223rd St	TS	0.710	C	0.726	C
4.	Alameda St at I-405 NB Ramps	TS	0.587	A	0.838	D
5.	223rd St at I-405 SB Ramps	TS	0.550	A	0.566	A
6.	Alameda St (Connector) at 223rd St	TS	0.569	A	0.853	D
7.	East Driveway at 223rd St	CSS[4]	[13.9]	B	[20.6]	C
8.	Center Driveway at 223rd St	CSS	[14.9]	B	[23.7]	C
9.	West Driveway at 223rd St	CSS	[15.1]	C	[24.3]	C

Notes:

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

(2) V/C = Volume/Capacity. Delay is shown in [seconds/vehicle]. For intersections with cross street stop control, LOS is based on average delay of the worst individual lane (or movements sharing a lane).

(3) LOS = Level of Service

(4) As specified in the Highway Capacity Manual, Level of Service at one- or two-way stop controlled intersections is based on the highest average approach delay (as opposed to the worst individual movement delay).

Table 7
Existing Plus Project Significant Impact Evaluation

ID	Study Intersection	Traffic Control[1]	Existing				Existing Plus Project				AM Peak Hour		PM Peak Hour	
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour					
			V/C or [Delay][2]	LOS[3]	V/C or [Delay]	LOS	V/C or [Delay]	LOS	V/C or [Delay]	LOS	Project Change	Significant Impact?	Project Change	Significant Impact?
1.	Wilmington Ave at I-405 NB Ramps	TS	0.639	B	0.714	C	0.642	B	0.715	C	+0.003	NO	+0.001	NO
2.	Wilmington Ave at I-405 SB Ramps	TS	0.870	D	0.761	C	0.888	D	0.768	C	+0.018	NO	+0.007	NO
3.	Wilmington Ave at 223rd St	TS	0.710	C	0.722	C	0.710	C	0.726	C	+0.000	NO	+0.004	NO
4.	Alameda St at I-405 NB Ramps	TS	0.568	A	0.829	D	0.587	A	0.838	D	+0.019	NO	+0.009	NO
5.	223rd St at I-405 SB Ramps	TS	0.547	A	0.558	A	0.550	A	0.566	A	+0.003	NO	+0.008	NO
6.	Alameda St (Connector) at 223rd St	TS	0.565	A	0.840	D	0.569	A	0.853	D	+0.004	NO	+0.013	NO
7.	East Driveway at 223rd St	CSS[4]	-	-	-	-	[13.9]	B	[20.6]	C	-	NO	-	NO
8.	Center Driveway at 223rd St	CSS	-	-	-	-	[14.9]	B	[23.7]	C	-	NO	-	NO
9.	West Driveway at 223rd St	CSS	-	-	-	-	[15.1]	C	[24.3]	C	-	NO	-	NO

Notes:

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

(2) V/C = Volume/Capacity. Delay is shown in [seconds/vehicle]. For intersections with cross street stop control, LOS is based on average delay of the worst individual lane (or movements sharing a lane).

(3) LOS = Level of Service

(4) As specified in the Highway Capacity Manual, Level of Service at one- or two-way stop controlled intersections is based on the highest average approach delay (as opposed to the worst individual movement delay).

Table 8
Opening Year (2021) Without Project Intersection Levels of Service

ID	Study Intersection	Traffic Control[1]	AM Peak Hour		PM Peak Hour	
			V/C[2]	LOS[3]	V/C[2]	LOS[3]
1.	Wilmington Ave at I-405 NB Ramps	TS	0.645	B	0.728	C
2.	Wilmington Ave at I-405 SB Ramps	TS	0.886	D	0.777	C
3.	Wilmington Ave at 223rd St	TS	0.718	C	0.734	C
4.	Alameda St at I-405 NB Ramps	TS	0.592	A	0.849	D
5.	223rd St at I-405 SB Ramps	TS	0.560	A	0.571	A
6.	Alameda St (Connector) at 223rd St	TS	0.577	A	0.858	D

Notes:
(1) TS = Traffic Signal
(2) V/C = Volume/Capacity
(3) LOS = Level of Service

Table 9
Opening Year (2021) With Project Intersection Levels of Service

ID	Study Intersection	Traffic Control[1]	AM Peak Hour		PM Peak Hour	
			V/C[2]	LOS[3]	Delay[2]	LOS[3]
1.	Wilmington Ave at I-405 NB Ramps	TS	0.648	B	0.729	C
2.	Wilmington Ave at I-405 SB Ramps	TS	0.893	D	0.777	C
3.	Wilmington Ave at 223rd St	TS	0.719	C	0.738	C
4.	Alameda St at I-405 NB Ramps	TS	0.612	B	0.859	D
5.	223rd St at I-405 SB Ramps	TS	0.563	A	0.580	A
6.	Alameda St (Connector) at 223rd St	TS	0.581	A	0.871	D
7.	East Driveway at 223rd St	CSS [4]	[14.2]	B	[21.1]	C
8.	Center Driveway at 223rd St	CSS	[15.3]	C	[24.5]	C
9.	West Driveway at 223rd St	CSS	[15.5]	C	[25.1]	D

Notes:

(1) TS = Traffic Signal

(2) V/C = Volume/Capacity

(3) LOS = Level of Service

(4) As specified in the Highway Capacity Manual, Level of Service at one- or two-way stop controlled intersections is based on the highest average approach delay (as opposed to the worst individual movement delay).

Table 10
Opening Year Significant Impact Evaluation

ID	Study Intersection	Traffic Control[1]	Opening Year (2021) Without Project				Opening Year (2021) With Project				AM Peak Hour		PM Peak Hour	
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour					
			V/C or [Delay][2]	LOS[3]	V/C or [Delay]	LOS	V/C or [Delay]	LOS	V/C or [Delay]	LOS	Project Change	Significant Impact?	Project Change	Significant Impact?
1.	Wilmington Ave at I-405 NB Ramps	TS	0.645	B	0.728	C	0.648	B	0.729	C	+0.003	NO	+0.001	NO
2.	Wilmington Ave at I-405 SB Ramps	TS	0.886	D	0.777	C	0.893	D	0.777	C	+0.007	NO	+0.000	NO
3.	Wilmington Ave at 223rd St	TS	0.718	C	0.734	C	0.719	C	0.738	C	+0.001	NO	+0.004	NO
4.	Alameda St at I-405 NB Ramps	TS	0.592	A	0.849	D	0.612	B	0.859	D	+0.020	NO	+0.010	NO
5.	223rd St at I-405 SB Ramps	TS	0.560	A	0.571	A	0.563	A	0.580	A	+0.003	NO	+0.009	NO
6.	Alameda St (Connector) at 223rd St	TS	0.577	A	0.858	D	0.581	A	0.871	D	+0.004	NO	+0.013	NO
7.	East Driveway at 223rd St	CSS[4]	-	-	-	-	[14.2]	B	[21.1]	C	-	NO	-	NO
8.	Center Driveway at 223rd St	CSS	-	-	-	-	[15.3]	C	[24.5]	C	-	NO	-	NO
9.	West Driveway at 223rd St	CSS	-	-	-	-	[15.5]	C	[25.1]	D	-	NO	-	NO

Notes:

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

(2) V/C = Volume/Capacity. Delay is shown in [seconds/vehicle]. For intersections with cross street stop control, LOS is based on average delay of the worst individual lane (or movements sharing a lane).

(3) LOS = Level of Service

(4) As specified in the Highway Capacity Manual, Level of Service at one- or two-way stop controlled intersections is based on the highest average approach delay (as opposed to the worst individual movement delay).

7. SITE ACCESS & CIRCULATION

PROJECT DESIGN FEATURES

This analysis assumes the following improvements will be constructed by the project to provide project site access:

Project East Driveway (NS) at 223rd Street (EW) - #7

- Install northbound stop control.
- Construct the northbound approach to provide one shared left/right turn lane.

Project Center Driveway (NS) at 223rd Street (EW) - #8

- Install northbound stop control.
- Construct the northbound approach to provide one left turn lane and one right turn lane.

Project West Driveway (NS) at 223rd Street (EW) - #9

- Install northbound stop control.
- Construct the northbound approach to provide one shared left/right turn lane.

This analysis also assumes the project shall comply with the following conditions as part of the City of Carson's standard development review process:

- All roadway design, signing/striping, and traffic control improvements relating to the proposed project shall be constructed in accordance with applicable engineering standards and approved by City of Carson Public Works Department.

- Site-adjacent roadways shall be constructed or repaired at their ultimate half-section width, including landscaping and parkway improvements in conjunction with development.

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

- A construction work site traffic control plan shall be submitted to the City for review and approval prior to the issuance of a grading permit or start of any construction work. The plan shall identify any roadway, sidewalk, bike route, or bus stop closures and detours as well as haul routes and hours of operation. All construction related trips shall be restricted to off-peak hours to the extent possible.

SITE ACCESS QUEUEING

Table 11 summarizes the results of a queue analysis for left turn, right turn, or shared through/turn lanes at project driveways based on the forecast 95th-percentile queue lengths shown in the delay calculation worksheets (see Appendix D). Based on the queueing analysis, adequate storage length is forecast to be provided for the right-only turn lanes and the shared-turn lanes at the project driveways.

TRAFFIC SIGNAL WARRANT ANALYSIS

The potential need for installation of a traffic signal at the project driveways was evaluated based on the California Manual on Uniform Traffic Control Devices ("California MUTCD"), Section 4C.04, peak hour volume Warrant 3. The project driveways are not forecast to satisfy the California MUTCD peak hour volume warrant. Traffic signal warrant worksheets are provided in Appendix E.

Table 11
Project Driveway Queueing Analysis (Opening Year With Project)

ID	Intersection	Approach	Lane	Storage Length (Feet)[1]	95th-Percentile Queue Length (Feet)[2]		Adequate Storage Provided?
					AM Peak Hour	PM Peak Hour	
7.	East Driveway at 223rd St	Northbound	Left-Right	75	<25	<25	YES
		Eastbound	Thru-Right	300	<25	<25	YES
		Westbound	Left	30	<25	<25	YES
8.	Center Driveway at 223rd St	Northbound	Left	75	<25	<25	YES
		Eastbound	Thru-Right	325	<25	<25	YES
		Westbound	Left	60	<25	<25	YES
9.	West Driveway at 223rd St	Northbound	Left-Right	75	<25	<25	YES
		Eastbound	Thru-Right	140	<25	<25	YES
		Westbound	Left	215	<25	<25	YES

Notes:

(1) Distance to the adjacent driveway (existing or proposed future development).

(2) The forecast 95th-percentile queue lengths reported in the delay/Level of Service calculation worksheets have been rounded up to nearest 5-foot increment.

8. STATE HIGHWAY ANALYSIS

This section provides analysis of the project impacts at State highway facilities in accordance with typical California Department of Transportation (Caltrans) requirements.

STATE HIGHWAY SYSTEM

I-405 is a 12-lane freeway in the project vicinity providing north-south regional access from its southerly terminus in Irvine to its northern terminus near San Fernando. I-405 freeway access is provided via grade separated interchanges at Wilmington Avenue and Alameda Street. It currently carries approximately 258,000 to 281,000 vehicles per day in the project vicinity.

METHODOLOGIES

Intersection Delay Methodology

As previously noted, the technique used to assess the performance of intersections within the California Department of Transportation jurisdiction is known as the intersection delay methodology based on procedures contained in the Highway Capacity Manual (Transportation Research Board, 6th Edition). Refer to the earlier Methodology section for further explanation.

Off-Ramp Queueing Methodology

Off-ramp queueing is evaluated based on the 95th-percentile back-of-queue method based on procedures contained in the Highway Capacity Manual (Transportation Research Board, 6th Edition) and reported in the delay/Level of Service calculation worksheets.

Thresholds of Significance

As previously noted, a project impact is considered significant if the addition of project-generated trips is forecast to cause the performance of a State Highway study intersection to change from acceptable operation (Level of Service D or better) to deficient operation (Level of Service E or F).

For freeway off-ramps, a project impact is considered significant if the addition of project-generated trips is forecast to cause or worsen a condition where the queue length exceeds 85 percent of off-ramp storage capacity.

STATE HIGHWAY INTERSECTION ANALYSIS

Intersection Delay Methodology

As previously noted, the technique used to assess the performance of intersections within the California Department of Transportation jurisdiction is known as the intersection delay methodology based on procedures contained in the Highway Capacity Manual (Transportation Research Board, 6th Edition). Refer to the earlier Methodology section for further explanation.

Intersection Levels of Service

Table 12 shows the intersection Levels of Service at the State highway study intersections using the delay methodology. As shown in Table 12, the State highway study intersections are forecast to operate at Level of Service C or better during the peak hour conditions. Detailed intersection delay/Level of Service calculation worksheets for the State highway study intersections are provided in Appendix F.

FREEWAY MAINLINE AND OFF-RAMP SCREENING CRITERIA

Caltrans District 7 generally requires freeway mainline and/or off-ramp queueing analysis if a project meets any of the following screening criteria:

- The project's peak hour trips would result in a one percent (1%) or more increase to the freeway mainline capacity of a freeway segment operating at Level of Service E or F (based on an assumed capacity of 2,000 vehicles per hour per lane).
- The project's peak hour trips would result in a two percent (2%) or more increase to the freeway mainline capacity of a freeway segment operating at Level of Service D (based on an assumed capacity of 2,000 vehicles per hour per lane).
- The project's peak hour trips would result in a one percent (1%) or more increase to the capacity of a freeway off-ramp operating at Level of Service E or F (based on an assumed ramp capacity of 850 vehicles per hour per lane).
- The project's peak hour trips would result in a two percent (2%) or more increase to the capacity of a freeway off-ramp operating at Level of Service D (based on an assumed ramp capacity of 850 vehicles per hour per lane).

Project Trip Contribution

The project PM peak hour trip contribution to State highway facilities is shown on Figure 31. As shown on Figure 31, the project is forecast to contribute no more than 37 two-way peak hour trips to the I-405 freeway mainline and no more than 10 peak hour trips to I-405 southbound off-ramps at Wilmington Avenue and northbound off-ramps at Alameda Street.

Assuming the I-405 freeway mainline is operating at Level of Service E or worse, one percent of hourly capacity is equal 100 trips for a five-lane segment (i.e., one-way and excluding high-occupancy vehicle (HOV) lanes). The proposed project is forecast to contribute fewer than 100 trips to I-405 in any direction; therefore, the project impact at freeway mainline facilities is considered less than significant.

Based on the State highway study intersection analysis, the freeway ramp terminus intersections are operating at Level of Service C or better. Therefore, the project would typically not be required to perform off-ramp queueing analysis, however, off-ramp queueing analysis has been performed for the two off-ramps expected to be most utilized by the project.

OFF-RAMP QUEUEING ANALYSIS

Off-Ramp Queueing

Table 13 summarizes the results of a queueing analysis for the I-405 freeway off-ramps at Wilmington Avenue and Alameda. As shown in Table 13, adequate off-ramp storage capacity is forecast to be provided at the study off-ramps with the addition of project-generated trips; therefore, the project impact is considered less than significant.

Table 12
State Highway Intersection Levels of Service

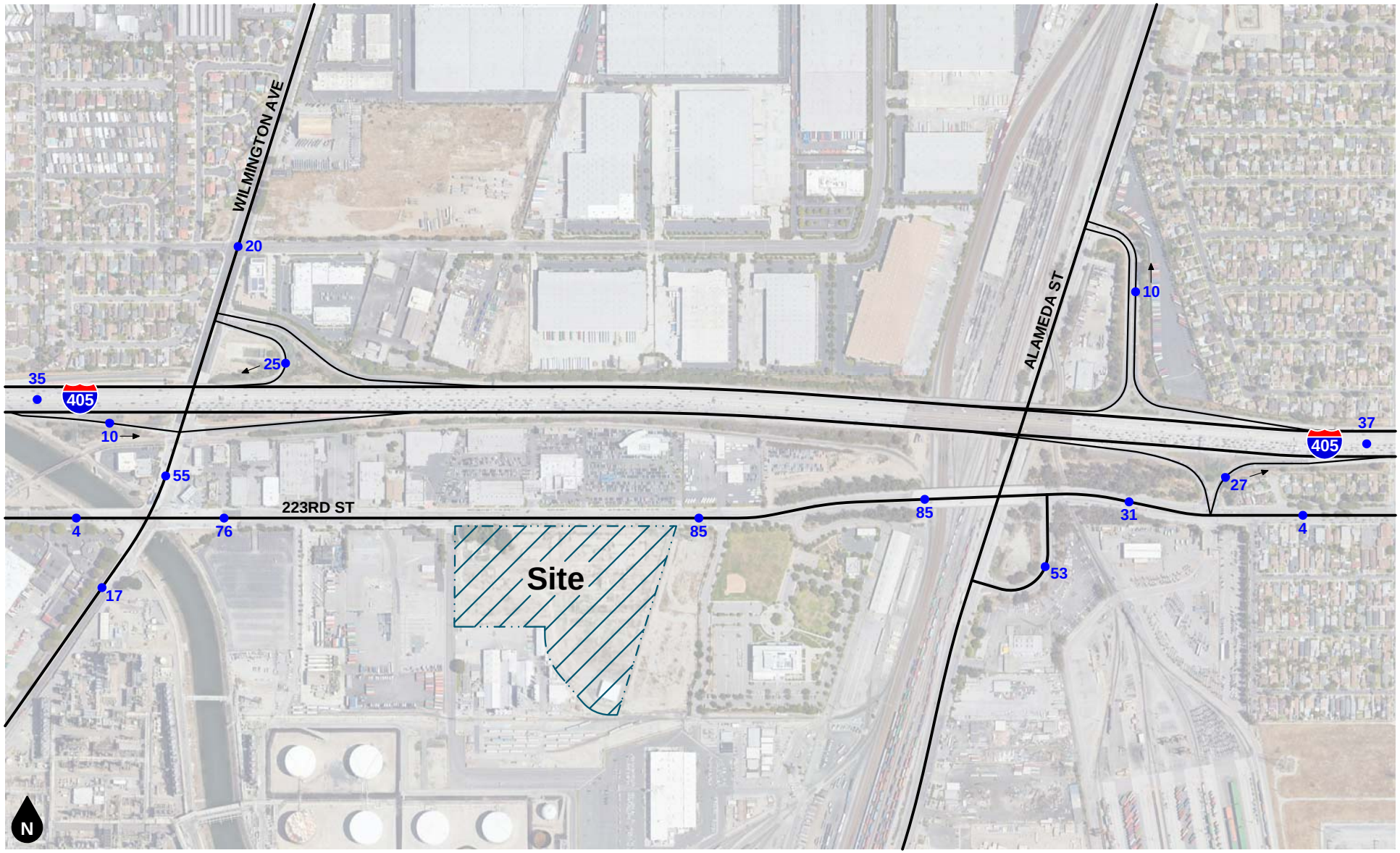
ID	Study Intersection	Existing				Existing Plus Project				Opening Year (2021) Without Project				Opening Year (2021) With Project			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay[1]	LOS[2]	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1.	Wilmington Ave at I-405 NB Ramps	22.1	C	21.3	C	22.0	C	21.3	C	22.2	C	21.2	C	22.1	C	21.2	C
2.	Wilmington Ave at I-405 SB Ramps	20.8	C	14.5	B	22.8	C	14.6	B	21.5	C	14.8	B	23.9	C	15.0	B
4.	Alameda St at I-405 NB Ramps	17.8	B	21.7	C	18.8	B	21.9	C	18.8	B	22.4	C	20.0	B	22.7	C
5.	223rd St at I-405 SB Ramps	24.8	C	21.5	C	24.8	C	21.5	C	25.1	C	21.6	C	25.1	C	21.6	C

Notes:
(1) Delay is shown in seconds/vehicle.
(2) LOS = Level of Service

Table 13
Freeway Off-Ramp Queueing Analysis

ID	Intersection	Approach	Lane(s)	Designated Turning Lane Storage Length (Feet)[1]	Queue Length / Distance (Feet): Peak Hour 95th-Percentile Queue Length[2]		Queue Length Exceeding Turning Lane Storage		Sum of Queue Lengths Exceeding Turning Lane Storage		85% Off-Ramp Length (Feet)[1]	Off-Ramp Storage Length Remaining		Adequate Storage Provided?	
					AM	PM	AM	PM	AM	PM		AM	PM	AM	PM
1.	Wilmington Ave at I-405 NB Ramps	Westbound	Left	400	460	485	60	85	150	170	820	670	650	YES	YES
			Left	400	460	485	60	85							
			Right	400	430	320	30	0							
2.	Wilmington Ave at I-405 SB Ramps	Eastbound	Left-Thru	75	105	35	30	0	230	0	720	490	720	YES	YES
			Right	75	275	65	200	0							
4.	Alameda St at I-405 NB Ramps	Eastbound	Left	730	520	545	0	0	0	0	750	750	750	YES	YES
			Right	730	205	235	0	0							
5.	223rd St at I-405 SB Ramps	Southbound	Left	260	105	105	0	0	0	0	600	600	600	YES	YES
			Thru-Right	260	185	185	0	0							

Notes:
(1) Length shown in feet per lane.
(2) Queue length shown per lane for Opening Year (Year 2021) With Project conditions.



Legend

●## PM Peak Hour Volumes

Figure 31
Project Trip Contribution

9. CONGESTION MANAGEMENT PROGRAM (CMP)

This section provides analysis of the project impacts at County facilities in accordance with typical Los Angeles County Congestion Management Program requirements.

CMP ANALYSIS REQUIREMENTS

The Los Angeles County 2010 Congestion Management Program (CMP), Appendix D - Guidelines for CMP Transportation Impact Analysis states that:

> "In general, a CMP TIA [Transportation Impact Analysis] is required for all projects required to prepare an Environmental Impact Report (EIR) based on local determination. A TIA is not required if the lead agency for the EIR finds that traffic is not a significant issue, and does not require local or regional traffic impact analysis in the EIR."

Furthermore, the Los Angeles County CMP states that the study area for CMP TIA must include the following:

- All CMP arterial monitoring intersections, including freeway on- and off-ramp intersections, where a proposed project is expected to add 50 or more trips during either the weekday AM or PM peak hours (of adjacent street traffic).
- If CMP arterial segments are being analyzed rather than intersections (see Section D.3), the study area must include all segments where the proposed project will add 50 or more peak hour trips (total of both directions).
- Mainline freeway monitoring locations where a project is expected to add 150 or more trips, in either direction, during either the weekday AM or PM peak hours.
- Caltrans must also be consulted through the Notice of Preparation (NOP) process to identify other specific locations to be analyzed on the state highway system.

If the TIA identifies no facilities for study based on the above criteria, no further traffic analysis is required. However, projects must still consider transit impacts.

Based on the project trip assignment, the proposed project is forecast to contribute fewer than 50 or more weekday peak hour trips to a CMP-monitored intersection or 150 or more weekday peak hour trips to a mainline freeway monitoring location. Therefore, a Congestion Management Program impact analysis is not required for this project.

CMP TRANSIT IMPACT REVIEW

The Los Angeles County 2010 Congestion Management Program requires documentation of existing transit services in the project vicinity and estimation of the number of trips assigned to transit.

There are no fixed route transit services within a one-quarter mile radius of the project site or Express bus routes and rail service within a two-mile radius of the project site. The nearest fixed route service is Metro Bus Line 202 along Alameda Street approximately 0.3 miles east of the project site. The nearest express bus route is Metro Line 456 Express Route providing service between Downtown Long Beach and Downtown Los Angeles with a stop at the Wardlow Station approximately 2.25 miles east of the project site.

The Los Angeles County CMP Section D.8.4 provides the following guidelines for estimating project trips assigned to transit:

1) Multiply the total trips generated by 1.4 to convert vehicle trips to person trips.

2) For each time period, multiply the result by one of the following factors:

   3.5% of Total Person Trips Generated for most cases, except:
   10% primarily Residential within 1/4 mile of a CMP transit center
   15% primarily Commercial within 1/4 mile of a CMP transit center
   7% primarily Residential within 1/4 mile of a CMP multi-modal transportation center
   9% primarily Commercial within 1/4 mile of a CMP multi-modal transportation center
   5% primarily Residential within 1/4 mile of a CMP transit corridor
   7% primarily Commercial within 1/4 mile of a CMP transit corridor
   0% if no fixed route transit services operate within one mile of the project

Accordingly, the proposed project-generated transit trips are calculated as follows based on the passenger car trip generation previously calculated in Table 2:

- Daily: 622 passenger vehicle trips x 1.4 person-trip factor x 3.5% ≈ 30 transit trips
- AM Peak Hour: 66 passenger vehicle trips x 1.4 person-trip factor x 3.5% ≈ 3 transit trips
- PM Peak Hour: 86 passenger vehicle trips x 1.4 person-trip factor x 3.5% ≈ 4 transit trips

The proposed project is forecast to generate approximately 30 daily transit trips, including 3 transit trips during the AM peak hour and 4 transit trips during the PM peak hour. Based on the relatively low project-generated transit trip estimate, the proposed project is expected to have a marginal impact on transit service capacity.

10. CONCLUSIONS

This section summarizes the findings and mitigation measures identified through the operational analysis in described previous sections.

PROJECT DESIGN FEATURES

This analysis assumes the following improvements will be constructed by the project to provide project site access:

Project East Driveway (NS) at 223rd Street (EW) - #7

- Install northbound stop control.
- Construct the northbound approach to provide one shared left/right turn lane.

Project Center Driveway (NS) at 223rd Street (EW) - #8

- Install northbound stop control.
- Construct the northbound approach to provide one left turn lane and one right turn lane.

Project West Driveway (NS) at 223rd Street (EW) - #9

- Install northbound stop control.
- Construct the northbound approach to provide one shared left/right turn lane.

This analysis also assumes the project shall comply with the following conditions as part of the City of Carson's standard development review process:

- All roadway design, signing/striping, and traffic control improvements relating to the proposed project shall be constructed in accordance with applicable engineering standards and approved by City of Carson Public Works Department.

- Site-adjacent roadways shall be constructed or repaired at their ultimate half-section width, including landscaping and parkway improvements in conjunction with development.

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

- A construction work site traffic control plan shall be submitted to the City for review and approval prior to the issuance of a grading permit or start of any construction work. The plan shall identify any roadway, sidewalk, bike route, or bus stop closures and detours as well as haul routes and hours of operation. All construction related trips shall be restricted to off-peak hours to the extent possible.

IMPACT SUMMARY

The proposed project is forecast to result in no significant traffic impacts at the study intersections for the scenarios analyzed based on the City and Caltrans-established thresholds of significance.

MITIGATION MEASURES

No off-site mitigation measure improvements were identified since the proposed project is forecast to result in no significant traffic impacts at the study intersections for the scenarios analyzed..

APPENDICES

Appendix A Glossary

Appendix B Scoping Agreement

Appendix C Intersection Turning Movement Count Worksheets

Appendix D Intersection Level of Service Worksheets

Appendix E Traffic Signal Warrant Worksheets

Appendix F State Highway 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
PCE	Passenger Car Equivalent
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

APPROVED
by Ryan Kim on 02.18.20

transportation ▪ noise ▪ air quality | **GANDDINI GROUP**

MEMORANDUM OF UNDERSTANDING

TO: Ryan Kim, City Traffic Engineer | CITY OF CARSON

FROM: Perrie Ilercil, PE (AZ) | GANDDINI GROUP, INC.

DATE: February 14, 2020

SUBJECT: Panattoni Project Traffic Study Assumptions
19230

The purpose of this scoping document is to outline the proposed focused traffic analysis parameters and assumptions for the Panattoni Project for review/concurrence by City of Carson staff.

PROJECT DESCRIPTION

Figure 1 shows the project location map. The 14.8-acre project site is located at 2112 East 223rd Street in the City of Carson. The project site is located south of I-405 freeway between Wilmington Avenue and Alameda Street in an area zoned for manufacturing land use. The project site is currently undeveloped and vacant.

The site plan is illustrated on Figure 2. The proposed project consists of developing the project site with three new industrial buildings totaling 292,400 square feet. Vehicular access is proposed via three driveways at East 223rd Street.

PROJECT TRIP GENERATION & DISTRIBUTION

Table 1 shows the project trip generation based upon rates obtained from the Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Edition, 2017) and the ITE Trip Generation Handbook, 3rd Edition, 2017. The project trips have been categorized into passenger cars and trucks average truck trip percentage for industrial park from Trip Generation Handbook. Additionally, the project generated truck trips have been converted to Passenger Car Equivalent (PCE) trips based on PCE for trucks.

As shown in Table 1, the proposed is forecast to generate approximately 788 daily vehicle trips, including 108 vehicle trips during the AM peak hour and 117 vehicle trips during the PM peak hour. In PCE trips, the project is forecast to generate approximately 1,018 daily PCE trips, including 165 PCE trips during the AM peak hour and 160 PCE trips during the PM peak hour.

Figures 3 and 4 illustrate the forecast directional distribution patterns of the project generated passenger car and truck trips. Passenger car trips are generally more localized with residential or commercial origin/destination points, whereas truck trips generally have a more regional distribution travelling to/from other industrial uses or ports/terminals via the freeway. The project trip distribution patterns are based on review of existing volume data, surrounding land uses, designated truck routes, and the local and regional roadway facilities in the project vicinity.

STUDY AREA

As specified in the City of Carson application review letter, the study area shall consist of the following study intersection:

Study Intersections	Jurisdiction
1. Wilmington Avenue (NS) at I-405 WB Ramps (EW)	Carson / Caltrans
2. Wilmington Avenue (NS) at I-405 EB Ramps (EW)	Carson / Caltrans
3. Wilmington Avenue (NS) at E 223rd Street (EW)	Carson
4. Alameda Street (NS) at I-405 WB Ramps (EW)	Carson / Caltrans
5. Alameda Street (Connection) (NS) at E 223rd Street (EW)	Carson
6. E 223rd Street (Connection) at I-405 EB Ramps (EW)	Carson / Caltrans

TRAFFIC COUNTS

New intersection turning movement counts will be collected at the study intersections during the morning peak period (7:00 AM – 9:00 AM) and evening peak period (4:00 PM – 6:00 PM) on a typical weekday (Tuesday, Wednesday, or Thursday) while local schools are in session. To account for truck volumes, the peak hour intersection turning movement volume counts were collected by vehicle classification and converted into Passenger Car Equivalent (PCE) trips in accordance with PCE factors recommended by the San Bernardino Association of Governments (SANBAG) Congestion Management Program (1.5 PCEs for 2-axle trucks, 2.0 PCEs for 3-axle trucks, and 3.0 PCEs for trucks with 4 or more axles).

INTERSECTION ANALYSIS METHODOLOGY

The study non-State highway signalized intersections shall by analyzed using the Intersection Capacity Utilization (ICU) methodology in accordance with the parameters established by the County of Los Angeles guidelines[1]. The capacity of individual lanes be used in the ICU calculations is 1,600 vehicles per hour per lane for through and turn lanes, 2,880 vehicles per hour for dual left-turn lanes, and a total clearance adjustment of 10 percent (i.e., 0.10 added to critical Volume/Capacity).

The unsignalized intersections and intersections within the California Department of Transportation jurisdiction shall by analyzed using the intersection delay methodology based on procedures contained in the Highway Capacity Manual (Transportation Research Board, 6th Edition). Default values not specifically identified in the City or County guidelines will be based Highway Capacity Manual recommended values. Intersection analysis shall be performed using the Vistro software (Version 6.00-00).

PERFORMANCE STANDARDS

City of Carson / County of Los Angeles. Level of Service D is typically recognized as the minimum acceptable Level of Service for key intersections of the arterial system in the City of Carson, and County of Los Angeles.

California Department of Transportation. As stated in the Guide for the Preparation of Traffic Impact Studies (State of California, 2002), "California Department of Transportation endeavors to maintain a target LOS [Level

[1] County of Los Angeles Traffic Impact Analysis (TIA) Report Guidelines; December 2013.

of Service] at the transition between LOS "C" and LOS "D" on State highway facilities". The California Department of Transportation acknowledges this may not always be feasible and recommends consultation with the California Department of Transportation to determine the appropriate target Level of Service. For consistency with local requirements, this analysis defines Level of Service D as the minimum acceptable Level of Service for State Highway facilities.

THRESHOLDS OF SIGNIFICANCE

City of Carson /County of Los Angeles: Based on the County of Los Angeles guidelines, a project traffic impact at a signalized intersection is considered significant if the project related increase in the volume to capacity ratio equals or exceeds the thresholds shown below:

Pre-Project Conditions		Project Increase in V/C
LOS	V/C	
C	0.71 to 0.80	0.04 or more
D	0.81 to 0.90	0.02 or more
E/F	0.91 or more	0.01 or more

California Department of Transportation (Caltrans): Based on the Caltrans guidelines, project traffic impact is considered significant if the addition of project generated trips is forecast to cause the performance of a State Highway study intersection to change from acceptable operation (Level of Service D or better) to deficient operation (Level of Service E or F).

Unsignalized Intersections: It should be noted that many jurisdictions, including the City of Carson, and County of Los Angeles, do not have established significant impact thresholds for unsignalized intersections. For unsignalized intersections operating at Level of Service E or F, a signal warrant analysis shall be conducted.

ANALYSIS SCENARIOS

The traffic study shall evaluate the following analysis scenarios for typical weekday AM and PM peak hour conditions:

- Existing
- Existing Plus Project
- Opening Year (2021) Without Project (Ambient Growth + Other Development)
- Opening Year (2021) With Project (Ambient Growth + Other Development + Project)

OPENING YEAR (2021) FORECASTING METHODOLOGY

Regional Ambient Growth

To account for ambient growth, existing roadway volumes shall be increased by a growth rate of one percent (0.5%)[2] per year over a one-year period for Opening Year (2021) conditions.

[2] Source: Congestion Management Program for the County of Los Angeles, 2010 The annual areawide growth rate has been obtained from the modeled traffic volume growth factors based on the Regional Statistical Area (RSA) for the City.

Other Development

In addition, a list of pending and approved other development projects shall be requested from the City of Carson and City of Long Beach. Trip forecasts for other development projects within the project study area shall be determined from the other development traffic study or calculated based on the Institute of Transportation Engineers (ITE), Trip Generation Manual, 10th Edition, 2017 and will be assigned to the study intersections as appropriate.

CONCLUSION

We appreciate the opportunity to provide this memorandum of understanding for your review. Should you have any questions or comments regarding the proposed scope, please contact me.

Sincerely,

Perrie Ilercil,
Senior Engineer
c. 949 257-3126

Table 1
Project Trip Generation - (Warehouse and Manufacturing)

Land Use/Vehicle Type	Source[1]	Trip Generation Rates per TSF[2]						
		AM Peak Hour			PM Peak Hour			
		% In	% Out	Total	% In	% Out	Total	Daily
Warehouse	ITE 150	77%	23%	0.17	27%	73%	0.19	1.74
Percent Cars	[a]	--	--	62.86%	--	--	64.38%	79.57%
Percent Trucks	[a]	--	--	37.14%	--	--	35.62%	20.43%
Car Trips per TSF		0.082	0.025	0.107	0.033	0.089	0.122	1.385
Truck Trips per TSF		0.049	0.015	0.064	0.018	0.049	0.067	0.355
Manufacturing	ITE 130	77%	23%	0.62	31%	69%	0.67	3.93
Percent Cars	[b]	--	--	60.53%	--	--	76.83%	78.60%
Percent Trucks	[b]	--	--	39.47%	--	--	23.17%	21.40%
Car Trips per TSF		0.289	0.086	0.375	0.160	0.355	0.515	3.089
Truck Trips per TSF		0.188	0.056	0.244	0.048	0.107	0.155	0.841

Vehicle Trips Generated									
Land Use/Vehicle Type	Quantity (TSF)[3]	Land use in Building	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Warehouse	165.200	1 2 & 3							
Cars			14	4	18	5	15	20	229
Trucks			8	3	11	3	8	11	59
Manufacturing	127.200	1 2 & 3							
Cars			37	11	48	20	46	66	393
Trucks			24	7	31	6	14	20	107
TOTAL VEHICLE TRIPS GENERATED			**83**	**25**	**108**	**34**	**83**	**117**	**788**

Passenger Car Equivalent (PCE) Trips Generated									
Land Use/Vehicle Type	Quantity (TSF)	Truck Percent[4]	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Warehouse	165.200								
Cars			14	4	18	5	15	20	229
Trucks	PCE Factor[5]								
2-Axle Trucks	1.5	16.95%	2	1	3	1	2	3	15
3-Axle Trucks	2.0	22.71%	4	1	5	1	4	5	26
4+ Axle Trucks	3.0	60.34%	15	4	19	5	15	20	105
Subtotal Trucks	--		21	6	27	7	21	28	146
Manufacturing	127.200								
Cars			37	11	48	20	46	66	393
Trucks	PCE Factor[4]								
2-Axle Trucks	1.5	32.70%	12	3	15	3	7	10	53
3-Axle Trucks	2.0	17.90%	9	2	11	2	5	7	38
4+ Axle Trucks	3.0	49.40%	35	11	46	9	20	29	159
Subtotal Trucks	--		56	16	72	14	32	46	250
Subtotal Cars			51	15	66	25	61	86	622
Subtotal Trucks			77	22	99	21	53	74	396
TOTAL VEHICLE TRIPS GENERATED			**128**	**37**	**165**	**46**	**114**	**160**	**1,018**

Notes:

(1) Source: Institute of Transportation Engineers, Trip Generation Manual, 10th Edition, 2017, Land Use Code ###.

[a] City of Fontana, Truck Trip Generation Study, August 2003. Heavy warehouse values used for car to truck and truck by axle percentages.

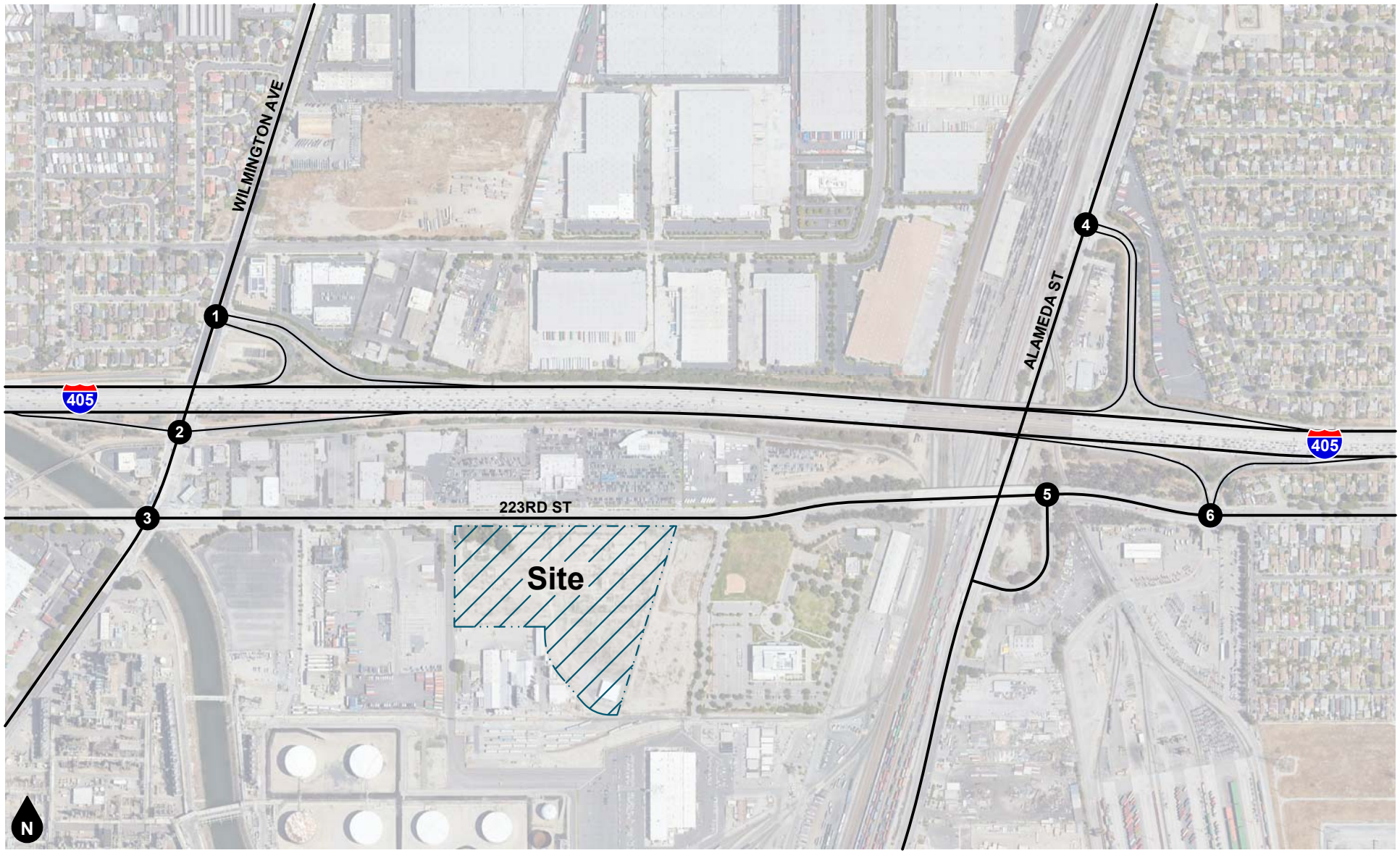
[b] City of Fontana, Truck Trip Generation Study, August 2003. Light industrial values used for car to truck and truck by axle percentages.

(2) TSF = Thousand Square Feet

(3) Source: Site Plan A1.1; dated November 19, 2019

(4) Truck by axle percentages obtained from City of Fontana, Truck Trip Generation Study, August 2003.

(5) Passenger Car Equivalent (PCE) factors have been obtained from the County of San Bernardino Congestion Management Program.
PCE factor of 1.0 is used for passenger cars (such as employee vehicles); light duty trucks use a PCE factor of 1.5; medium duty trucks with 3 axles use a PCE factor of 2.0; and heavy duty trucks with 4 or more axles use a PCE factor of 3.0.



Legend

Study Intersection

Figure 1
Project Location Map

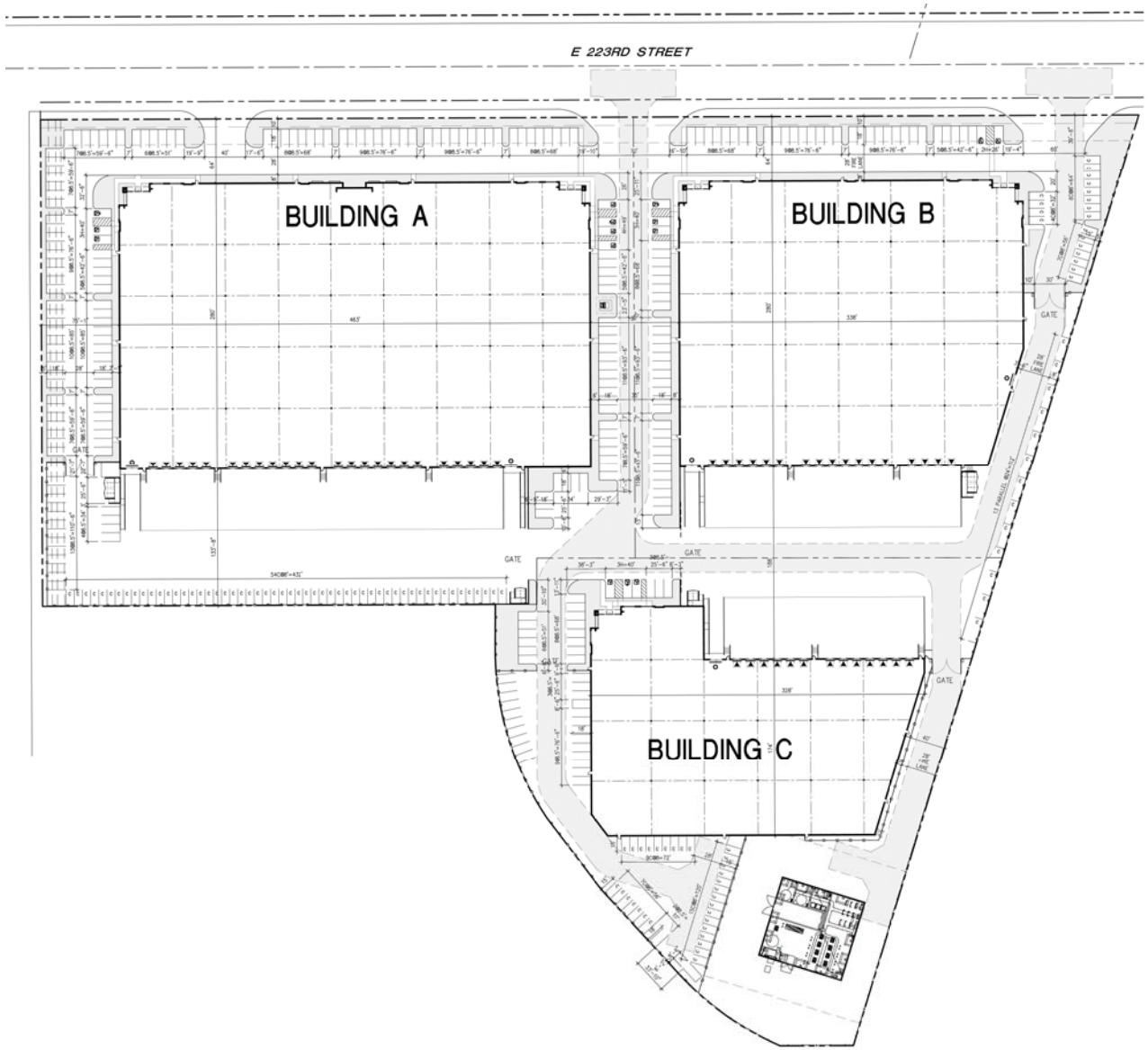


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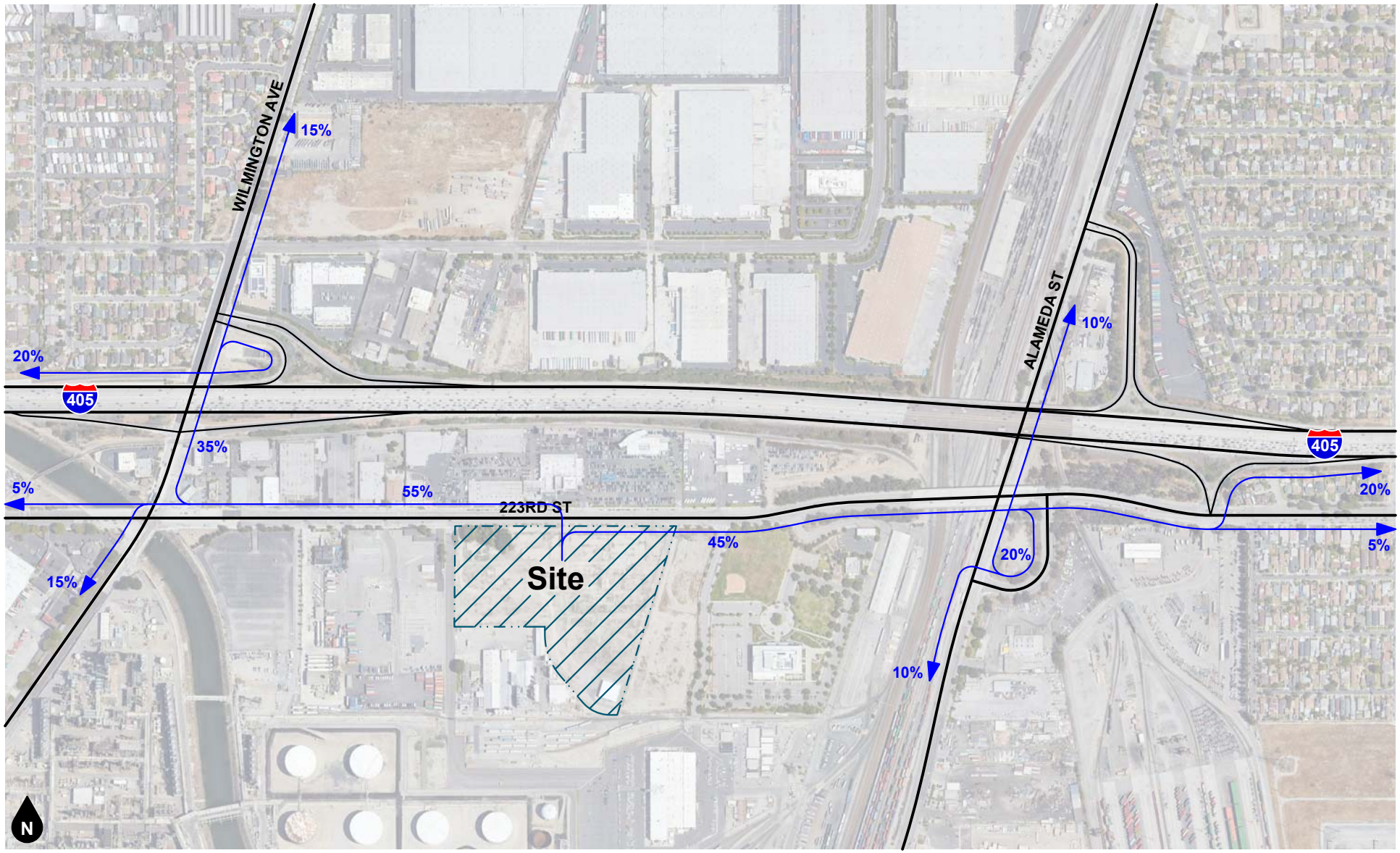
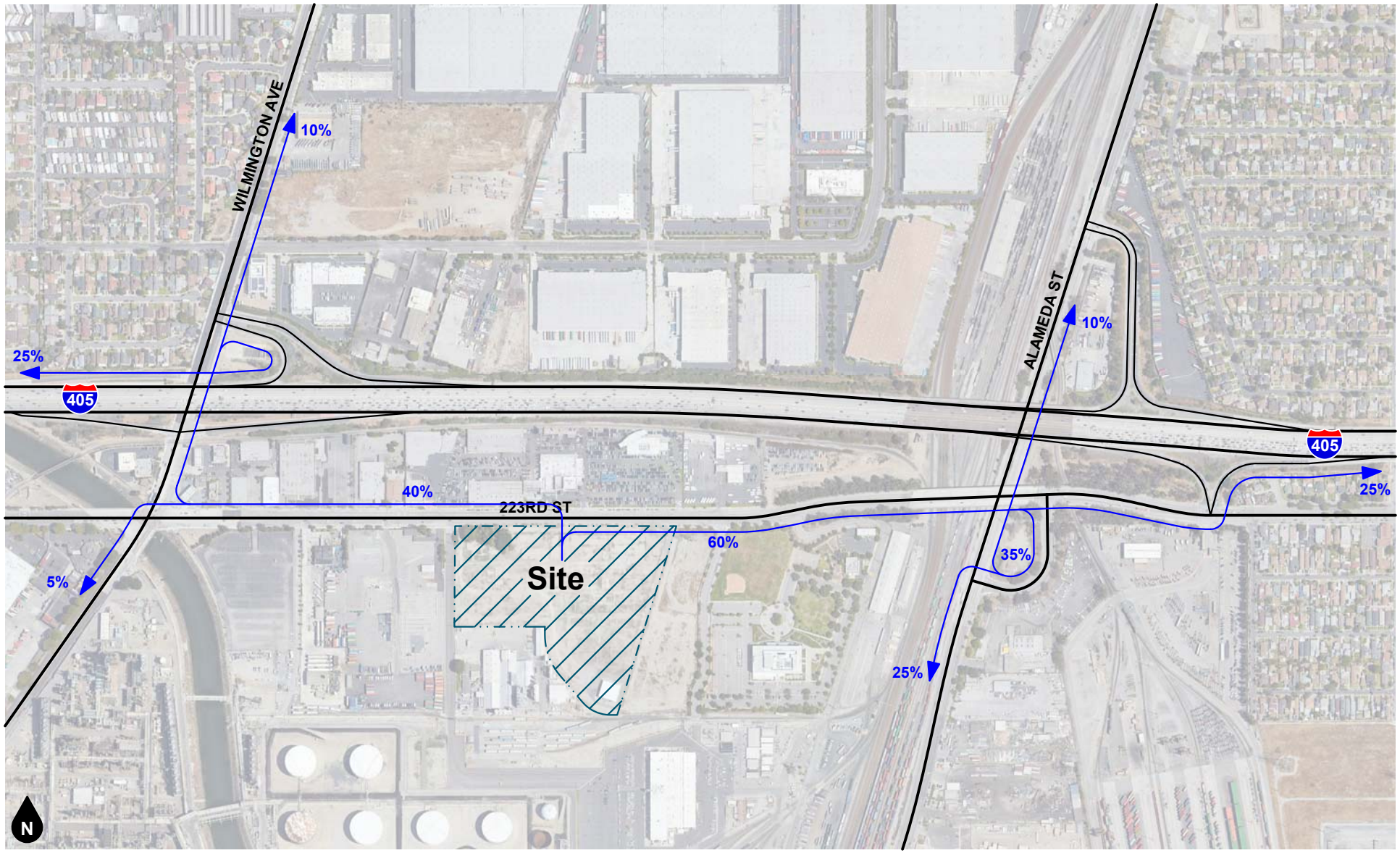
Figure 2
Site Plan



Legend

10% Percent To/From Project

Figure 3
Project Trip Distribution - Cars



Legend

10% Percent To/From Project

Figure 4
Project Trip Distribution - Trucks

APPENDIX C

INTERSECTION TURNING MOVEMENT COUNT WORKSHEETS

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Carson
N/S: Wilmington Avenue
E/W: I-405 Northbound Ramps
Weather: Clear

File Name : 01_CRS_Wilmington_405N AM
Site Code : 22520115
Start Date : 2/25/2020
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

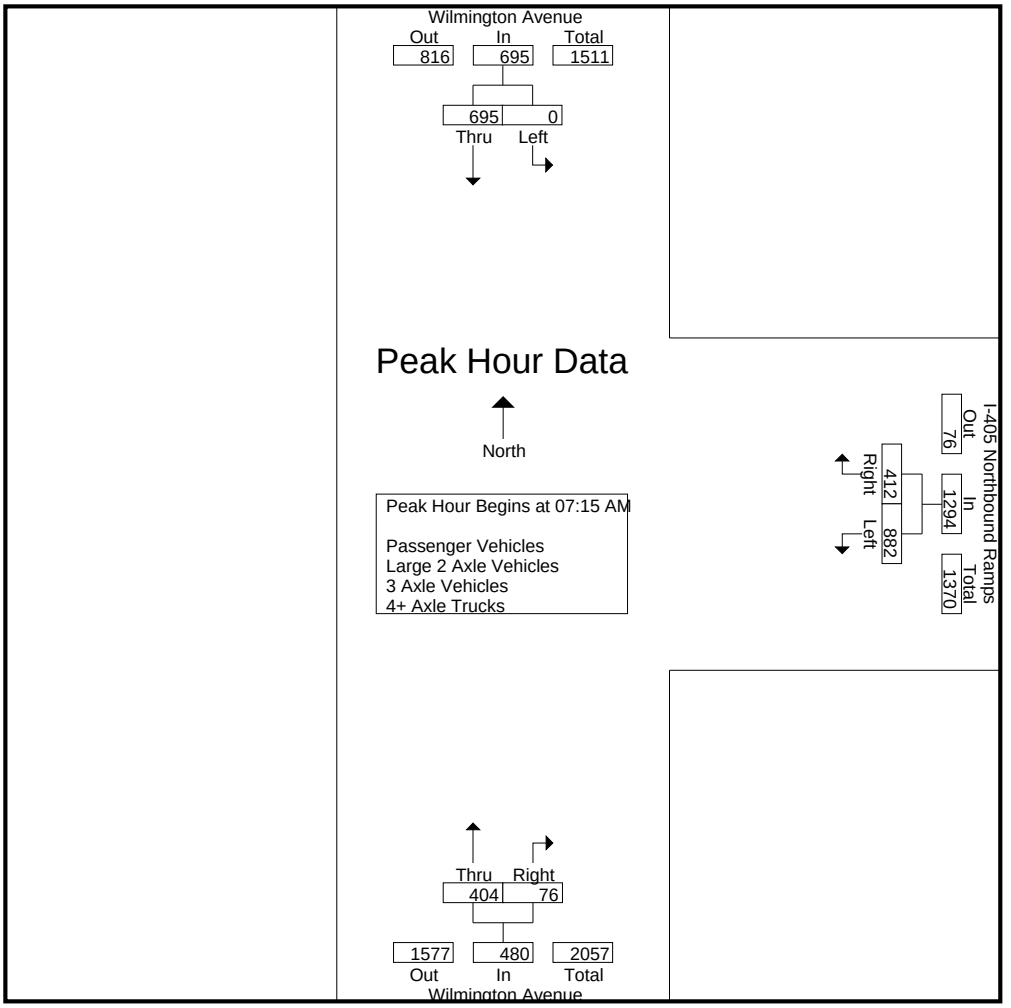
	Wilmington Avenue Southbound			I-405 Northbound Ramps Westbound			Wilmington Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	0	150	150	237	74	311	71	16	87	548
07:15 AM	0	170	170	231	95	326	86	19	105	601
07:30 AM	0	192	192	201	89	290	85	25	110	592
07:45 AM	0	178	178	215	114	329	123	13	136	643
Total	0	690	690	884	372	1256	365	73	438	2384
08:00 AM	0	155	155	235	114	349	110	19	129	633
08:15 AM	0	147	147	181	98	279	96	7	103	529
08:30 AM	1	158	159	186	99	285	68	15	83	527
08:45 AM	0	123	123	183	92	275	85	9	94	492
Total	1	583	584	785	403	1188	359	50	409	2181
Grand Total	1	1273	1274	1669	775	2444	724	123	847	4565
Apprch %	0.1	99.9		68.3	31.7		85.5	14.5		
Total %	0	27.9	27.9	36.6	17	53.5	15.9	2.7	18.6	
Passenger Vehicles	0	973	973	1459	722	2181	620	108	728	3882
% Passenger Vehicles	0	76.4	76.4	87.4	93.2	89.2	85.6	87.8	86	85
Large 2 Axle Vehicles	0	88	88	51	16	67	35	4	39	194
% Large 2 Axle Vehicles	0	6.9	6.9	3.1	2.1	2.7	4.8	3.3	4.6	4.2
3 Axle Vehicles	0	88	88	18	8	26	25	1	26	140
% 3 Axle Vehicles	0	6.9	6.9	1.1	1	1.1	3.5	0.8	3.1	3.1
4+ Axle Trucks	1	124	125	141	29	170	44	10	54	349
% 4+ Axle Trucks	100	9.7	9.8	8.4	3.7	7	6.1	8.1	6.4	7.6

	Wilmington Avenue Southbound			I-405 Northbound Ramps Westbound			Wilmington Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	170	170	231	95	326	86	19	105	601
07:30 AM	0	**192**	**192**	201	89	290	85	**25**	110	592
07:45 AM	0	178	178	215	**114**	329	**123**	13	**136**	**643**
08:00 AM	0	155	155	**235**	114	**349**	110	19	129	633
Total Volume	0	695	695	882	412	1294	404	76	480	2469
% App. Total	0	100		68.2	31.8		84.2	15.8		
PHF	.000	.905	.905	.938	.904	.927	.821	.760	.882	.960

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Carson
N/S: Wilmington Avenue
E/W: I-405 Northbound Ramps
Weather: Clear

File Name : 01_CRS_Wilmington_405N AM
Site Code : 22520115
Start Date : 2/25/2020
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	0	170	170	231	95	326	86	19	105
+15 mins.	0	**192**	**192**	201	89	290	85	**25**	110
+30 mins.	0	178	178	215	**114**	329	**123**	13	**136**
+45 mins.	0	155	155	**235**	114	**349**	110	19	129
Total Volume	0	695	695	882	412	1294	404	76	480
% App. Total	0	100		68.2	31.8		84.2	15.8	
PHF	.000	.905	.905	.938	.904	.927	.821	.760	.882

Counts Unlimited
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City of Carson
N/S: Wilmington Avenue
E/W: I-405 Northbound Ramps
Weather: Clear

File Name : 01_CRS_Wilmington_405N AM
Site Code : 22520115
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Groups Printed- Passenger Vehicles

	Wilmington Avenue Southbound			I-405 Northbound Ramps Westbound			Wilmington Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	0	102	102	211	68	279	63	13	76	457
07:15 AM	0	132	132	205	89	294	82	17	99	525
07:30 AM	0	165	165	182	84	266	74	21	95	526
07:45 AM	0	140	140	190	108	298	110	12	122	560
Total	0	539	539	788	349	1137	329	63	392	2068
08:00 AM	0	122	122	202	107	309	95	18	113	544
08:15 AM	0	115	115	163	90	253	81	6	87	455
08:30 AM	0	110	110	155	93	248	54	13	67	425
08:45 AM	0	87	87	151	83	234	61	8	69	390
Total	0	434	434	671	373	1044	291	45	336	1814
Grand Total	0	973	973	1459	722	2181	620	108	728	3882
Apprch %	0	100		66.9	33.1		85.2	14.8		
Total %	0	25.1	25.1	37.6	18.6	56.2	16	2.8	18.8	

	Wilmington Avenue Southbound			I-405 Northbound Ramps Westbound			Wilmington Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	132	132	**205**	89	294	82	17	99	525
07:30 AM	0	**165**	**165**	182	84	266	74	**21**	95	526
07:45 AM	0	140	140	190	**108**	298	**110**	12	**122**	**560**
08:00 AM	0	122	122	202	107	**309**	95	18	113	544
Total Volume	0	559	559	779	388	1167	361	68	429	2155
% App. Total	0	100		66.8	33.2		84.1	15.9		
PHF	.000	.847	.847	.950	.898	.944	.820	.810	.879	.962

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City of Carson
N/S: Wilmington Avenue
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File Name : 01_CRS_Wilmington_405N AM
Site Code : 22520115
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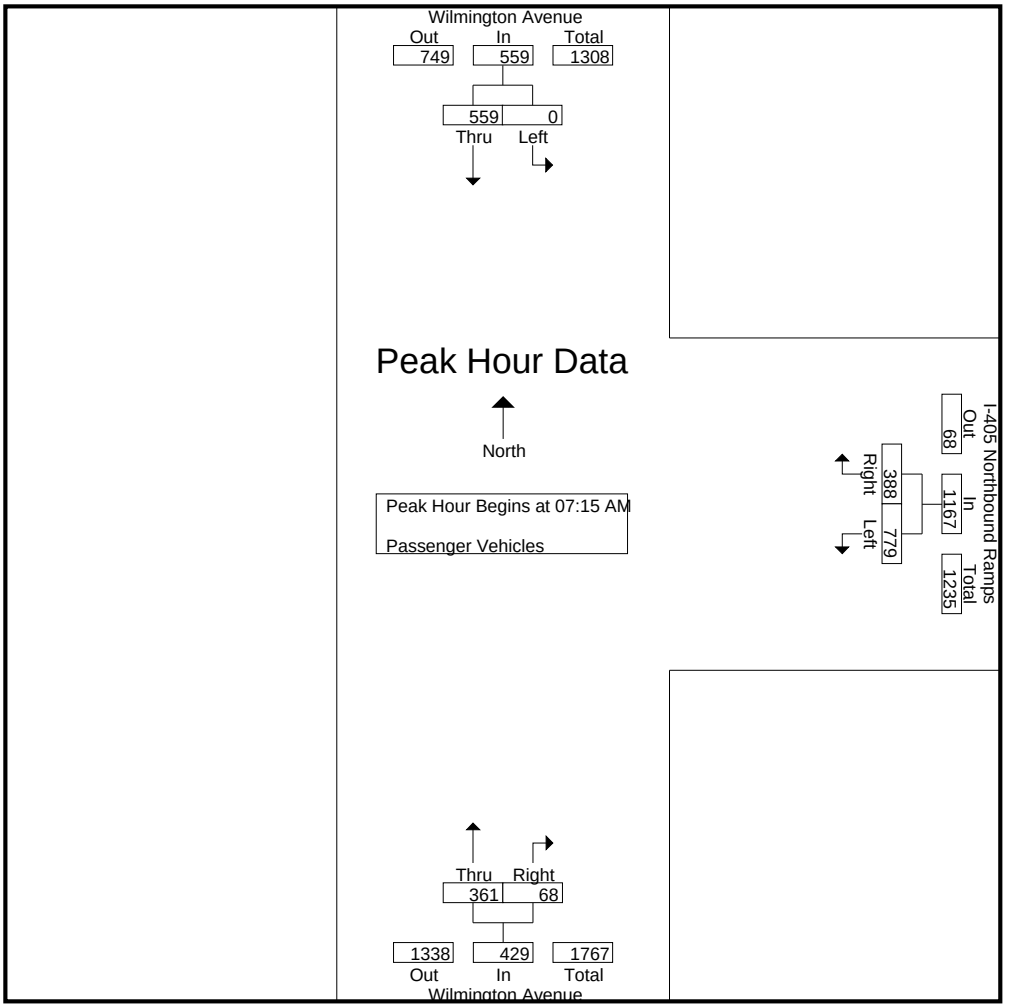

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	0	132	132	**205**	89	294	82	17	99
+15 mins.	0	**165**	**165**	182	84	266	74	**21**	95
+30 mins.	0	140	140	190	**108**	298	**110**	12	**122**
+45 mins.	0	122	122	202	107	**309**	95	18	113
Total Volume	0	559	559	779	388	1167	361	68	429
% App. Total	0	100		66.8	33.2		84.1	15.9	
PHF	.000	.847	.847	.950	.898	.944	.820	.810	.879

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City of Carson
N/S: Wilmington Avenue
E/W: I-405 Northbound Ramps
Weather: Clear

File Name : 01_CRS_Wilmington_405N AM
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Groups Printed- Large 2 Axle Vehicles

	Wilmington Avenue Southbound			I-405 Northbound Ramps Westbound			Wilmington Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	0	13	13	9	2	11	2	2	4	28
07:15 AM	0	10	10	5	1	6	2	1	3	19
07:30 AM	0	7	7	5	2	7	2	0	2	16
07:45 AM	0	13	13	9	1	10	2	1	3	26
Total	0	43	43	28	6	34	8	4	12	89
08:00 AM	0	12	12	9	2	11	4	0	4	27
08:15 AM	0	10	10	4	2	6	7	0	7	23
08:30 AM	0	13	13	5	1	6	5	0	5	24
08:45 AM	0	10	10	5	5	10	11	0	11	31
Total	0	45	45	23	10	33	27	0	27	105
Grand Total	0	88	88	51	16	67	35	4	39	194
Apprch %	0	100		76.1	23.9		89.7	10.3		
Total %	0	45.4	45.4	26.3	8.2	34.5	18	2.1	20.1	

	Wilmington Avenue Southbound			I-405 Northbound Ramps Westbound			Wilmington Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	10	10	5	1	6	2	**1**	3	19
07:30 AM	0	7	7	5	**2**	7	2	0	2	16
07:45 AM	0	**13**	**13**	**9**	1	10	2	1	3	26
08:00 AM	0	12	12	9	2	**11**	**4**	0	**4**	**27**
Total Volume	0	42	42	28	6	34	10	2	12	88
% App. Total	0	100		82.4	17.6		83.3	16.7		
PHF	.000	.808	.808	.778	.750	.773	.625	.500	.750	.815

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City of Carson
N/S: Wilmington Avenue
E/W: I-405 Northbound Ramps
Weather: Clear

File Name : 01_CRS_Wilmington_405N AM
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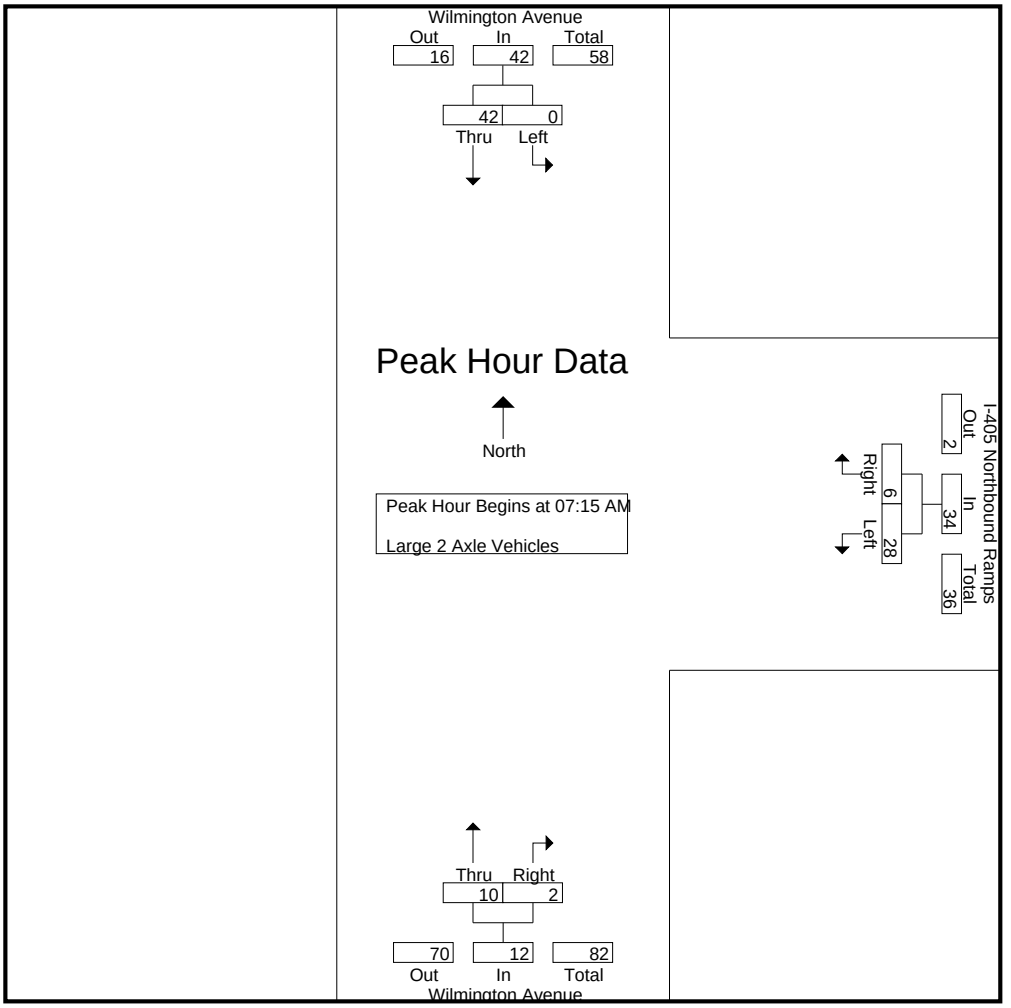

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	0	10	10	5	1	6	2	**1**	3
+15 mins.	0	7	7	5	**2**	7	2	0	2
+30 mins.	0	**13**	**13**	**9**	1	10	2	1	3
+45 mins.	0	12	12	9	2	**11**	**4**	0	**4**
Total Volume	0	42	42	28	6	34	10	2	12
% App. Total	0	100		82.4	17.6		83.3	16.7	
PHF	.000	.808	.808	.778	.750	.773	.625	.500	.750

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City of Carson
N/S: Wilmington Avenue
E/W: I-405 Northbound Ramps
Weather: Clear

File Name : 01_CRS_Wilmington_405N AM
Site Code : 22520115
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Groups Printed- 3 Axle Vehicles

	Wilmington Avenue Southbound			I-405 Northbound Ramps Westbound			Wilmington Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	0	13	13	4	1	5	2	0	2	20
07:15 AM	0	10	10	4	1	5	1	0	1	16
07:30 AM	0	7	7	1	1	2	3	1	4	13
07:45 AM	0	13	13	2	1	3	6	0	6	22
Total	0	43	43	11	4	15	12	1	13	71
08:00 AM	0	12	12	4	1	5	6	0	6	23
08:15 AM	0	10	10	2	2	4	2	0	2	16
08:30 AM	0	13	13	0	1	1	4	0	4	18
08:45 AM	0	10	10	1	0	1	1	0	1	12
Total	0	45	45	7	4	11	13	0	13	69
Grand Total	0	88	88	18	8	26	25	1	26	140
Apprch %	0	100		69.2	30.8		96.2	3.8		
Total %	0	62.9	62.9	12.9	5.7	18.6	17.9	0.7	18.6	

	Wilmington Avenue Southbound			I-405 Northbound Ramps Westbound			Wilmington Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	10	10	**4**	**1**	**5**	1	0	1	16
07:30 AM	0	7	7	1	1	2	3	**1**	4	13
07:45 AM	0	**13**	**13**	2	1	3	**6**	0	**6**	22
08:00 AM	0	12	12	4	1	5	6	0	6	**23**
Total Volume	0	42	42	11	4	15	16	1	17	74
% App. Total	0	100		73.3	26.7		94.1	5.9		
PHF	.000	.808	.808	.688	1.00	.750	.667	.250	.708	.804

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City of Carson
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Weather: Clear

File Name : 01_CRS_Wilmington_405N AM
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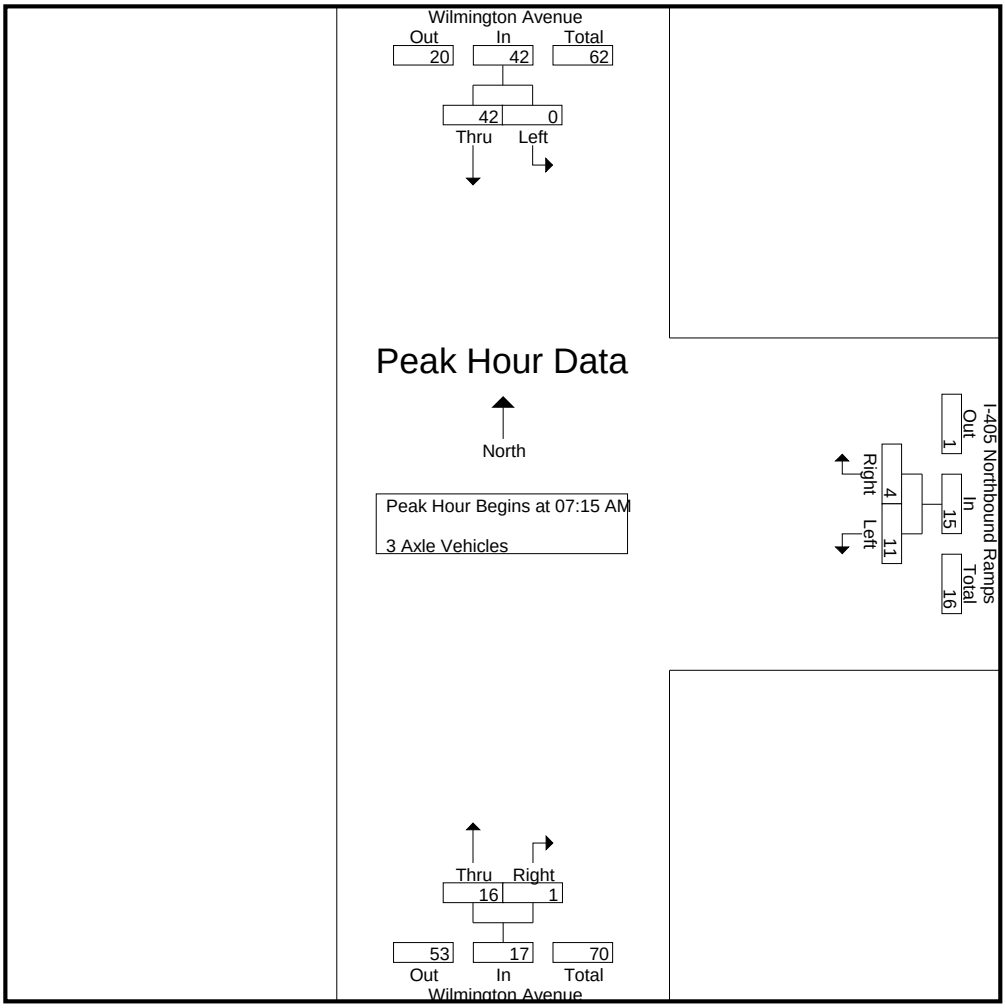

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	0	10	10	**4**	**1**	**5**	1	0	1
+15 mins.	0	7	7	1	1	2	3	**1**	4
+30 mins.	0	**13**	**13**	2	1	3	**6**	0	**6**
+45 mins.	0	12	12	4	1	5	6	0	6
Total Volume	0	42	42	11	4	15	16	1	17
% App. Total	0	100		73.3	26.7		94.1	5.9	
PHF	.000	.808	.808	.688	1.000	.750	.667	.250	.708

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City of Carson
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Weather: Clear

File Name : 01_CRS_Wilmington_405N AM
Site Code : 22520115
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Groups Printed- 4+ Axle Trucks

	Wilmington Avenue Southbound			I-405 Northbound Ramps Westbound			Wilmington Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	0	22	22	13	3	16	4	1	5	43
07:15 AM	0	18	18	17	4	21	1	1	2	41
07:30 AM	0	13	13	13	2	15	6	3	9	37
07:45 AM	0	12	12	14	4	18	5	0	5	35
Total	0	65	65	57	13	70	16	5	21	156
08:00 AM	0	9	9	20	4	24	5	1	6	39
08:15 AM	0	12	12	12	4	16	6	1	7	35
08:30 AM	1	22	23	26	4	30	5	2	7	60
08:45 AM	0	16	16	26	4	30	12	1	13	59
Total	1	59	60	84	16	100	28	5	33	193
Grand Total	1	124	125	141	29	170	44	10	54	349
Apprch %	0.8	99.2		82.9	17.1		81.5	18.5		
Total %	0.3	35.5	35.8	40.4	8.3	48.7	12.6	2.9	15.5	

	Wilmington Avenue Southbound			I-405 Northbound Ramps Westbound			Wilmington Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	**18**	**18**	17	**4**	21	1	1	2	**41**
07:30 AM	0	13	13	13	2	15	**6**	**3**	**9**	37
07:45 AM	0	12	12	14	4	18	5	0	5	35
08:00 AM	0	9	9	**20**	4	**24**	5	1	6	39
Total Volume	0	52	52	64	14	78	17	5	22	152
% App. Total	0	100		82.1	17.9		77.3	22.7		
PHF	.000	.722	.722	.800	.875	.813	.708	.417	.611	.927

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City of Carson
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File Name : 01_CRS_Wilmington_405N AM
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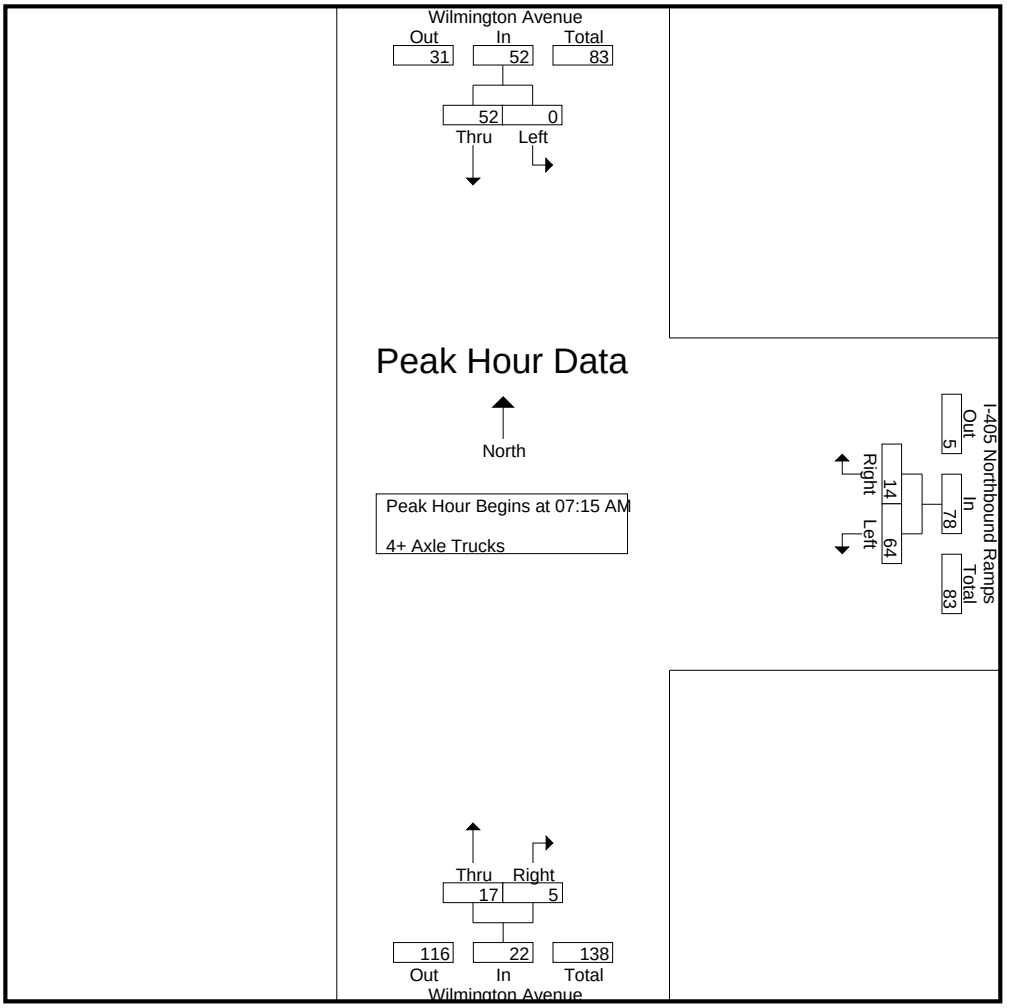

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	0	**18**	**18**	17	**4**	21	1	1	2
+15 mins.	0	13	13	13	2	15	**6**	**3**	**9**
+30 mins.	0	12	12	14	4	18	5	0	5
+45 mins.	0	9	9	**20**	4	**24**	5	1	6
Total Volume	0	52	52	64	14	78	17	5	22
% App. Total	0	100		82.1	17.9		77.3	22.7	
PHF	.000	.722	.722	.800	.875	.813	.708	.417	.611

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Site Code : 22520115
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Wilmington Avenue Southbound			I-405 Northbound Ramps Westbound			Wilmington Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	0	257	257	234	90	324	84	30	114	695
04:15 PM	0	196	196	225	78	303	63	27	90	589
04:30 PM	0	271	271	207	63	270	97	66	163	704
04:45 PM	0	261	261	278	70	348	97	33	130	739
Total	0	985	985	944	301	1245	341	156	497	2727
05:00 PM	0	294	294	271	78	349	87	18	105	748
05:15 PM	0	282	282	270	80	350	113	20	133	765
05:30 PM	0	269	269	234	87	321	108	24	132	722
05:45 PM	0	187	187	260	83	343	63	22	85	615
Total	0	1032	1032	1035	328	1363	371	84	455	2850
Grand Total	0	2017	2017	1979	629	2608	712	240	952	5577
Apprch %	0	100		75.9	24.1		74.8	25.2		
Total %	0	36.2	36.2	35.5	11.3	46.8	12.8	4.3	17.1	
Passenger Vehicles	0	1849	1849	1821	510	2331	621	223	844	5024
% Passenger Vehicles	0	91.7	91.7	92	81.1	89.4	87.2	92.9	88.7	90.1
Large 2 Axle Vehicles	0	43	43	51	45	96	25	7	32	171
% Large 2 Axle Vehicles	0	2.1	2.1	2.6	7.2	3.7	3.5	2.9	3.4	3.1
3 Axle Vehicles	0	43	43	29	28	57	26	1	27	127
% 3 Axle Vehicles	0	2.1	2.1	1.5	4.5	2.2	3.7	0.4	2.8	2.3
4+ Axle Trucks	0	82	82	78	46	124	40	9	49	255
% 4+ Axle Trucks	0	4.1	4.1	3.9	7.3	4.8	5.6	3.8	5.1	4.6

	Wilmington Avenue Southbound			I-405 Northbound Ramps Westbound			Wilmington Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	0	261	261	**278**	70	348	97	**33**	130	739
05:00 PM	0	**294**	**294**	271	78	349	87	18	105	748
05:15 PM	0	282	282	270	80	**350**	**113**	20	**133**	**765**
05:30 PM	0	269	269	234	**87**	321	108	24	132	722
Total Volume	0	1106	1106	1053	315	1368	405	95	500	2974
% App. Total	0	100		77	23		81	19		
PHF	.000	.940	.940	.947	.905	.977	.896	.720	.940	.972

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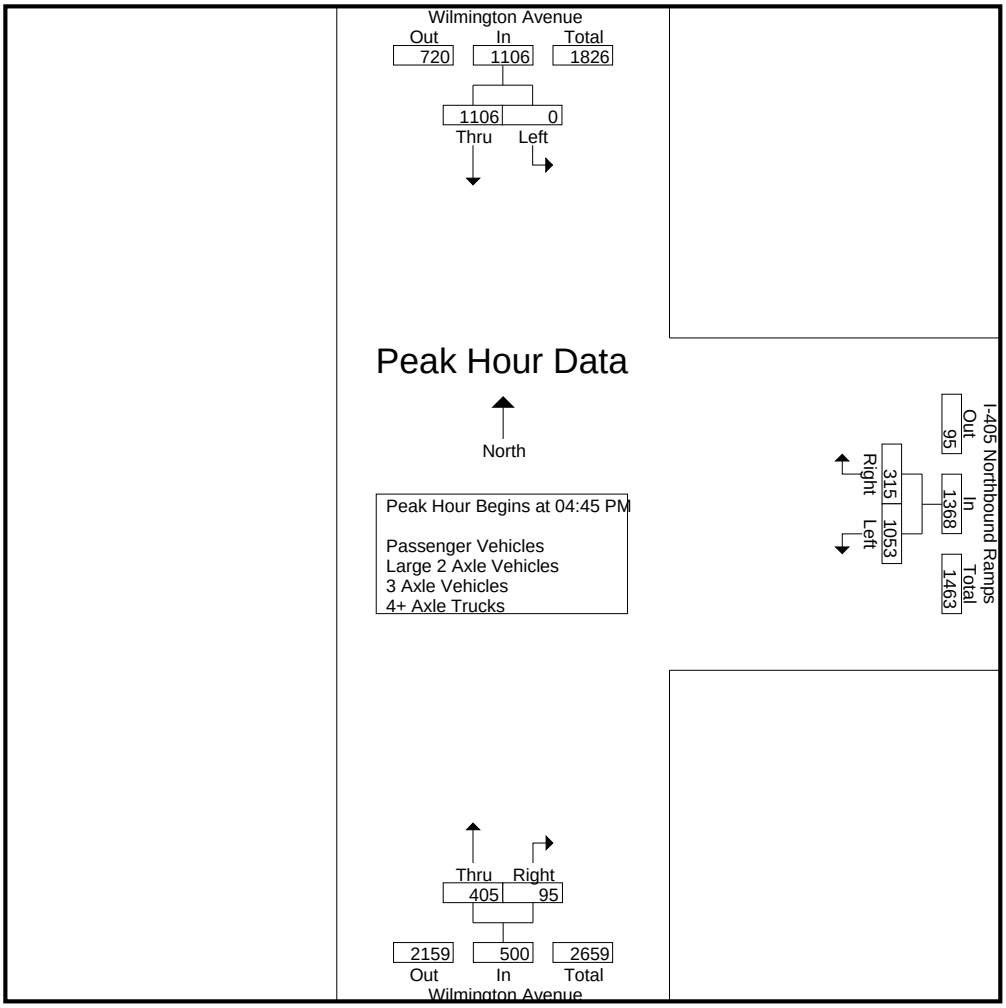

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM			04:45 PM			04:30 PM		
+0 mins.	0	271	271	**278**	70	348	97	**66**	**163**
+15 mins.	0	261	261	271	78	349	97	33	130
+30 mins.	0	**294**	**294**	270	80	**350**	87	18	105
+45 mins.	0	282	282	234	**87**	321	**113**	20	133
Total Volume	0	1108	1108	1053	315	1368	394	137	531
% App. Total	0	100		77	23		74.2	25.8	
PHF	.000	.942	.942	.947	.905	.977	.872	.519	.814

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Groups Printed- Passenger Vehicles

	Wilmington Avenue Southbound			I-405 Northbound Ramps Westbound			Wilmington Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	0	228	228	200	66	266	69	28	97	591
04:15 PM	0	178	178	202	59	261	49	25	74	513
04:30 PM	0	245	245	184	47	231	81	63	144	620
04:45 PM	0	237	237	258	60	318	86	32	118	673
Total	0	888	888	844	232	1076	285	148	433	2397
05:00 PM	0	266	266	251	64	315	78	18	96	677
05:15 PM	0	265	265	257	67	324	107	14	121	710
05:30 PM	0	252	252	217	73	290	98	24	122	664
05:45 PM	0	178	178	252	74	326	53	19	72	576
Total	0	961	961	977	278	1255	336	75	411	2627
Grand Total	0	1849	1849	1821	510	2331	621	223	844	5024
Apprch %	0	100		78.1	21.9		73.6	26.4		
Total %	0	36.8	36.8	36.2	10.2	46.4	12.4	4.4	16.8	

	Wilmington Avenue Southbound			I-405 Northbound Ramps Westbound			Wilmington Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	0	237	237	**258**	60	318	86	**32**	118	673
05:00 PM	0	**266**	**266**	251	64	315	78	18	96	677
05:15 PM	0	265	265	257	67	**324**	**107**	14	121	**710**
05:30 PM	0	252	252	217	**73**	290	98	24	**122**	664
Total Volume	0	1020	1020	983	264	1247	369	88	457	2724
% App. Total	0	100		78.8	21.2		80.7	19.3		
PHF	.000	.959	.959	.953	.904	.962	.862	.688	.936	.959

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City of Carson
N/S: Wilmington Avenue
E/W: I-405 Northbound Ramps
Weather: Clear

File Name : 01_CRS_Wilmington_405N PM
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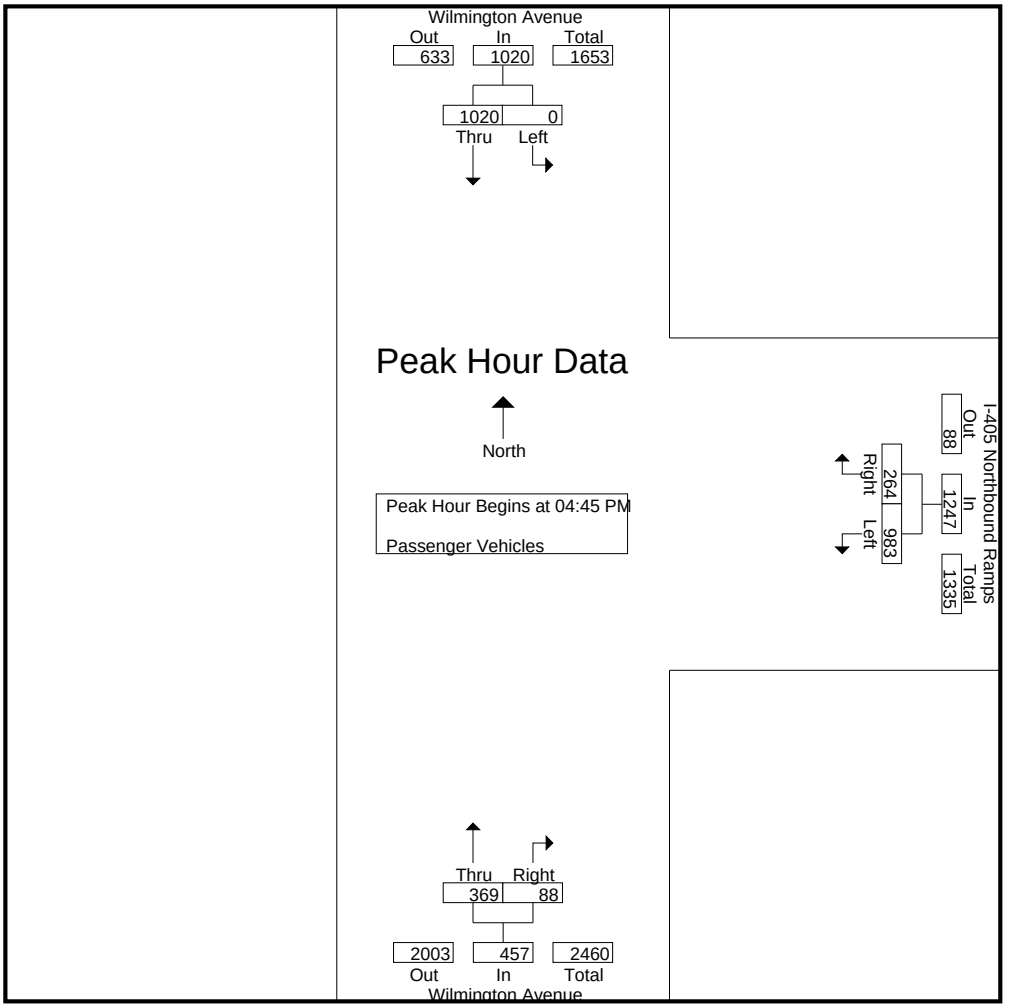

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM			04:45 PM			04:45 PM		
+0 mins.	0	237	237	**258**	60	318	86	**32**	118
+15 mins.	0	**266**	**266**	251	64	315	78	18	96
+30 mins.	0	265	265	257	67	**324**	**107**	14	121
+45 mins.	0	252	252	217	**73**	290	98	24	**122**
Total Volume	0	1020	1020	983	264	1247	369	88	457
% App. Total	0	100		78.8	21.2		80.7	19.3	
PHF	.000	.959	.959	.953	.904	.962	.862	.688	.936

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City of Carson
N/S: Wilmington Avenue
E/W: I-405 Northbound Ramps
Weather: Clear

File Name : 01_CRS_Wilmington_405N PM
Site Code : 22520115
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Groups Printed- Large 2 Axle Vehicles

	Wilmington Avenue Southbound			I-405 Northbound Ramps Westbound			Wilmington Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	0	6	6	17	7	24	6	1	7	37
04:15 PM	0	4	4	6	7	13	1	1	2	19
04:30 PM	0	9	9	8	5	13	5	1	6	28
04:45 PM	0	8	8	4	2	6	4	1	5	19
Total	0	27	27	35	21	56	16	4	20	103
05:00 PM	0	7	7	8	6	14	2	0	2	23
05:15 PM	0	5	5	4	5	9	3	2	5	19
05:30 PM	0	2	2	3	10	13	2	0	2	17
05:45 PM	0	2	2	1	3	4	2	1	3	9
Total	0	16	16	16	24	40	9	3	12	68
Grand Total	0	43	43	51	45	96	25	7	32	171
Apprch %	0	100		53.1	46.9		78.1	21.9		
Total %	0	25.1	25.1	29.8	26.3	56.1	14.6	4.1	18.7	

	Wilmington Avenue Southbound			I-405 Northbound Ramps Westbound			Wilmington Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	0	**8**	**8**	4	2	6	**4**	1	**5**	19
05:00 PM	0	7	7	**8**	6	**14**	2	0	2	**23**
05:15 PM	0	5	5	4	5	9	3	**2**	5	19
05:30 PM	0	2	2	3	**10**	13	2	0	2	17
Total Volume	0	22	22	19	23	42	11	3	14	78
% App. Total	0	100		45.2	54.8		78.6	21.4		
PHF	.000	.688	.688	.594	.575	.750	.688	.375	.700	.848

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File Name : 01_CRS_Wilmington_405N PM
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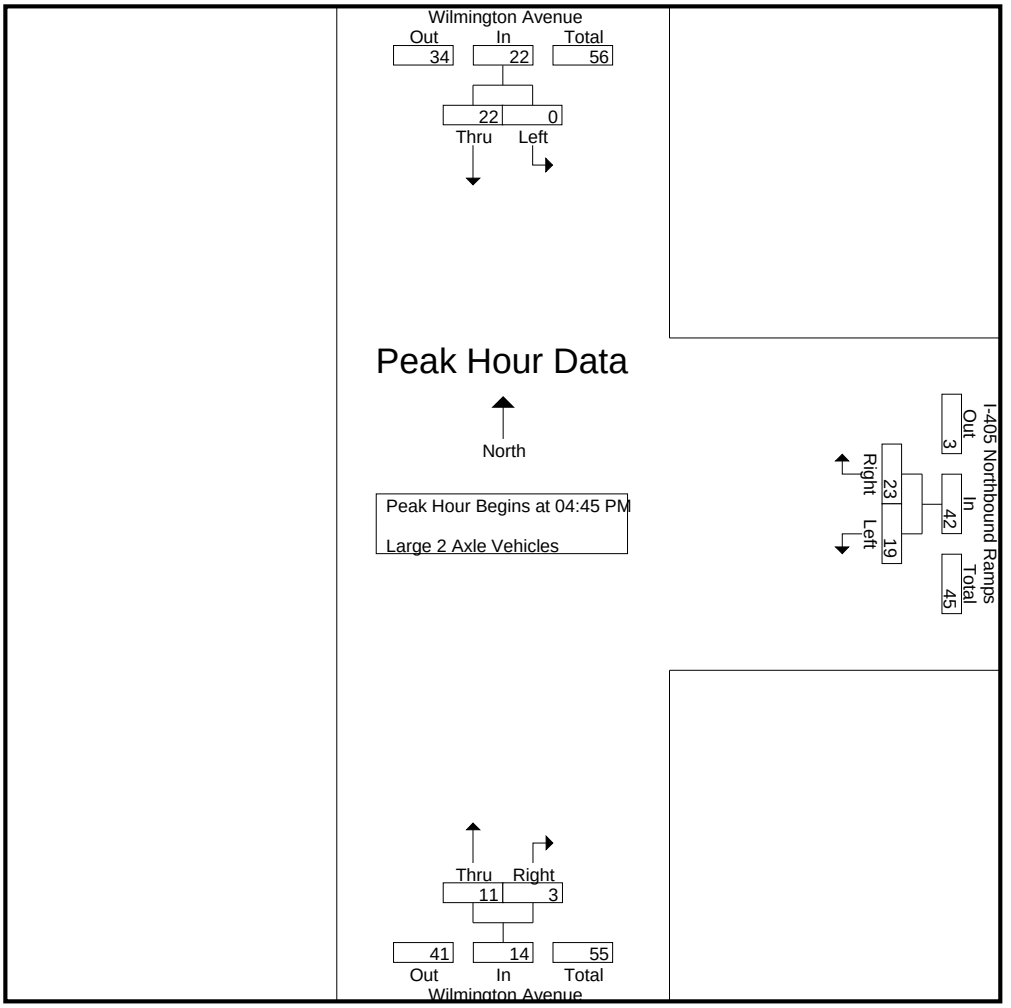

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM			04:45 PM			04:45 PM		
+0 mins.	0	**8**	**8**	4	2	6	**4**	1	**5**
+15 mins.	0	7	7	**8**	6	**14**	2	0	2
+30 mins.	0	5	5	4	5	9	3	**2**	5
+45 mins.	0	2	2	3	**10**	13	2	0	2
Total Volume	0	22	22	19	23	42	11	3	14
% App. Total	0	100		45.2	54.8		78.6	21.4	
PHF	.000	.688	.688	.594	.575	.750	.688	.375	.700

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City of Carson
N/S: Wilmington Avenue
E/W: I-405 Northbound Ramps
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File Name : 01_CRS_Wilmington_405N PM
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Groups Printed- 3 Axle Vehicles

	Wilmington Avenue Southbound			I-405 Northbound Ramps Westbound			Wilmington Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	0	6	6	6	7	13	3	0	3	22
04:15 PM	0	4	4	2	5	7	3	0	3	14
04:30 PM	0	9	9	5	4	9	4	1	5	23
04:45 PM	0	8	8	5	3	8	6	0	6	22
Total	0	27	27	18	19	37	16	1	17	81
05:00 PM	0	7	7	3	1	4	4	0	4	15
05:15 PM	0	5	5	5	5	10	1	0	1	16
05:30 PM	0	2	2	1	1	2	3	0	3	7
05:45 PM	0	2	2	2	2	4	2	0	2	8
Total	0	16	16	11	9	20	10	0	10	46
Grand Total	0	43	43	29	28	57	26	1	27	127
Apprch %	0	100		50.9	49.1		96.3	3.7		
Total %	0	33.9	33.9	22.8	22	44.9	20.5	0.8	21.3	

	Wilmington Avenue Southbound			I-405 Northbound Ramps Westbound			Wilmington Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	0	**8**	**8**	**5**	3	8	**6**	0	**6**	**22**
05:00 PM	0	7	7	3	1	4	4	0	4	15
05:15 PM	0	5	5	5	**5**	**10**	1	0	1	16
05:30 PM	0	2	2	1	1	2	3	0	3	7
Total Volume	0	22	22	14	10	24	14	0	14	60
% App. Total	0	100		58.3	41.7		100	0		
PHF	.000	.688	.688	.700	.500	.600	.583	.000	.583	.682

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File Name : 01_CRS_Wilmington_405N PM
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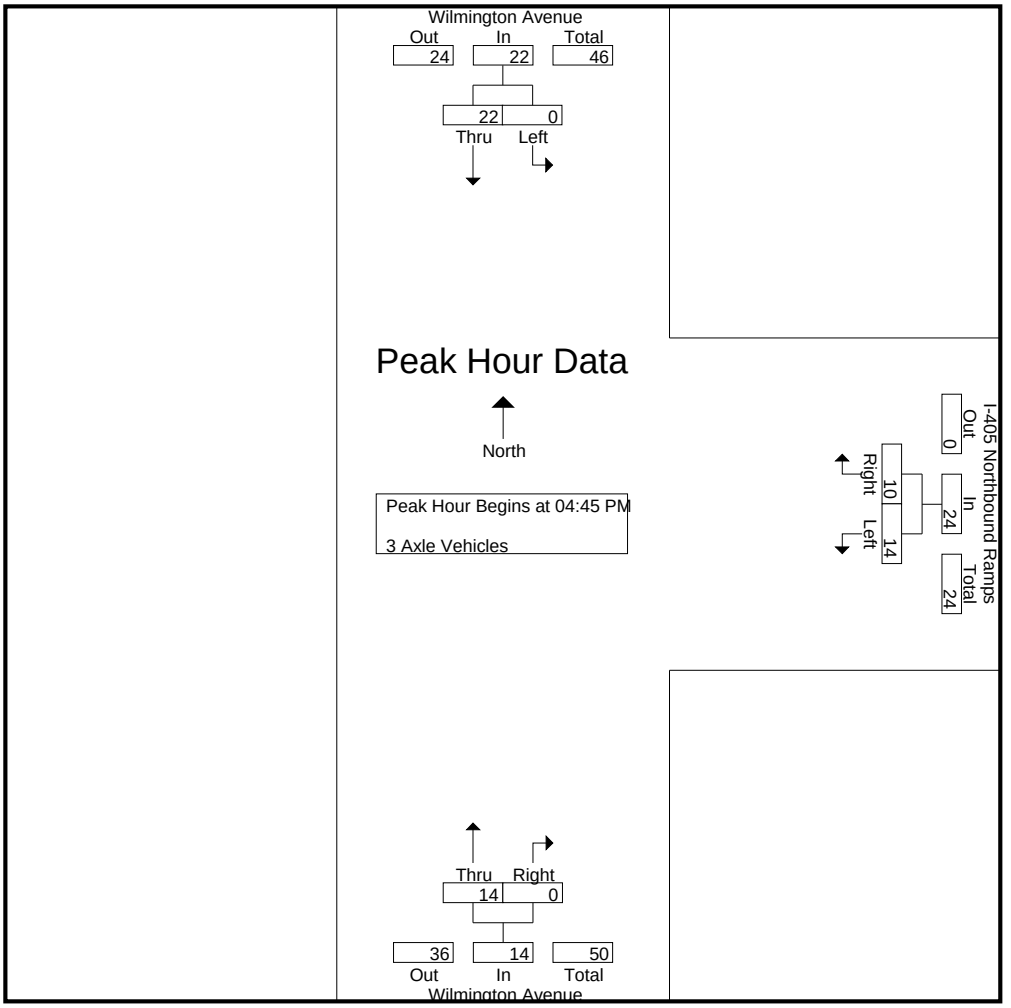

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM			04:45 PM			04:45 PM		
+0 mins.	0	**8**	**8**	**5**	3	8	**6**	0	**6**
+15 mins.	0	7	7	3	1	4	4	0	4
+30 mins.	0	5	5	5	**5**	**10**	1	0	1
+45 mins.	0	2	2	1	1	2	3	0	3
Total Volume	0	22	22	14	10	24	14	0	14
% App. Total	0	100		58.3	41.7		100	0	
PHF	.000	.688	.688	.700	.500	.600	.583	.000	.583

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Weather: Clear

File Name : 01_CRS_Wilmington_405N PM
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Groups Printed- 4+ Axle Trucks

	Wilmington Avenue Southbound			I-405 Northbound Ramps Westbound			Wilmington Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	0	17	17	11	10	21	6	1	7	45
04:15 PM	0	10	10	15	7	22	10	1	11	43
04:30 PM	0	8	8	10	7	17	7	1	8	33
04:45 PM	0	8	8	11	5	16	1	0	1	25
Total	0	43	43	47	29	76	24	3	27	146
05:00 PM	0	14	14	9	7	16	3	0	3	33
05:15 PM	0	7	7	4	3	7	2	4	6	20
05:30 PM	0	13	13	13	3	16	5	0	5	34
05:45 PM	0	5	5	5	4	9	6	2	8	22
Total	0	39	39	31	17	48	16	6	22	109
Grand Total	0	82	82	78	46	124	40	9	49	255
Apprch %	0	100		62.9	37.1		81.6	18.4		
Total %	0	32.2	32.2	30.6	18	48.6	15.7	3.5	19.2	

	Wilmington Avenue Southbound			I-405 Northbound Ramps Westbound			Wilmington Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	0	8	8	11	5	**16**	1	0	1	25
05:00 PM	0	**14**	**14**	9	**7**	16	3	0	3	33
05:15 PM	0	7	7	4	3	7	2	**4**	**6**	20
05:30 PM	0	13	13	**13**	3	16	**5**	0	5	**34**
Total Volume	0	42	42	37	18	55	11	4	15	112
% App. Total	0	100		67.3	32.7		73.3	26.7		
PHF	.000	.750	.750	.712	.643	.859	.550	.250	.625	.824

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File Name : 01_CRS_Wilmington_405N PM
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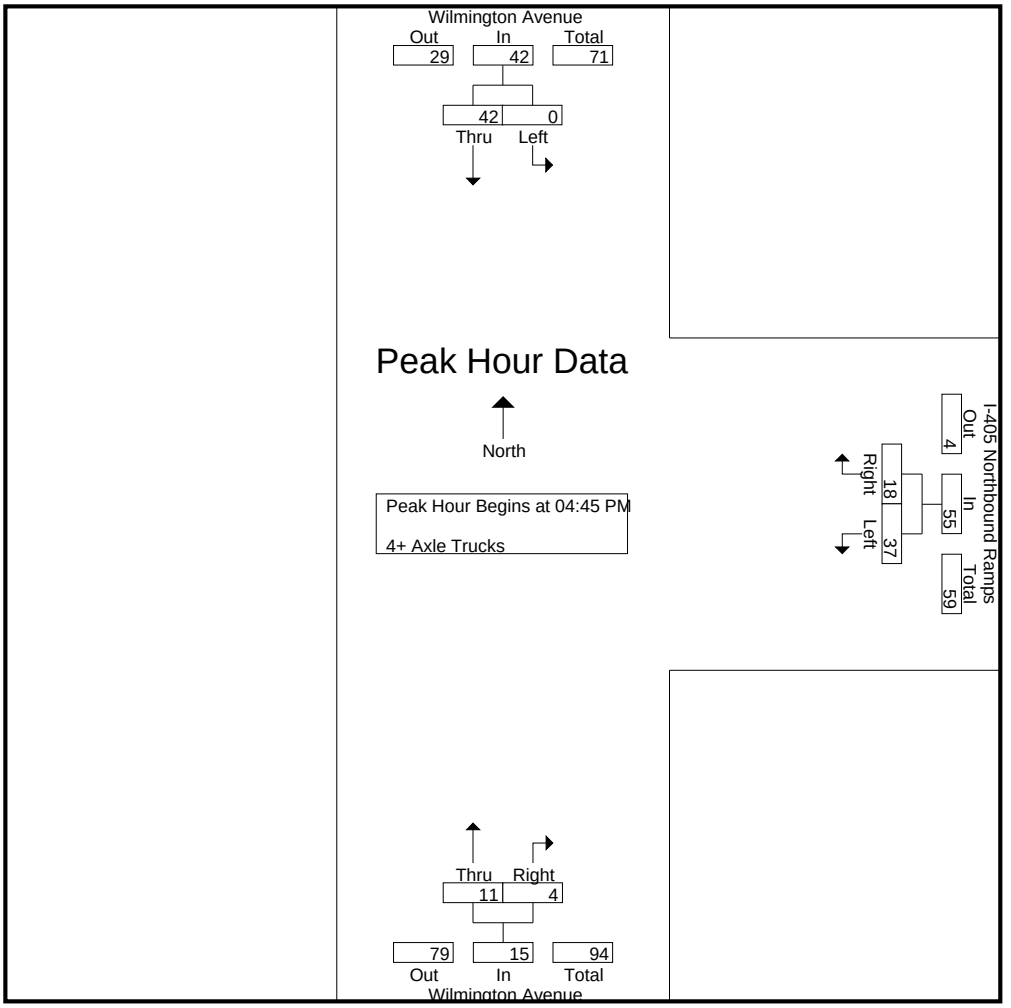

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM			04:45 PM			04:45 PM		
+0 mins.	0	8	8	11	5	**16**	1	0	1
+15 mins.	0	**14**	**14**	9	**7**	16	3	0	3
+30 mins.	0	7	7	4	3	7	2	**4**	**6**
+45 mins.	0	13	13	**13**	3	16	**5**	0	5
Total Volume	0	42	42	37	18	55	11	4	15
% App. Total	0	100		67.3	32.7		73.3	26.7	
PHF	.000	.750	.750	.712	.643	.859	.550	.250	.625

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Weather: Clear

File Name : 02_CRS_Wilmington_405S AM
Site Code : 22520115
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Wilmington Avenue Southbound				I-405 Northbound On Ramp Westbound				Wilmington Avenue Northbound				I-405 Northbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	82	271	0	353	0	0	0	0	0	76	146	222	21	0	39	60	635
07:15 AM	81	310	0	391	0	0	0	0	0	80	192	272	15	0	41	56	719
07:30 AM	85	286	0	371	0	0	0	0	0	92	221	313	13	0	26	39	723
07:45 AM	70	296	0	366	0	0	0	0	0	104	176	280	27	0	41	68	714
Total	318	1163	0	1481	0	0	0	0	0	352	735	1087	76	0	147	223	2791
08:00 AM	72	301	0	373	0	0	0	0	0	100	187	287	28	0	50	78	738
08:15 AM	72	243	0	315	0	0	0	0	0	98	225	323	13	0	38	51	689
08:30 AM	64	278	0	342	0	0	0	0	0	57	191	248	20	0	36	56	646
08:45 AM	60	244	0	304	0	0	0	0	0	74	150	224	16	0	49	65	593
Total	268	1066	0	1334	0	0	0	0	0	329	753	1082	77	0	173	250	2666
Grand Total	586	2229	0	2815	0	0	0	0	0	681	1488	2169	153	0	320	473	5457
Apprch %	20.8	79.2	0		0	0	0		0	31.4	68.6		32.3	0	67.7		
Total %	10.7	40.8	0	51.6	0	0	0	0	0	12.5	27.3	39.7	2.8	0	5.9	8.7	
Passenger Vehicles	451	1921	0	2372	0	0	0	0	0	580	1328	1908	140	0	266	406	4686
% Passenger Vehicles	77	86.2	0	84.3	0	0	0	0	0	85.2	89.2	88	91.5	0	83.1	85.8	85.9
Large 2 Axle Vehicles	51	65	0	116	0	0	0	0	0	31	32	63	5	0	25	30	209
% Large 2 Axle Vehicles	8.7	2.9	0	4.1	0	0	0	0	0	4.6	2.2	2.9	3.3	0	7.8	6.3	3.8
3 Axle Vehicles	30	65	0	95	0	0	0	0	0	25	27	52	1	0	9	10	157
% 3 Axle Vehicles	5.1	2.9	0	3.4	0	0	0	0	0	3.7	1.8	2.4	0.7	0	2.8	2.1	2.9
4+ Axle Trucks	54	178	0	232	0	0	0	0	0	45	101	146	7	0	20	27	405
% 4+ Axle Trucks	9.2	8	0	8.2	0	0	0	0	0	6.6	6.8	6.7	4.6	0	6.2	5.7	7.4

	Wilmington Avenue Southbound				I-405 Northbound On Ramp Westbound				Wilmington Avenue Northbound				I-405 Northbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	81	**310**	0	**391**	0	0	0	0	0	80	192	272	15	0	41	56	719
07:30 AM	**85**	286	0	371	0	0	0	0	0	92	**221**	**313**	13	0	26	39	723
07:45 AM	70	296	0	366	0	0	0	0	0	**104**	176	280	27	0	41	68	714
08:00 AM	72	301	0	373	0	0	0	0	0	100	187	287	**28**	0	**50**	**78**	**738**
Total Volume	308	1193	0	1501	0	0	0	0	0	376	776	1152	83	0	158	241	2894
% App. Total	20.5	79.5	0		0	0	0		0	32.6	67.4		34.4	0	65.6		
PHF	.906	.962	.000	.960	.000	.000	.000	.000	.000	.904	.878	.920	.741	.000	.790	.772	.980

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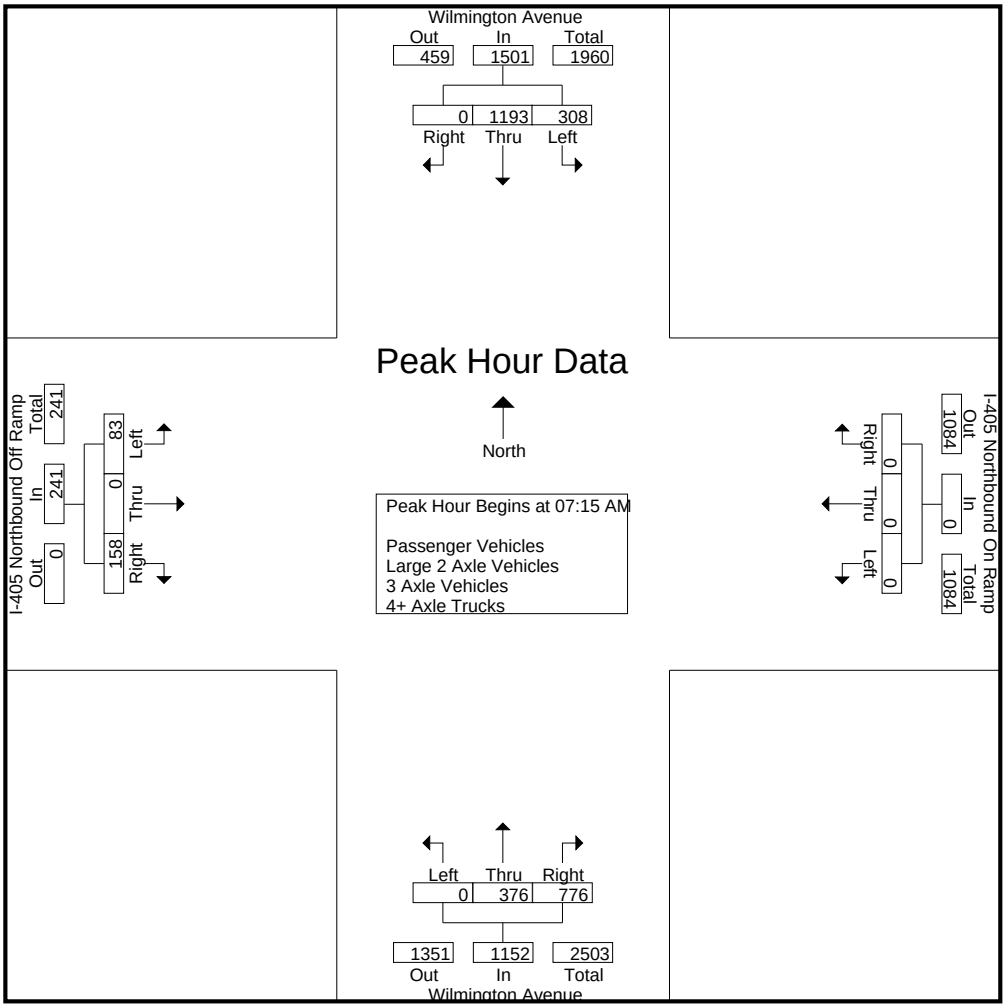

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:00 AM				07:30 AM				07:45 AM			
+0 mins.	81	**310**	0	**391**	0	0	0	0	0	92	221	313	27	0	41	68
+15 mins.	**85**	286	0	371	0	0	0	0	0	**104**	176	280	**28**	0	**50**	**78**
+30 mins.	70	296	0	366	0	0	0	0	0	100	187	287	13	0	38	51
+45 mins.	72	301	0	373	0	0	0	0	0	98	**225**	**323**	20	0	36	56
Total Volume	308	1193	0	1501	0	0	0	0	0	394	809	1203	88	0	165	253
% App. Total	20.5	79.5	0		0	0	0		0	32.8	67.2		34.8	0	65.2	
PHF	.906	.962	.000	.960	.000	.000	.000	.000	.000	.947	.899	.931	.786	.000	.825	.811

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File Name : 02_CRS_Wilmington_405S AM
Site Code : 22520115
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Groups Printed- Passenger Vehicles

	Wilmington Avenue Southbound				I-405 Northbound On Ramp Westbound				Wilmington Avenue Northbound				I-405 Northbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	59	234	0	293	0	0	0	0	0	68	129	197	19	0	37	56	546
07:15 AM	61	270	0	331	0	0	0	0	0	75	169	244	15	0	38	53	628
07:30 AM	70	265	0	335	0	0	0	0	0	80	203	283	12	0	20	32	650
07:45 AM	52	259	0	311	0	0	0	0	0	91	161	252	27	0	31	58	621
Total	242	1028	0	1270	0	0	0	0	0	314	662	976	73	0	126	199	2445
08:00 AM	60	264	0	324	0	0	0	0	0	84	167	251	28	0	43	71	646
08:15 AM	61	215	0	276	0	0	0	0	0	84	201	285	11	0	32	43	604
08:30 AM	45	220	0	265	0	0	0	0	0	43	172	215	18	0	31	49	529
08:45 AM	43	194	0	237	0	0	0	0	0	55	126	181	10	0	34	44	462
Total	209	893	0	1102	0	0	0	0	0	266	666	932	67	0	140	207	2241
Grand Total	451	1921	0	2372	0	0	0	0	0	580	1328	1908	140	0	266	406	4686
Apprch %	19	81	0		0	0	0		0	30.4	69.6		34.5	0	65.5		
Total %	9.6	41	0	50.6	0	0	0	0	0	12.4	28.3	40.7	3	0	5.7	8.7	

	Wilmington Avenue Southbound				I-405 Northbound On Ramp Westbound				Wilmington Avenue Northbound				I-405 Northbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	61	**270**	0	331	0	0	0	0	0	75	169	244	15	0	38	53	628
07:30 AM	**70**	265	0	**335**	0	0	0	0	0	80	**203**	**283**	12	0	20	32	**650**
07:45 AM	52	259	0	311	0	0	0	0	0	**91**	161	252	27	0	31	58	621
08:00 AM	60	264	0	324	0	0	0	0	0	84	167	251	**28**	0	**43**	**71**	646
Total Volume	243	1058	0	1301	0	0	0	0	0	330	700	1030	82	0	132	214	2545
% App. Total	18.7	81.3	0		0	0	0		0	32	68		38.3	0	61.7		
PHF	.868	.980	.000	.971	.000	.000	.000	.000	.000	.907	.862	.910	.732	.000	.767	.754	.979

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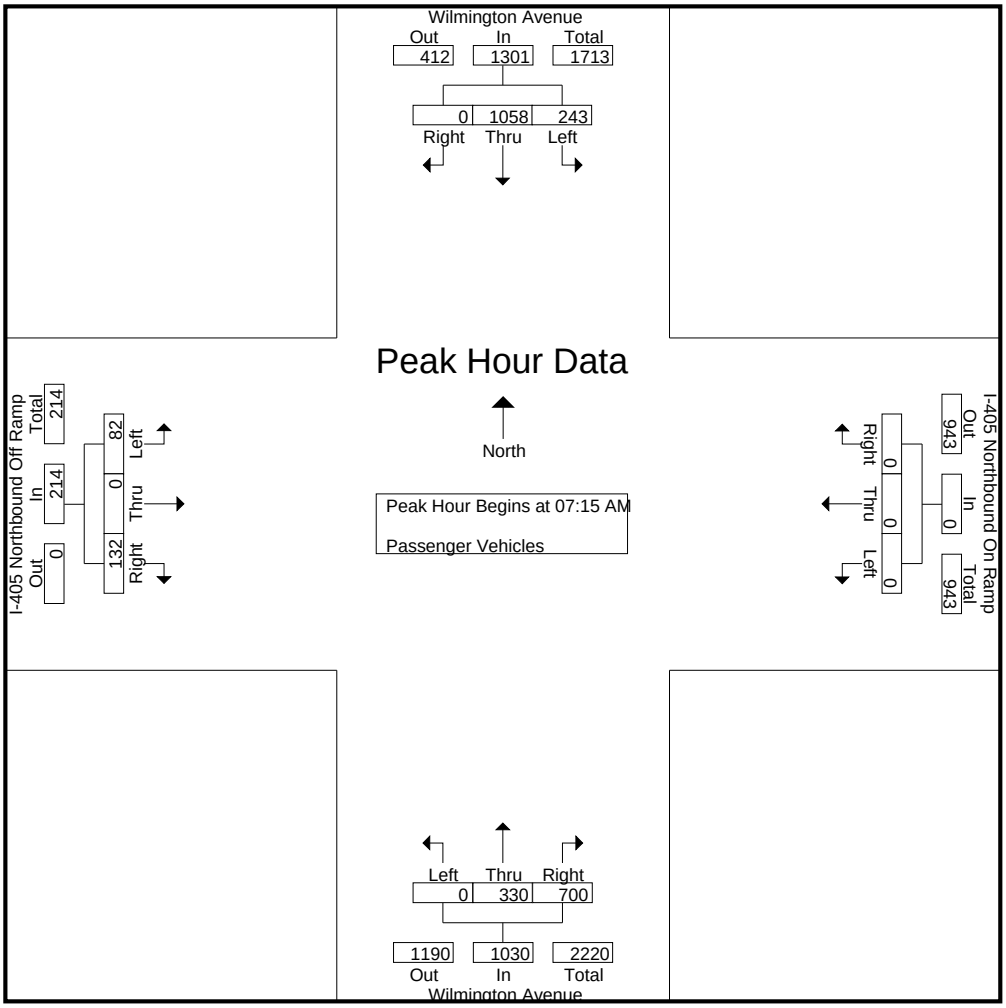
(951) 268-6268

City of Carson
N/S: Wilmington Avenue
E/W: I-405 Northbound Ramps
Weather: Clear

File Name : 02_CRS_Wilmington_405S AM
Site Code : 22520115
Start Date : 2/25/2020
Page No : 2



Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	61	**270**	0	331	0	0	0	0	0	75	169	244	15	0	38	53
+15 mins.	**70**	265	0	**335**	0	0	0	0	0	80	**203**	**283**	12	0	20	32
+30 mins.	52	259	0	311	0	0	0	0	0	**91**	161	252	27	0	31	58
+45 mins.	60	264	0	324	0	0	0	0	0	84	167	251	**28**	0	**43**	**71**
Total Volume	243	1058	0	1301	0	0	0	0	0	330	700	1030	82	0	132	214
% App. Total	18.7	81.3	0		0	0	0		0	32	68		38.3	0	61.7	
PHF	.868	.980	.000	.971	.000	.000	.000	.000	.000	.907	.862	.910	.732	.000	.767	.754

Counts Unlimited
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File Name : 02_CRS_Wilmington_405S AM
Site Code : 22520115
Start Date : 2/25/2020
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Groups Printed- Large 2 Axle Vehicles

	Wilmington Avenue Southbound				I-405 Northbound On Ramp Westbound				Wilmington Avenue Northbound				I-405 Northbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	7	8	0	15	0	0	0	0	0	2	2	4	0	0	0	0	19
07:15 AM	8	8	0	16	0	0	0	0	0	3	3	6	0	0	0	0	22
07:30 AM	4	4	0	8	0	0	0	0	0	1	6	7	0	0	3	3	18
07:45 AM	9	10	0	19	0	0	0	0	0	2	2	4	0	0	4	4	27
Total	28	30	0	58	0	0	0	0	0	8	13	21	0	0	7	7	86
08:00 AM	6	8	0	14	0	0	0	0	0	4	5	9	0	0	1	1	24
08:15 AM	6	6	0	12	0	0	0	0	0	6	5	11	1	0	4	5	28
08:30 AM	4	12	0	16	0	0	0	0	0	4	2	6	2	0	4	6	28
08:45 AM	7	9	0	16	0	0	0	0	0	9	7	16	2	0	9	11	43
Total	23	35	0	58	0	0	0	0	0	23	19	42	5	0	18	23	123
Grand Total	51	65	0	116	0	0	0	0	0	31	32	63	5	0	25	30	209
Apprch %	44	56	0		0	0	0		0	49.2	50.8		16.7	0	83.3		
Total %	24.4	31.1	0	55.5	0	0	0	0	0	14.8	15.3	30.1	2.4	0	12	14.4	

	Wilmington Avenue Southbound				I-405 Northbound On Ramp Westbound				Wilmington Avenue Northbound				I-405 Northbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	8	8	0	16	0	0	0	0	0	3	3	6	0	0	0	0	22
07:30 AM	4	4	0	8	0	0	0	0	0	1	**6**	7	0	0	3	3	18
07:45 AM	**9**	**10**	0	**19**	0	0	0	0	0	2	2	4	0	0	**4**	**4**	**27**
08:00 AM	6	8	0	14	0	0	0	0	0	**4**	5	**9**	0	0	1	1	24
Total Volume	27	30	0	57	0	0	0	0	0	10	16	26	0	0	8	8	91
% App. Total	47.4	52.6	0		0	0	0		0	38.5	61.5		0	0	100		
PHF	.750	.750	.000	.750	.000	.000	.000	.000	.000	.625	.667	.722	.000	.000	.500	.500	.843

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File Name : 02_CRS_Wilmington_405S AM
Site Code : 22520115
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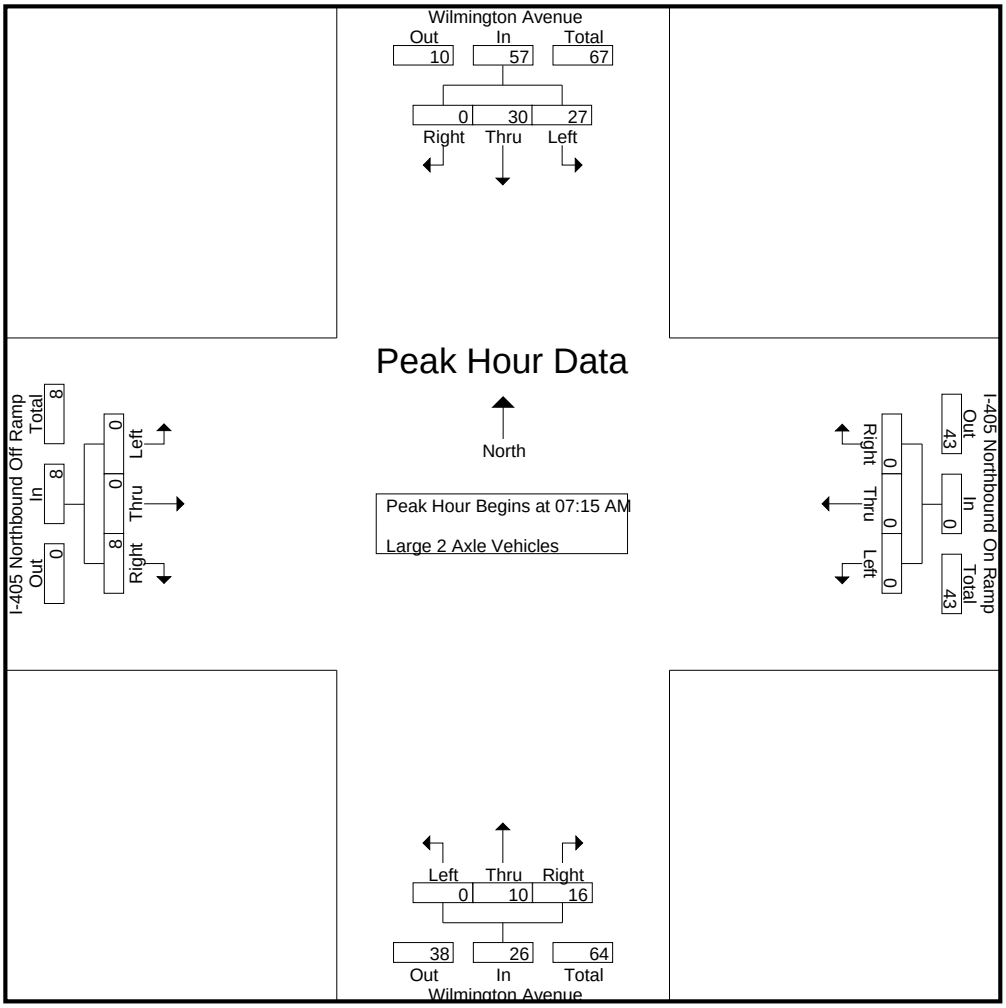

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	8	8	0	16	0	0	0	0	0	3	3	6	0	0	0	0
+15 mins.	4	4	0	8	0	0	0	0	0	1	**6**	7	0	0	3	3
+30 mins.	**9**	**10**	0	**19**	0	0	0	0	0	2	2	4	0	0	**4**	**4**
+45 mins.	6	8	0	14	0	0	0	0	0	**4**	5	**9**	0	0	1	1
Total Volume	27	30	0	57	0	0	0	0	0	10	16	26	0	0	8	8
% App. Total	47.4	52.6	0		0	0	0		0	38.5	61.5		0	0	100	
PHF	.750	.750	.000	.750	.000	.000	.000	.000	.000	.625	.667	.722	.000	.000	.500	.500

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City of Carson
N/S: Wilmington Avenue
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File Name : 02_CRS_Wilmington_405S AM
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Groups Printed- 3 Axle Vehicles

	Wilmington Avenue Southbound				I-405 Northbound On Ramp Westbound				Wilmington Avenue Northbound				I-405 Northbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	13	8	0	21	0	0	0	0	0	2	3	5	0	0	0	0	26
07:15 AM	5	8	0	13	0	0	0	0	0	1	1	2	0	0	1	1	16
07:30 AM	4	4	0	8	0	0	0	0	0	4	1	5	0	0	2	2	15
07:45 AM	4	10	0	14	0	0	0	0	0	7	5	12	0	0	3	3	29
Total	26	30	0	56	0	0	0	0	0	14	10	24	0	0	6	6	86
08:00 AM	1	8	0	9	0	0	0	0	0	6	5	11	0	0	1	1	21
08:15 AM	0	6	0	6	0	0	0	0	0	1	8	9	1	0	0	1	16
08:30 AM	3	12	0	15	0	0	0	0	0	3	1	4	0	0	1	1	20
08:45 AM	0	9	0	9	0	0	0	0	0	1	3	4	0	0	1	1	14
Total	4	35	0	39	0	0	0	0	0	11	17	28	1	0	3	4	71
Grand Total	30	65	0	95	0	0	0	0	0	25	27	52	1	0	9	10	157
Apprch %	31.6	68.4	0		0	0	0		0	48.1	51.9		10	0	90		
Total %	19.1	41.4	0	60.5	0	0	0	0	0	15.9	17.2	33.1	0.6	0	5.7	6.4	

	Wilmington Avenue Southbound				I-405 Northbound On Ramp Westbound				Wilmington Avenue Northbound				I-405 Northbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	**5**	8	0	13	0	0	0	0	0	1	1	2	0	0	1	1	16
07:30 AM	4	4	0	8	0	0	0	0	0	4	1	5	0	0	2	2	15
07:45 AM	4	**10**	0	**14**	0	0	0	0	0	**7**	**5**	**12**	0	0	**3**	**3**	**29**
08:00 AM	1	8	0	9	0	0	0	0	0	6	5	11	0	0	1	1	21
Total Volume	14	30	0	44	0	0	0	0	0	18	12	30	0	0	7	7	81
% App. Total	31.8	68.2	0		0	0	0		0	60	40		0	0	100		
PHF	.700	.750	.000	.786	.000	.000	.000	.000	.000	.643	.600	.625	.000	.000	.583	.583	.698

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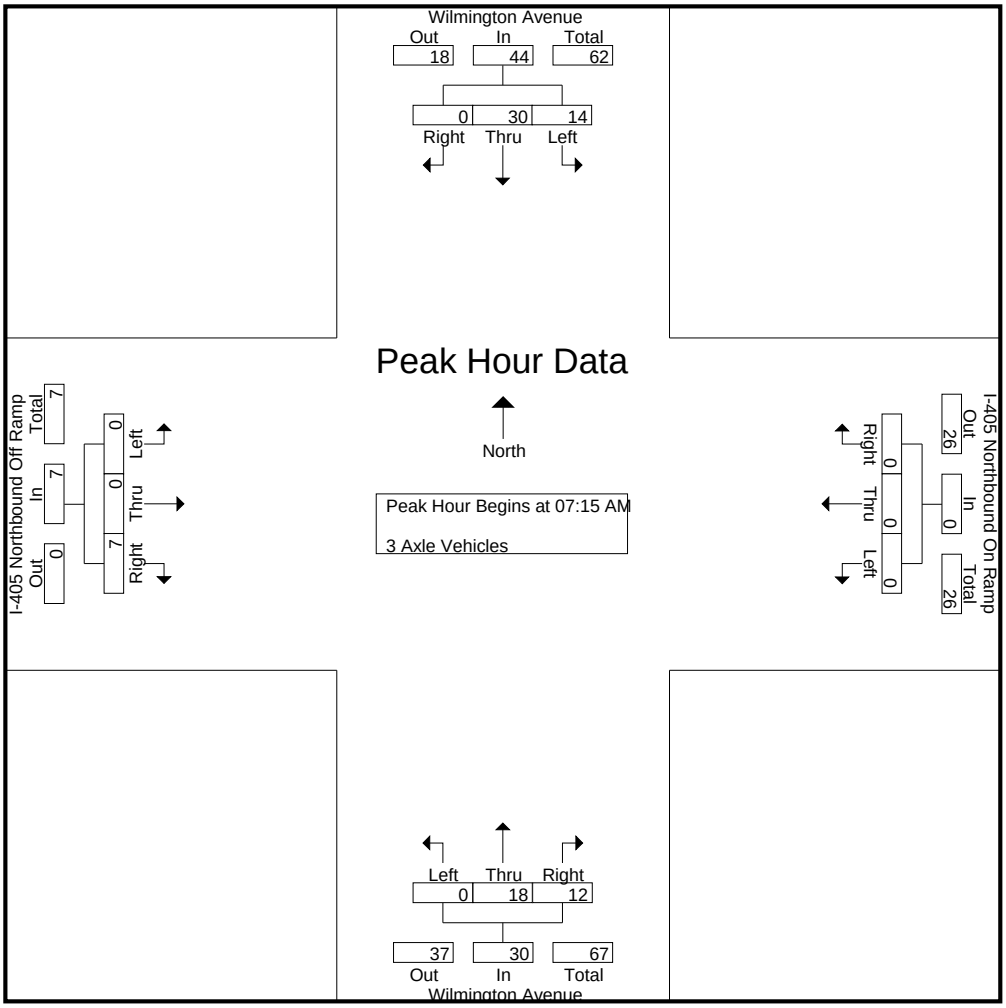

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	**5**	8	0	13	0	0	0	0	0	1	1	2	0	0	1	1
+15 mins.	4	4	0	8	0	0	0	0	0	4	1	5	0	0	2	2
+30 mins.	4	**10**	0	**14**	0	0	0	0	0	**7**	**5**	**12**	0	0	**3**	**3**
+45 mins.	1	8	0	9	0	0	0	0	0	6	5	11	0	0	1	1
Total Volume	14	30	0	44	0	0	0	0	0	18	12	30	0	0	7	7
% App. Total	31.8	68.2	0		0	0	0		0	60	40		0	0	100	
PHF	.700	.750	.000	.786	.000	.000	.000	.000	.000	.643	.600	.625	.000	.000	.583	.583

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City of Carson
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File Name : 02_CRS_Wilmington_405S AM
Site Code : 22520115
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Page No : 1

Groups Printed- 4+ Axle Trucks

	Wilmington Avenue Southbound				I-405 Northbound On Ramp Westbound				Wilmington Avenue Northbound				I-405 Northbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	3	21	0	24	0	0	0	0	0	4	12	16	2	0	2	4	44
07:15 AM	7	24	0	31	0	0	0	0	0	1	19	20	0	0	2	2	53
07:30 AM	7	13	0	20	0	0	0	0	0	7	11	18	1	0	1	2	40
07:45 AM	5	17	0	22	0	0	0	0	0	4	8	12	0	0	3	3	37
Total	22	75	0	97	0	0	0	0	0	16	50	66	3	0	8	11	174
08:00 AM	5	21	0	26	0	0	0	0	0	6	10	16	0	0	5	5	47
08:15 AM	5	16	0	21	0	0	0	0	0	7	11	18	0	0	2	2	41
08:30 AM	12	34	0	46	0	0	0	0	0	7	16	23	0	0	0	0	69
08:45 AM	10	32	0	42	0	0	0	0	0	9	14	23	4	0	5	9	74
Total	32	103	0	135	0	0	0	0	0	29	51	80	4	0	12	16	231
Grand Total	54	178	0	232	0	0	0	0	0	45	101	146	7	0	20	27	405
Apprch %	23.3	76.7	0		0	0	0		0	30.8	69.2		25.9	0	74.1		
Total %	13.3	44	0	57.3	0	0	0	0	0	11.1	24.9	36	1.7	0	4.9	6.7	

	Wilmington Avenue Southbound				I-405 Northbound On Ramp Westbound				Wilmington Avenue Northbound				I-405 Northbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	**7**	**24**	0	**31**	0	0	0	0	0	1	**19**	**20**	0	0	2	2	**53**
07:30 AM	7	13	0	20	0	0	0	0	0	**7**	11	18	**1**	0	1	2	40
07:45 AM	5	17	0	22	0	0	0	0	0	4	8	12	0	0	3	3	37
08:00 AM	5	21	0	26	0	0	0	0	0	6	10	16	0	0	**5**	**5**	47
Total Volume	24	75	0	99	0	0	0	0	0	18	48	66	1	0	11	12	177
% App. Total	24.2	75.8	0		0	0	0		0	27.3	72.7		8.3	0	91.7		
PHF	.857	.781	.000	.798	.000	.000	.000	.000	.000	.643	.632	.825	.250	.000	.550	.600	.835

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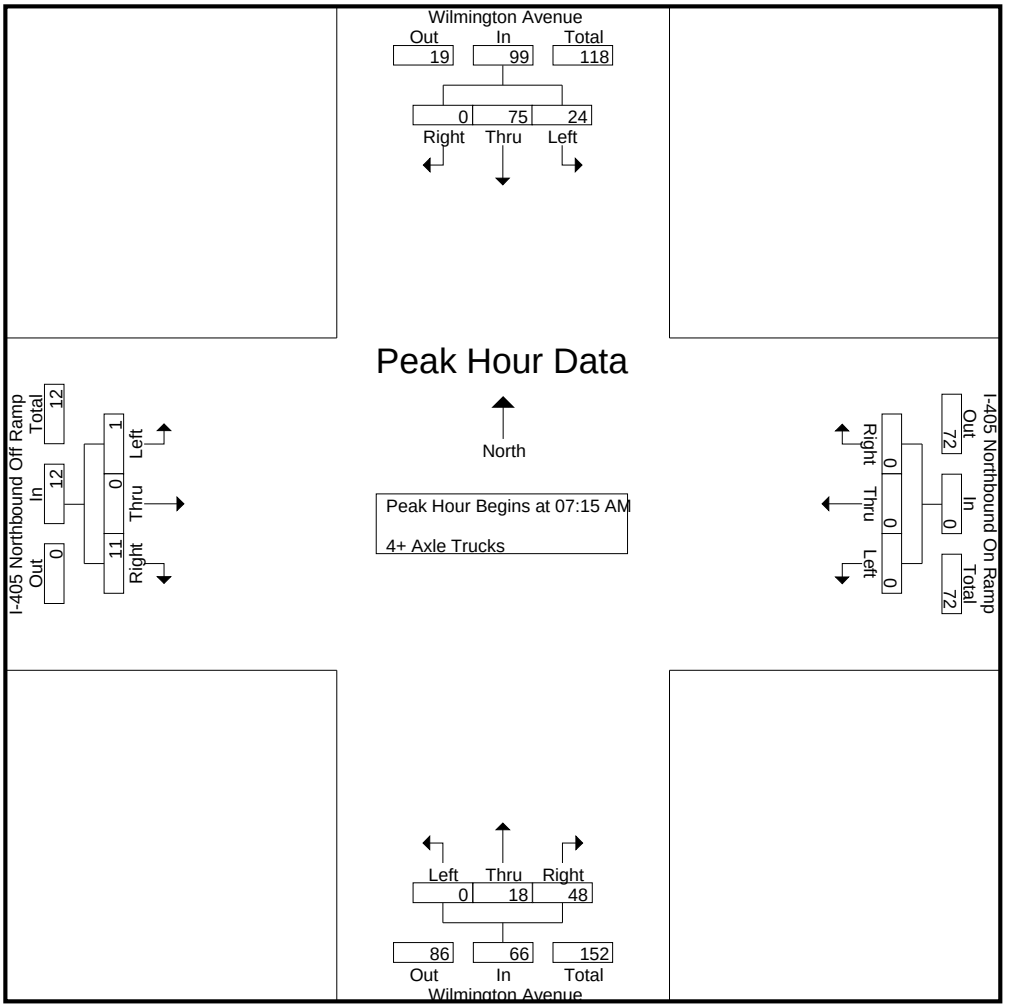

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	**7**	**24**	0	**31**	0	0	0	0	0	1	**19**	**20**	0	0	2	2
+15 mins.	7	13	0	20	0	0	0	0	0	**7**	11	18	**1**	0	1	2
+30 mins.	5	17	0	22	0	0	0	0	0	4	8	12	0	0	3	3
+45 mins.	5	21	0	26	0	0	0	0	0	6	10	16	0	0	**5**	**5**
Total Volume	24	75	0	99	0	0	0	0	0	18	48	66	1	0	11	12
% App. Total	24.2	75.8	0		0	0	0		0	27.3	72.7		8.3	0	91.7	
PHF	.857	.781	.000	.798	.000	.000	.000	.000	.000	.643	.632	.825	.250	.000	.550	.600

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City of Carson
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File Name : 02_CRS_Wilmington_405S PM
Site Code : 22520115
Start Date : 2/25/2020
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Wilmington Avenue Southbound				I-405 Northbound On Ramp Westbound				Wilmington Avenue Northbound				I-405 Northbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	144	316	0	460	0	0	0	0	0	112	180	292	4	0	8	12	764
04:15 PM	106	295	0	401	0	0	0	0	0	94	193	287	4	0	14	18	706
04:30 PM	121	304	0	425	0	0	0	0	0	145	182	327	7	0	13	20	772
04:45 PM	143	328	0	471	0	0	0	0	0	127	188	315	3	1	10	14	800
Total	514	1243	0	1757	0	0	0	0	0	478	743	1221	18	1	45	64	3042
05:00 PM	161	356	0	517	0	0	0	0	0	105	136	241	2	0	7	9	767
05:15 PM	178	351	0	529	0	0	0	0	0	139	117	256	1	0	8	9	794
05:30 PM	156	320	0	476	0	0	0	0	0	119	137	256	3	0	4	7	739
05:45 PM	89	289	0	378	0	0	0	0	0	77	156	233	1	0	7	8	619
Total	584	1316	0	1900	0	0	0	0	0	440	546	986	7	0	26	33	2919
Grand Total	1098	2559	0	3657	0	0	0	0	0	918	1289	2207	25	1	71	97	5961
Apprch %	30	70	0		0	0	0		0	41.6	58.4		25.8	1	73.2		
Total %	18.4	42.9	0	61.3	0	0	0	0	0	15.4	21.6	37	0.4	0	1.2	1.6	
Passenger Vehicles	1028	2339	0	3367	0	0	0	0	0	817	1199	2016	20	1	60	81	5464
% Passenger Vehicles	93.6	91.4	0	92.1	0	0	0	0	0	89	93	91.3	80	100	84.5	83.5	91.7
Large 2 Axle Vehicles	9	59	0	68	0	0	0	0	0	28	18	46	1	0	3	4	118
% Large 2 Axle Vehicles	0.8	2.3	0	1.9	0	0	0	0	0	3.1	1.4	2.1	4	0	4.2	4.1	2
3 Axle Vehicles	13	59	0	72	0	0	0	0	0	28	11	39	0	0	1	1	112
% 3 Axle Vehicles	1.2	2.3	0	2	0	0	0	0	0	3.1	0.9	1.8	0	0	1.4	1	1.9
4+ Axle Trucks	48	102	0	150	0	0	0	0	0	45	61	106	4	0	7	11	267
% 4+ Axle Trucks	4.4	4	0	4.1	0	0	0	0	0	4.9	4.7	4.8	16	0	9.9	11.3	4.5

	Wilmington Avenue Southbound				I-405 Northbound On Ramp Westbound				Wilmington Avenue Northbound				I-405 Northbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	121	304	0	425	0	0	0	0	0	**145**	182	**327**	**7**	0	**13**	**20**	772
04:45 PM	143	328	0	471	0	0	0	0	0	127	**188**	315	3	**1**	10	14	**800**
05:00 PM	161	**356**	0	517	0	0	0	0	0	105	136	241	2	0	7	9	767
05:15 PM	**178**	351	0	**529**	0	0	0	0	0	139	117	256	1	0	8	9	794
Total Volume	603	1339	0	1942	0	0	0	0	0	516	623	1139	13	1	38	52	3133
% App. Total	31.1	68.9	0		0	0	0		0	45.3	54.7		25	1.9	73.1		
PHF	.847	.940	.000	.918	.000	.000	.000	.000	.000	.890	.828	.871	.464	.250	.731	.650	.979

Counts Unlimited
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City of Carson
N/S: Wilmington Avenue
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Weather: Clear

File Name : 02_CRS_Wilmington_405S PM
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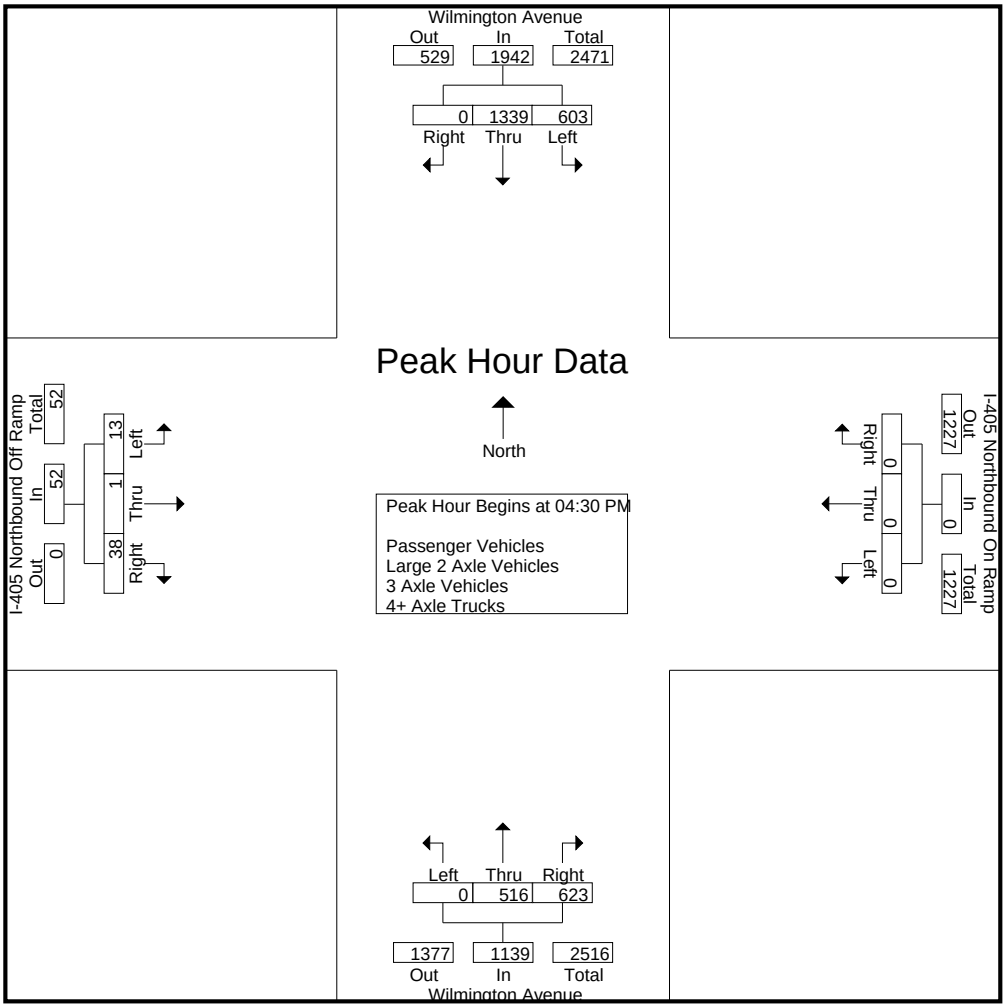

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	143	328	0	471	0	0	0	0	0	112	180	292	4	0	8	12
+15 mins.	161	**356**	0	517	0	0	0	0	0	94	**193**	287	4	0	**14**	18
+30 mins.	**178**	351	0	**529**	0	0	0	0	0	**145**	182	**327**	**7**	0	13	**20**
+45 mins.	156	320	0	476	0	0	0	0	0	127	188	315	3	**1**	10	14
Total Volume	638	1355	0	1993	0	0	0	0	0	478	743	1221	18	1	45	64
% App. Total	32	68	0		0	0	0		0	39.1	60.9		28.1	1.6	70.3	
PHF	.896	.952	.000	.942	.000	.000	.000	.000	.000	.824	.962	.933	.643	.250	.804	.800

Counts Unlimited
PO Box 1178
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City of Carson
N/S: Wilmington Avenue
E/W: I-405 Northbound Ramps
Weather: Clear

File Name : 02_CRS_Wilmington_405S PM
Site Code : 22520115
Start Date : 2/25/2020
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Groups Printed- Passenger Vehicles

	Wilmington Avenue Southbound				I-405 Northbound On Ramp Westbound				Wilmington Avenue Northbound				I-405 Northbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	131	269	0	400	0	0	0	0	0	97	156	253	3	0	8	11	664
04:15 PM	96	269	0	365	0	0	0	0	0	75	182	257	2	0	12	14	636
04:30 PM	115	270	0	385	0	0	0	0	0	131	169	300	6	0	11	17	702
04:45 PM	135	299	0	434	0	0	0	0	0	116	174	290	2	1	7	10	734
Total	477	1107	0	1584	0	0	0	0	0	419	681	1100	13	1	38	52	2736
05:00 PM	150	326	0	476	0	0	0	0	0	97	130	227	2	0	6	8	711
05:15 PM	171	325	0	496	0	0	0	0	0	126	111	237	1	0	6	7	740
05:30 PM	145	299	0	444	0	0	0	0	0	109	129	238	3	0	3	6	688
05:45 PM	85	282	0	367	0	0	0	0	0	66	148	214	1	0	7	8	589
Total	551	1232	0	1783	0	0	0	0	0	398	518	916	7	0	22	29	2728
Grand Total	1028	2339	0	3367	0	0	0	0	0	817	1199	2016	20	1	60	81	5464
Apprch %	30.5	69.5	0		0	0	0		0	40.5	59.5		24.7	1.2	74.1		
Total %	18.8	42.8	0	61.6	0	0	0	0	0	15	21.9	36.9	0.4	0	1.1	1.5	

	Wilmington Avenue Southbound				I-405 Northbound On Ramp Westbound				Wilmington Avenue Northbound				I-405 Northbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	115	270	0	385	0	0	0	0	0	**131**	169	**300**	**6**	0	**11**	**17**	702
04:45 PM	135	299	0	434	0	0	0	0	0	116	**174**	290	2	**1**	7	10	734
05:00 PM	150	**326**	0	476	0	0	0	0	0	97	130	227	2	0	6	8	711
05:15 PM	**171**	325	0	**496**	0	0	0	0	0	126	111	237	1	0	6	7	**740**
Total Volume	571	1220	0	1791	0	0	0	0	0	470	584	1054	11	1	30	42	2887
% App. Total	31.9	68.1	0		0	0	0		0	44.6	55.4		26.2	2.4	71.4		
PHF	.835	.936	.000	.903	.000	.000	.000	.000	.000	.897	.839	.878	.458	.250	.682	.618	.975

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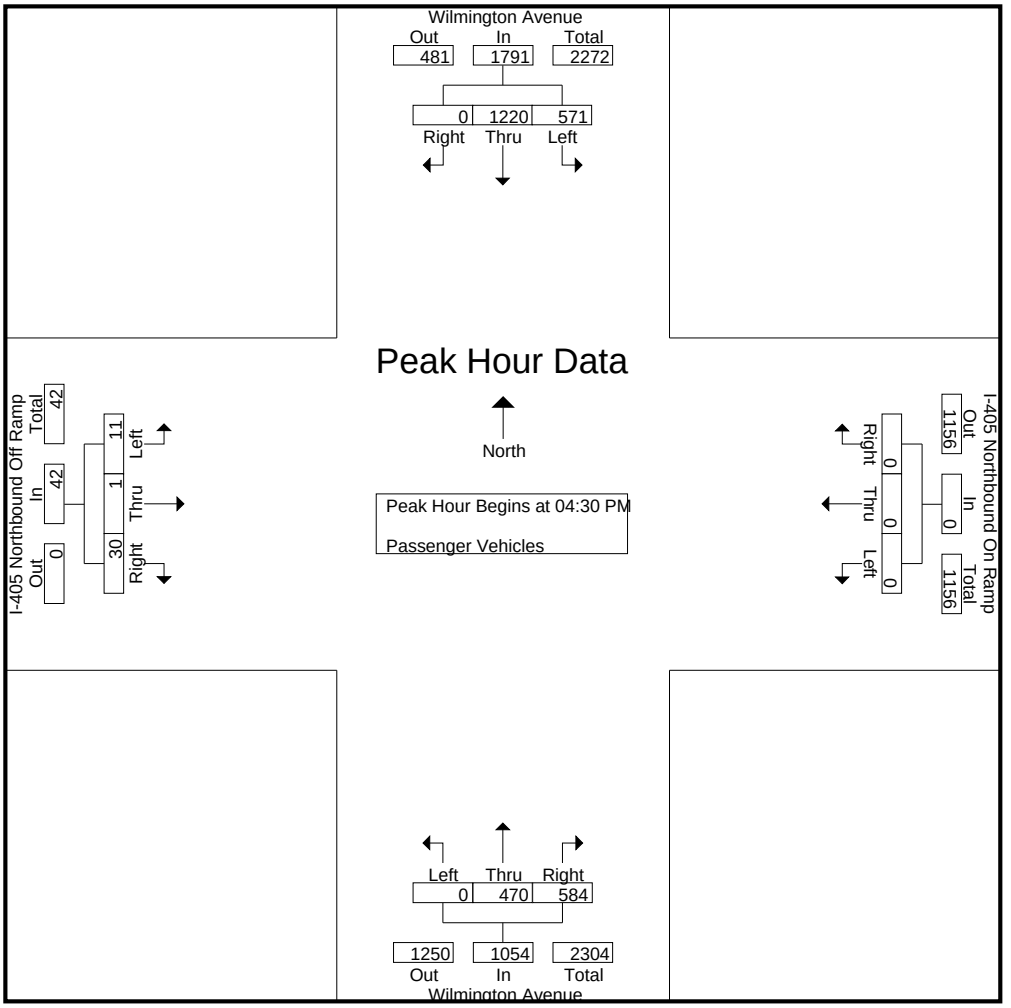
City of Carson
N/S: Wilmington Avenue
E/W: I-405 Northbound Ramps
Weather: Clear

File Name : 02_CRS_Wilmington_405S PM
Site Code : 22520115
Start Date : 2/25/2020
Page No : 2



Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	115	270	0	385	0	0	0	0	0	**131**	169	**300**	**6**	0	**11**	**17**
+15 mins.	135	299	0	434	0	0	0	0	0	116	**174**	290	2	**1**	7	10
+30 mins.	150	**326**	0	476	0	0	0	0	0	97	130	227	2	0	6	8
+45 mins.	**171**	325	0	**496**	0	0	0	0	0	126	111	237	1	0	6	7
Total Volume	571	1220	0	1791	0	0	0	0	0	470	584	1054	11	1	30	42
% App. Total	31.9	68.1	0		0	0	0		0	44.6	55.4		26.2	2.4	71.4	
PHF	.835	.936	.000	.903	.000	.000	.000	.000	.000	.897	.839	.878	.458	.250	.682	.618

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City of Carson
N/S: Wilmington Avenue
E/W: I-405 Northbound Ramps
Weather: Clear

File Name : 02_CRS_Wilmington_405S PM
Site Code : 22520115
Start Date : 2/25/2020
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Wilmington Avenue Southbound				I-405 Northbound On Ramp Westbound				Wilmington Avenue Northbound				I-405 Northbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	15	0	15	0	0	0	0	0	6	4	10	0	0	0	0	25
04:15 PM	3	6	0	9	0	0	0	0	0	3	3	6	0	0	0	0	15
04:30 PM	1	10	0	11	0	0	0	0	0	3	3	6	1	0	1	2	19
04:45 PM	2	7	0	9	0	0	0	0	0	5	6	11	0	0	1	1	21
Total	6	38	0	44	0	0	0	0	0	17	16	33	1	0	2	3	80
05:00 PM	1	10	0	11	0	0	0	0	0	1	1	2	0	0	0	0	13
05:15 PM	1	7	0	8	0	0	0	0	0	5	0	5	0	0	1	1	14
05:30 PM	1	3	0	4	0	0	0	0	0	2	1	3	0	0	0	0	7
05:45 PM	0	1	0	1	0	0	0	0	0	3	0	3	0	0	0	0	4
Total	3	21	0	24	0	0	0	0	0	11	2	13	0	0	1	1	38
Grand Total	9	59	0	68	0	0	0	0	0	28	18	46	1	0	3	4	118
Apprch %	13.2	86.8	0		0	0	0		0	60.9	39.1		25	0	75		
Total %	7.6	50	0	57.6	0	0	0	0	0	23.7	15.3	39	0.8	0	2.5	3.4	

	Wilmington Avenue Southbound				I-405 Northbound On Ramp Westbound				Wilmington Avenue Northbound				I-405 Northbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	1	**10**	0	**11**	0	0	0	0	0	3	3	6	**1**	0	**1**	**2**	19
04:45 PM	**2**	7	0	9	0	0	0	0	0	**5**	**6**	**11**	0	0	1	1	**21**
05:00 PM	1	10	0	11	0	0	0	0	0	1	1	2	0	0	0	0	13
05:15 PM	1	7	0	8	0	0	0	0	0	5	0	5	0	0	1	1	14
Total Volume	5	34	0	39	0	0	0	0	0	14	10	24	1	0	3	4	67
% App. Total	12.8	87.2	0		0	0	0		0	58.3	41.7		25	0	75		
PHF	.625	.850	.000	.886	.000	.000	.000	.000	.000	.700	.417	.545	.250	.000	.750	.500	.798

Counts Unlimited
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City of Carson
N/S: Wilmington Avenue
E/W: I-405 Northbound Ramps
Weather: Clear

File Name : 02_CRS_Wilmington_405S PM
Site Code : 22520115
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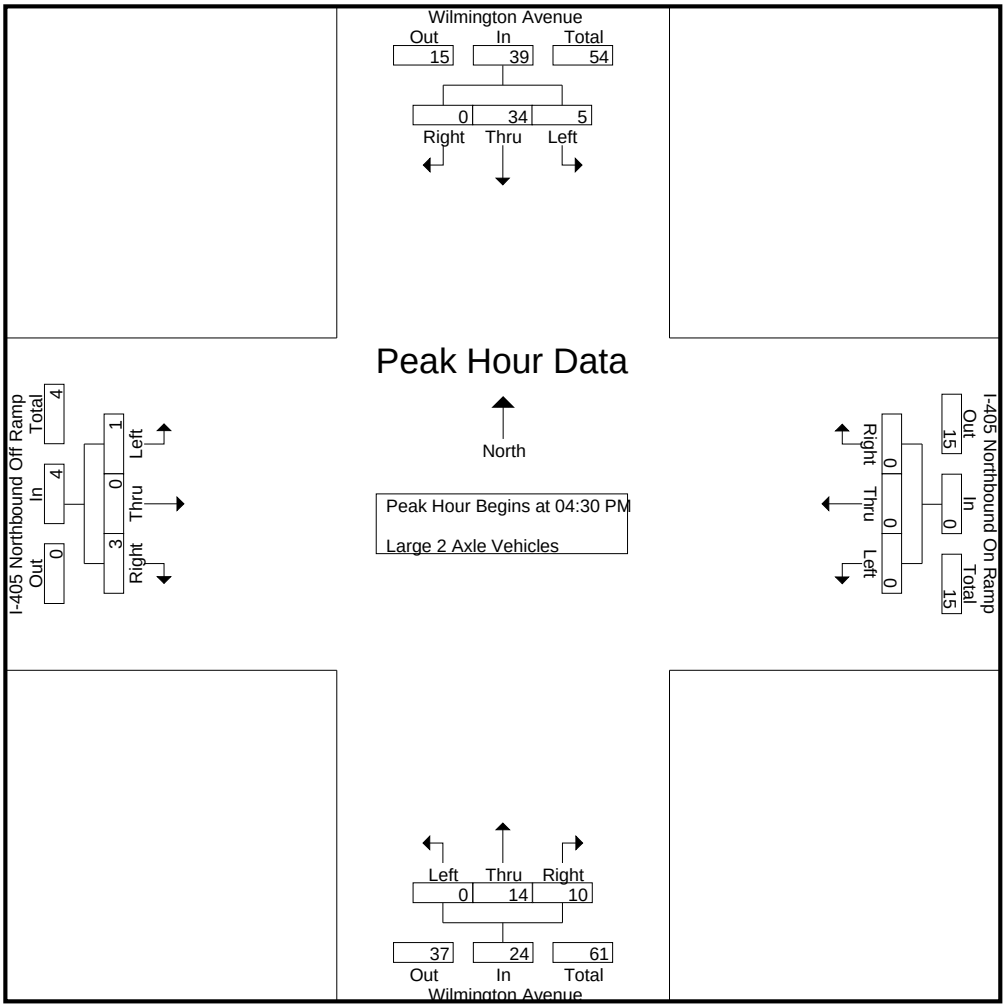

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	1	**10**	0	**11**	0	0	0	0	0	3	3	6	**1**	0	**1**	**2**
+15 mins.	**2**	7	0	9	0	0	0	0	0	**5**	**6**	**11**	0	0	1	1
+30 mins.	1	10	0	11	0	0	0	0	0	1	1	2	0	0	0	0
+45 mins.	1	7	0	8	0	0	0	0	0	5	0	5	0	0	1	1
Total Volume	5	34	0	39	0	0	0	0	0	14	10	24	1	0	3	4
% App. Total	12.8	87.2	0		0	0	0		0	58.3	41.7		25	0	75	
PHF	.625	.850	.000	.886	.000	.000	.000	.000	.000	.700	.417	.545	.250	.000	.750	.500

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City of Carson
N/S: Wilmington Avenue
E/W: I-405 Northbound Ramps
Weather: Clear

File Name : 02_CRS_Wilmington_405S PM
Site Code : 22520115
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Groups Printed- 3 Axle Vehicles

	Wilmington Avenue Southbound				I-405 Northbound On Ramp Westbound				Wilmington Avenue Northbound				I-405 Northbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	2	15	0	17	0	0	0	0	0	3	4	7	0	0	0	0	24
04:15 PM	2	6	0	8	0	0	0	0	0	4	0	4	0	0	0	0	12
04:30 PM	1	10	0	11	0	0	0	0	0	5	1	6	0	0	0	0	17
04:45 PM	0	7	0	7	0	0	0	0	0	6	0	6	0	0	1	1	14
Total	5	38	0	43	0	0	0	0	0	18	5	23	0	0	1	1	67
05:00 PM	2	10	0	12	0	0	0	0	0	4	2	6	0	0	0	0	18
05:15 PM	2	7	0	9	0	0	0	0	0	1	0	1	0	0	0	0	10
05:30 PM	2	3	0	5	0	0	0	0	0	3	1	4	0	0	0	0	9
05:45 PM	2	1	0	3	0	0	0	0	0	2	3	5	0	0	0	0	8
Total	8	21	0	29	0	0	0	0	0	10	6	16	0	0	0	0	45
Grand Total	13	59	0	72	0	0	0	0	0	28	11	39	0	0	1	1	112
Apprch %	18.1	81.9	0		0	0	0		0	71.8	28.2		0	0	100		
Total %	11.6	52.7	0	64.3	0	0	0	0	0	25	9.8	34.8	0	0	0.9	0.9	

	Wilmington Avenue Southbound				I-405 Northbound On Ramp Westbound				Wilmington Avenue Northbound				I-405 Northbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	1	**10**	0	11	0	0	0	0	0	5	1	**6**	0	0	0	0	17
04:45 PM	0	7	0	7	0	0	0	0	0	**6**	0	6	0	0	**1**	**1**	14
05:00 PM	**2**	10	0	**12**	0	0	0	0	0	4	**2**	6	0	0	0	0	**18**
05:15 PM	2	7	0	9	0	0	0	0	0	1	0	1	0	0	0	0	10
Total Volume	5	34	0	39	0	0	0	0	0	16	3	19	0	0	1	1	59
% App. Total	12.8	87.2	0		0	0	0		0	84.2	15.8		0	0	100		
PHF	.625	.850	.000	.813	.000	.000	.000	.000	.000	.667	.375	.792	.000	.000	.250	.250	.819

Counts Unlimited
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City of Carson
N/S: Wilmington Avenue
E/W: I-405 Northbound Ramps
Weather: Clear

File Name : 02_CRS_Wilmington_405S PM
Site Code : 22520115
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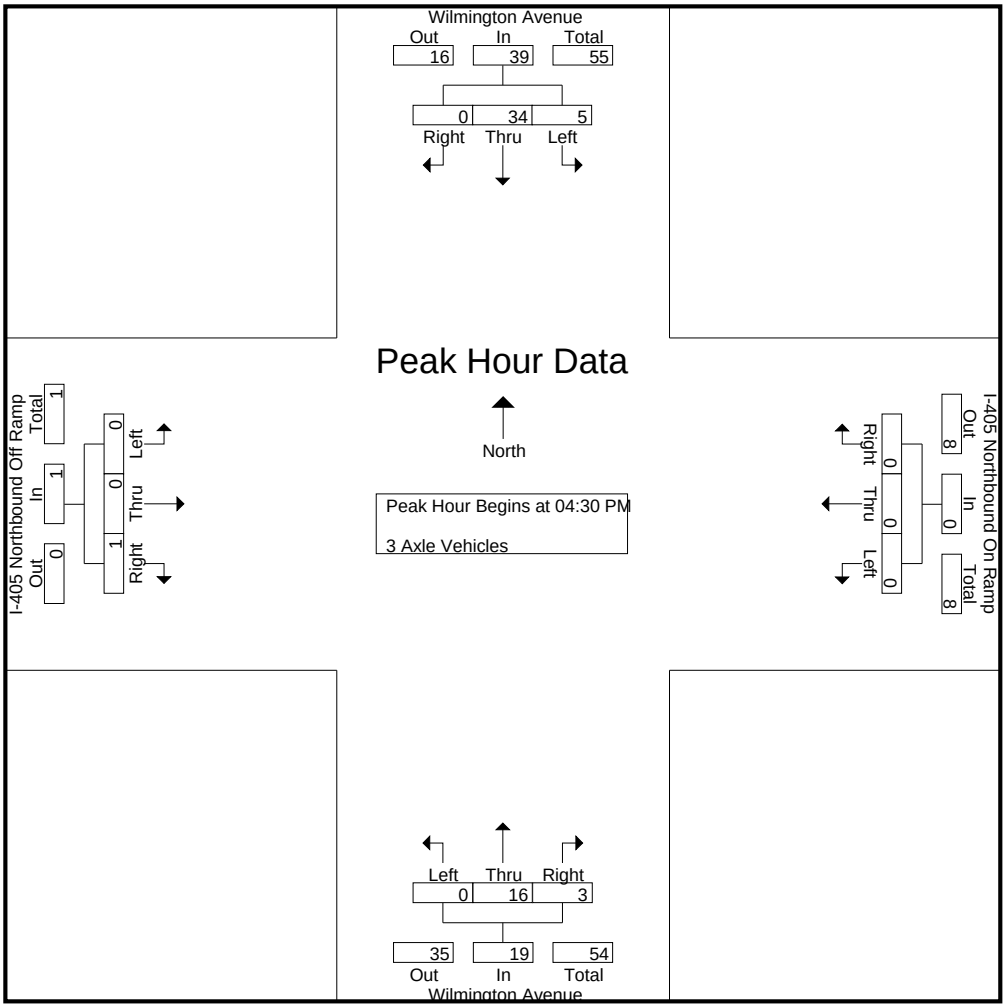

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	1	**10**	0	11	0	0	0	0	0	5	1	**6**	0	0	0	0
+15 mins.	0	7	0	7	0	0	0	0	0	**6**	0	6	0	0	**1**	**1**
+30 mins.	**2**	10	0	**12**	0	0	0	0	0	4	**2**	6	0	0	0	0
+45 mins.	2	7	0	9	0	0	0	0	0	1	0	1	0	0	0	0
Total Volume	5	34	0	39	0	0	0	0	0	16	3	19	0	0	1	1
% App. Total	12.8	87.2	0		0	0	0		0	84.2	15.8		0	0	100	
PHF	.625	.850	.000	.813	.000	.000	.000	.000	.000	.667	.375	.792	.000	.000	.250	.250

Counts Unlimited
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City of Carson
N/S: Wilmington Avenue
E/W: I-405 Northbound Ramps
Weather: Clear

File Name : 02_CRS_Wilmington_405S PM
Site Code : 22520115
Start Date : 2/25/2020
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Groups Printed- 4+ Axle Trucks

	Wilmington Avenue Southbound				I-405 Northbound On Ramp Westbound				Wilmington Avenue Northbound				I-405 Northbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	11	17	0	28	0	0	0	0	0	6	16	22	1	0	0	1	51
04:15 PM	5	14	0	19	0	0	0	0	0	12	8	20	2	0	2	4	43
04:30 PM	4	14	0	18	0	0	0	0	0	6	9	15	0	0	1	1	34
04:45 PM	6	15	0	21	0	0	0	0	0	0	8	8	1	0	1	2	31
Total	26	60	0	86	0	0	0	0	0	24	41	65	4	0	4	8	159
05:00 PM	8	10	0	18	0	0	0	0	0	3	3	6	0	0	1	1	25
05:15 PM	4	12	0	16	0	0	0	0	0	7	6	13	0	0	1	1	30
05:30 PM	8	15	0	23	0	0	0	0	0	5	6	11	0	0	1	1	35
05:45 PM	2	5	0	7	0	0	0	0	0	6	5	11	0	0	0	0	18
Total	22	42	0	64	0	0	0	0	0	21	20	41	0	0	3	3	108
Grand Total	48	102	0	150	0	0	0	0	0	45	61	106	4	0	7	11	267
Apprch %	32	68	0		0	0	0		0	42.5	57.5		36.4	0	63.6		
Total %	18	38.2	0	56.2	0	0	0	0	0	16.9	22.8	39.7	1.5	0	2.6	4.1	

	Wilmington Avenue Southbound				I-405 Northbound On Ramp Westbound				Wilmington Avenue Northbound				I-405 Northbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	4	14	0	18	0	0	0	0	0	6	**9**	**15**	0	0	**1**	1	**34**
04:45 PM	6	**15**	0	**21**	0	0	0	0	0	0	8	8	**1**	0	1	**2**	31
05:00 PM	**8**	10	0	18	0	0	0	0	0	3	3	6	0	0	1	1	25
05:15 PM	4	12	0	16	0	0	0	0	0	**7**	6	13	0	0	1	1	30
Total Volume	22	51	0	73	0	0	0	0	0	16	26	42	1	0	4	5	120
% App. Total	30.1	69.9	0		0	0	0		0	38.1	61.9		20	0	80		
PHF	.688	.850	.000	.869	.000	.000	.000	.000	.000	.571	.722	.700	.250	.000	1.00	.625	.882

Counts Unlimited
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City of Carson
N/S: Wilmington Avenue
E/W: I-405 Northbound Ramps
Weather: Clear

File Name : 02_CRS_Wilmington_405S PM
Site Code : 22520115
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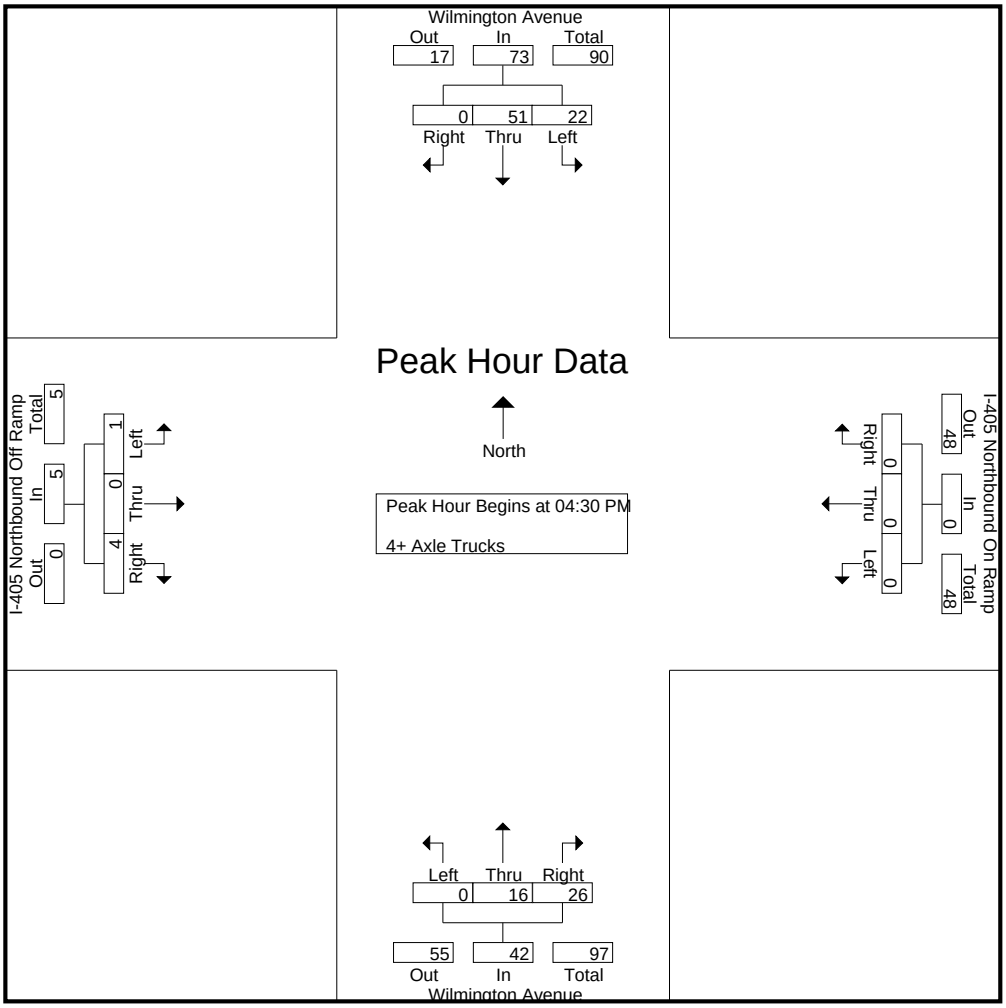

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	4	14	0	18	0	0	0	0	0	6	**9**	**15**	0	0	**1**	1
+15 mins.	6	**15**	0	**21**	0	0	0	0	0	0	8	8	**1**	0	1	**2**
+30 mins.	**8**	10	0	18	0	0	0	0	0	3	3	6	0	0	1	1
+45 mins.	4	12	0	16	0	0	0	0	0	**7**	6	13	0	0	1	1
Total Volume	22	51	0	73	0	0	0	0	0	16	26	42	1	0	4	5
% App. Total	30.1	69.9	0		0	0	0		0	38.1	61.9		20	0	80	
PHF	.688	.850	.000	.869	.000	.000	.000	.000	.000	.571	.722	.700	.250	.000	1.000	.625

Counts Unlimited
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City of Carson
N/S: Wilmington Avenue
E/W: East 223rd Street
Weather: Clear

File Name : 03_CRS_Wilmington_E 223rd AM
Site Code : 22520115
Start Date : 2/25/2020
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Wilmington Avenue Southbound				East 223rd Street Westbound				Wilmington Avenue Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	14	195	102	311	37	102	16	155	1	129	34	164	70	80	4	154	784
07:15 AM	19	172	142	333	47	128	13	188	0	143	33	176	99	117	0	216	913
07:30 AM	20	210	106	336	38	142	15	195	5	205	66	276	85	141	3	229	1036
07:45 AM	15	196	75	286	62	133	18	213	6	192	43	241	94	123	4	221	961
Total	68	773	425	1266	184	505	62	751	12	669	176	857	348	461	11	820	3694
08:00 AM	18	210	112	340	36	113	14	163	4	167	48	219	91	122	5	218	940
08:15 AM	19	178	64	261	44	102	11	157	2	206	40	248	83	108	0	191	857
08:30 AM	20	196	54	270	32	127	13	172	3	145	25	173	81	126	2	209	824
08:45 AM	17	188	102	307	30	95	14	139	6	139	24	169	71	94	1	166	781
Total	74	772	332	1178	142	437	52	631	15	657	137	809	326	450	8	784	3402
Grand Total	142	1545	757	2444	326	942	114	1382	27	1326	313	1666	674	911	19	1604	7096
Apprch %	5.8	63.2	31		23.6	68.2	8.2		1.6	79.6	18.8		42	56.8	1.2		
Total %	2	21.8	10.7	34.4	4.6	13.3	1.6	19.5	0.4	18.7	4.4	23.5	9.5	12.8	0.3	22.6	
Passenger Vehicles	107	1236	705	2048	309	906	96	1311	22	1143	278	1443	611	872	18	1501	6303
% Passenger Vehicles	75.4	80	93.1	83.8	94.8	96.2	84.2	94.9	81.5	86.2	88.8	86.6	90.7	95.7	94.7	93.6	88.8
Large 2 Axle Vehicles	9	71	19	99	5	16	8	29	1	54	5	60	14	14	0	28	216
% Large 2 Axle Vehicles	6.3	4.6	2.5	4.1	1.5	1.7	7	2.1	3.7	4.1	1.6	3.6	2.1	1.5	0	1.7	3
3 Axle Vehicles	13	71	9	93	2	10	2	14	0	27	22	49	18	7	1	26	182
% 3 Axle Vehicles	9.2	4.6	1.2	3.8	0.6	1.1	1.8	1	0	2	7	2.9	2.7	0.8	5.3	1.6	2.6
4+ Axle Trucks	13	167	24	204	10	10	8	28	4	102	8	114	31	18	0	49	395
% 4+ Axle Trucks	9.2	10.8	3.2	8.3	3.1	1.1	7	2	14.8	7.7	2.6	6.8	4.6	2	0	3.1	5.6

	Wilmington Avenue Southbound				East 223rd Street Westbound				Wilmington Avenue Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	19	172	**142**	333	47	128	13	188	0	143	33	176	**99**	117	0	216	913
07:30 AM	**20**	**210**	106	336	38	**142**	15	195	5	**205**	**66**	**276**	85	**141**	3	**229**	**1036**
07:45 AM	15	196	75	286	**62**	133	**18**	**213**	**6**	192	43	241	94	123	4	221	961
08:00 AM	18	210	112	**340**	36	113	14	163	4	167	48	219	91	122	**5**	218	940
Total Volume	72	788	435	1295	183	516	60	759	15	707	190	912	369	503	12	884	3850
% App. Total	5.6	60.8	33.6		24.1	68	7.9		1.6	77.5	20.8		41.7	56.9	1.4		
PHF	.900	.938	.766	.952	.738	.908	.833	.891	.625	.862	.720	.826	.932	.892	.600	.965	.929

Counts Unlimited
PO Box 1178
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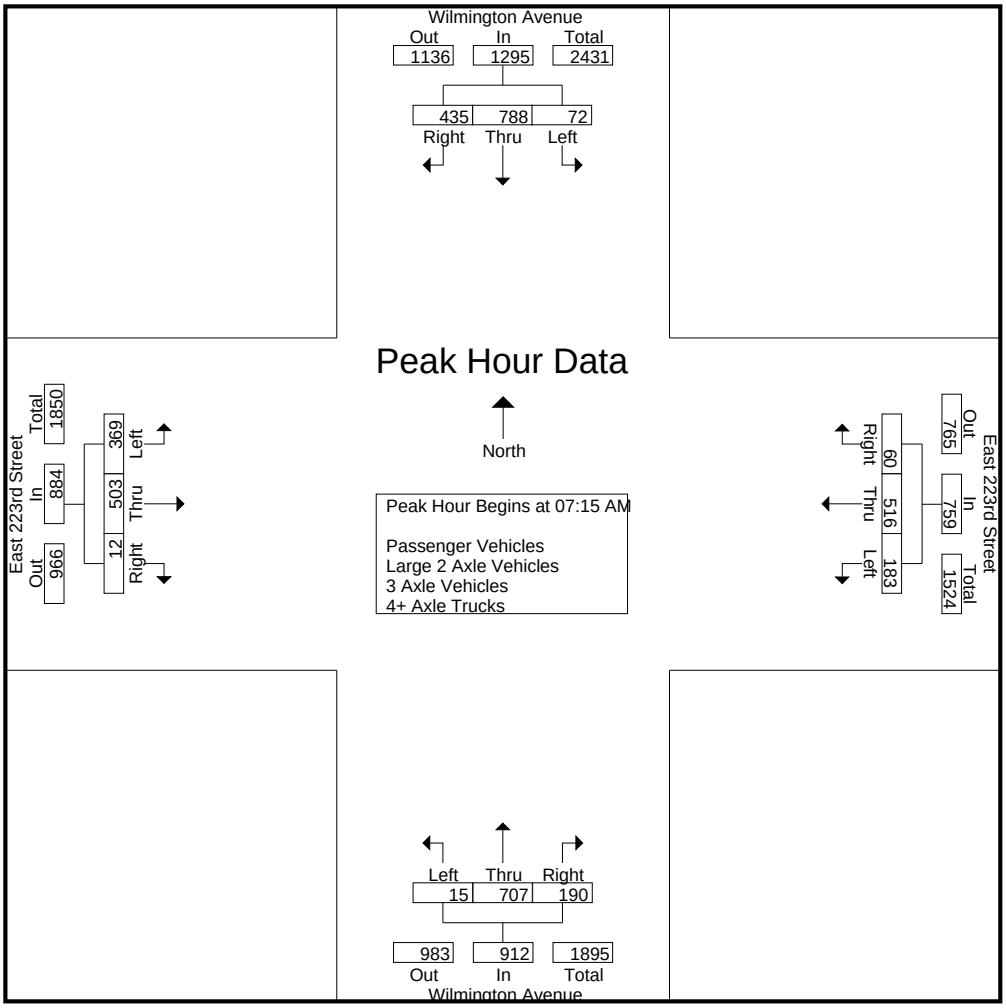
(951) 268-6268

City of Carson
N/S: Wilmington Avenue
E/W: East 223rd Street
Weather: Clear

File Name : 03_CRS_Wilmington_E 223rd AM
Site Code : 22520115
Start Date : 2/25/2020
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:30 AM				07:15 AM			
+0 mins.	19	172	**142**	333	47	128	13	188	5	205	**66**	**276**	**99**	117	0	216
+15 mins.	**20**	**210**	106	336	38	**142**	15	195	**6**	192	43	241	85	**141**	3	**229**
+30 mins.	15	196	75	286	**62**	133	**18**	**213**	4	167	48	219	94	123	4	221
+45 mins.	18	210	112	**340**	36	113	14	163	2	**206**	40	248	91	122	**5**	218
Total Volume	72	788	435	1295	183	516	60	759	17	770	197	984	369	503	12	884
% App. Total	5.6	60.8	33.6		24.1	68	7.9		1.7	78.3	20		41.7	56.9	1.4	
PHF	.900	.938	.766	.952	.738	.908	.833	.891	.708	.934	.746	.891	.932	.892	.600	.965

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City of Carson
N/S: Wilmington Avenue
E/W: East 223rd Street
Weather: Clear

File Name : 03_CRS_Wilmington_E 223rd AM
Site Code : 22520115
Start Date : 2/25/2020
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Groups Printed- Passenger Vehicles

	Wilmington Avenue Southbound				East 223rd Street Westbound				Wilmington Avenue Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	9	163	94	266	35	98	13	146	1	110	28	139	65	78	3	146	697
07:15 AM	14	139	135	288	42	122	12	176	0	119	28	147	96	115	0	211	822
07:30 AM	17	178	98	293	38	141	15	194	4	186	62	252	74	135	3	212	951
07:45 AM	11	164	69	244	61	129	16	206	6	173	40	219	85	120	4	209	878
Total	51	644	396	1091	176	490	56	722	11	588	158	757	320	448	10	778	3348
08:00 AM	16	171	104	291	36	108	9	153	3	148	41	192	79	117	5	201	837
08:15 AM	15	147	61	223	43	94	9	146	2	180	37	219	76	102	0	178	766
08:30 AM	15	140	48	203	28	120	11	159	2	123	21	146	72	116	2	190	698
08:45 AM	10	134	96	240	26	94	11	131	4	104	21	129	64	89	1	154	654
Total	56	592	309	957	133	416	40	589	11	555	120	686	291	424	8	723	2955
Grand Total	107	1236	705	2048	309	906	96	1311	22	1143	278	1443	611	872	18	1501	6303
Apprch %	5.2	60.4	34.4		23.6	69.1	7.3		1.5	79.2	19.3		40.7	58.1	1.2		
Total %	1.7	19.6	11.2	32.5	4.9	14.4	1.5	20.8	0.3	18.1	4.4	22.9	9.7	13.8	0.3	23.8	

	Wilmington Avenue Southbound				East 223rd Street Westbound				Wilmington Avenue Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	14	139	**135**	288	42	122	12	176	0	119	28	147	**96**	115	0	211	822
07:30 AM	**17**	**178**	98	**293**	38	**141**	15	194	4	**186**	**62**	**252**	74	**135**	3	**212**	**951**
07:45 AM	11	164	69	244	**61**	129	**16**	**206**	**6**	173	40	219	85	120	4	209	878
08:00 AM	16	171	104	291	36	108	9	153	3	148	41	192	79	117	**5**	201	837
Total Volume	58	652	406	1116	177	500	52	729	13	626	171	810	334	487	12	833	3488
% App. Total	5.2	58.4	36.4		24.3	68.6	7.1		1.6	77.3	21.1		40.1	58.5	1.4		
PHF	.853	.916	.752	.952	.725	.887	.813	.885	.542	.841	.690	.804	.870	.902	.600	.982	.917

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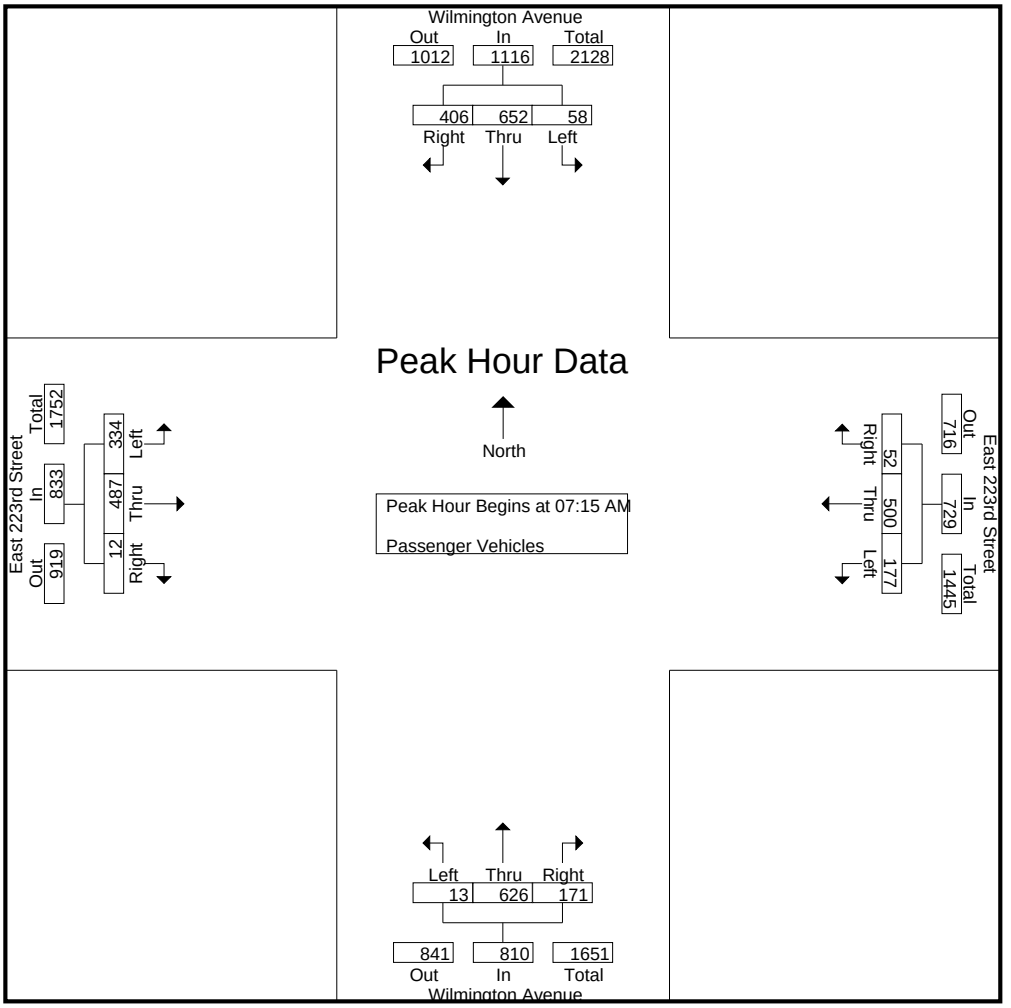
City of Carson
N/S: Wilmington Avenue
E/W: East 223rd Street
Weather: Clear

File Name : 03_CRS_Wilmington_E 223rd AM
Site Code : 22520115
Start Date : 2/25/2020
Page No : 2



Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	14	139	**135**	288	42	122	12	176	0	119	28	147	**96**	115	0	211
+15 mins.	**17**	**178**	98	**293**	38	**141**	15	194	4	**186**	**62**	**252**	74	**135**	3	**212**
+30 mins.	11	164	69	244	**61**	129	**16**	**206**	**6**	173	40	219	85	120	4	209
+45 mins.	16	171	104	291	36	108	9	153	3	148	41	192	79	117	**5**	201
Total Volume	58	652	406	1116	177	500	52	729	13	626	171	810	334	487	12	833
% App. Total	5.2	58.4	36.4		24.3	68.6	7.1		1.6	77.3	21.1		40.1	58.5	1.4	
PHF	.853	.916	.752	.952	.725	.887	.813	.885	.542	.841	.690	.804	.870	.902	.600	.982

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City of Carson
N/S: Wilmington Avenue
E/W: East 223rd Street
Weather: Clear

File Name : 03_CRS_Wilmington_E 223rd AM
Site Code : 22520115
Start Date : 2/25/2020
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Wilmington Avenue Southbound				East 223rd Street Westbound				Wilmington Avenue Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	5	5	10	0	2	1	3	0	3	0	3	0	1	0	1	17
07:15 AM	1	6	1	8	2	2	0	4	0	6	0	6	2	2	0	4	22
07:30 AM	0	8	4	12	0	1	0	1	0	5	2	7	3	2	0	5	25
07:45 AM	0	9	1	10	1	2	1	4	0	8	1	9	0	0	0	0	23
Total	1	28	11	40	3	7	2	12	0	22	3	25	5	5	0	10	87
08:00 AM	1	8	3	12	0	2	3	5	1	3	1	5	4	0	0	4	26
08:15 AM	1	9	1	11	0	4	1	5	0	7	0	7	1	3	0	4	27
08:30 AM	2	16	1	19	2	2	1	5	0	8	0	8	0	3	0	3	35
08:45 AM	4	10	3	17	0	1	1	2	0	14	1	15	4	3	0	7	41
Total	8	43	8	59	2	9	6	17	1	32	2	35	9	9	0	18	129
Grand Total	9	71	19	99	5	16	8	29	1	54	5	60	14	14	0	28	216
Apprch %	9.1	71.7	19.2		17.2	55.2	27.6		1.7	90	8.3		50	50	0		
Total %	4.2	32.9	8.8	45.8	2.3	7.4	3.7	13.4	0.5	25	2.3	27.8	6.5	6.5	0	13	

	Wilmington Avenue Southbound				East 223rd Street Westbound				Wilmington Avenue Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	**1**	6	1	8	**2**	**2**	0	4	0	6	0	6	2	**2**	0	4	22
07:30 AM	0	8	**4**	**12**	0	1	0	1	0	5	**2**	7	3	2	0	**5**	25
07:45 AM	0	**9**	1	10	1	2	1	4	0	**8**	1	**9**	0	0	0	0	23
08:00 AM	1	8	3	12	0	2	**3**	**5**	**1**	3	1	5	**4**	0	0	4	**26**
Total Volume	2	31	9	42	3	7	4	14	1	22	4	27	9	4	0	13	96
% App. Total	4.8	73.8	21.4		21.4	50	28.6		3.7	81.5	14.8		69.2	30.8	0		
PHF	.500	.861	.563	.875	.375	.875	.333	.700	.250	.688	.500	.750	.563	.500	.000	.650	.923

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City of Carson
N/S: Wilmington Avenue
E/W: East 223rd Street
Weather: Clear

File Name : 03_CRS_Wilmington_E 223rd AM
Site Code : 22520115
Start Date : 2/25/2020
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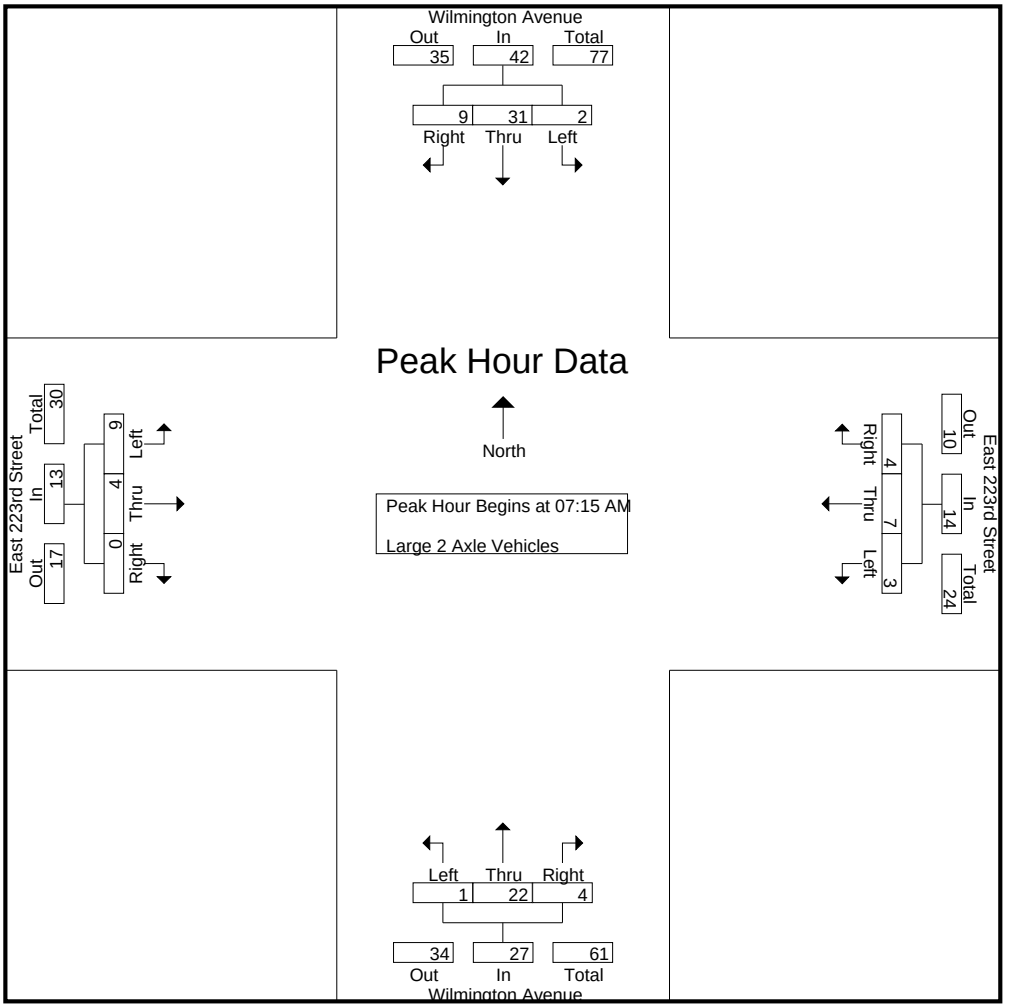

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	**1**	6	1	8	**2**	**2**	0	4	0	6	0	6	2	**2**	0	4
+15 mins.	0	8	**4**	**12**	0	1	0	1	0	5	**2**	7	3	2	0	**5**
+30 mins.	0	**9**	1	10	1	2	1	4	0	**8**	1	**9**	0	0	0	0
+45 mins.	1	8	3	12	0	2	**3**	**5**	**1**	3	1	5	**4**	0	0	4
Total Volume	2	31	9	42	3	7	4	14	1	22	4	27	9	4	0	13
% App. Total	4.8	73.8	21.4		21.4	50	28.6		3.7	81.5	14.8		69.2	30.8	0	
PHF	.500	.861	.563	.875	.375	.875	.333	.700	.250	.688	.500	.750	.563	.500	.000	.650

Counts Unlimited
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City of Carson
N/S: Wilmington Avenue
E/W: East 223rd Street
Weather: Clear

File Name : 03_CRS_Wilmington_E 223rd AM
Site Code : 22520115
Start Date : 2/25/2020
Page No : 1

Groups Printed- 3 Axle Vehicles

	Wilmington Avenue Southbound				East 223rd Street Westbound				Wilmington Avenue Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	2	5	2	9	0	2	1	3	0	3	5	8	1	0	1	2	22
07:15 AM	3	6	3	12	0	3	0	3	0	2	5	7	0	0	0	0	22
07:30 AM	3	8	1	12	0	0	0	0	0	2	1	3	2	2	0	4	19
07:45 AM	2	9	0	11	0	1	1	2	0	4	2	6	4	1	0	5	24
Total	10	28	6	44	0	6	2	8	0	11	13	24	7	3	1	11	87
08:00 AM	0	8	2	10	0	2	0	2	0	5	5	10	3	2	0	5	27
08:15 AM	1	9	1	11	1	2	0	3	0	3	1	4	4	1	0	5	23
08:30 AM	1	16	0	17	1	0	0	1	0	4	2	6	2	0	0	2	26
08:45 AM	1	10	0	11	0	0	0	0	0	4	1	5	2	1	0	3	19
Total	3	43	3	49	2	4	0	6	0	16	9	25	11	4	0	15	95
Grand Total	13	71	9	93	2	10	2	14	0	27	22	49	18	7	1	26	182
Apprch %	14	76.3	9.7		14.3	71.4	14.3		0	55.1	44.9		69.2	26.9	3.8		
Total %	7.1	39	4.9	51.1	1.1	5.5	1.1	7.7	0	14.8	12.1	26.9	9.9	3.8	0.5	14.3	

	Wilmington Avenue Southbound				East 223rd Street Westbound				Wilmington Avenue Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	**3**	6	**3**	**12**	0	**3**	0	**3**	0	2	**5**	7	0	0	0	0	22
07:30 AM	3	8	1	12	0	0	0	0	0	2	1	3	2	**2**	0	4	19
07:45 AM	2	**9**	0	11	0	1	**1**	2	0	4	2	6	**4**	1	0	**5**	24
08:00 AM	0	8	2	10	0	2	0	2	0	**5**	5	**10**	3	2	0	5	**27**
Total Volume	8	31	6	45	0	6	1	7	0	13	13	26	9	5	0	14	92
% App. Total	17.8	68.9	13.3		0	85.7	14.3		0	50	50		64.3	35.7	0		
PHF	.667	.861	.500	.938	.000	.500	.250	.583	.000	.650	.650	.650	.563	.625	.000	.700	.852

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City of Carson
N/S: Wilmington Avenue
E/W: East 223rd Street
Weather: Clear

File Name : 03_CRS_Wilmington_E 223rd AM
Site Code : 22520115
Start Date : 2/25/2020
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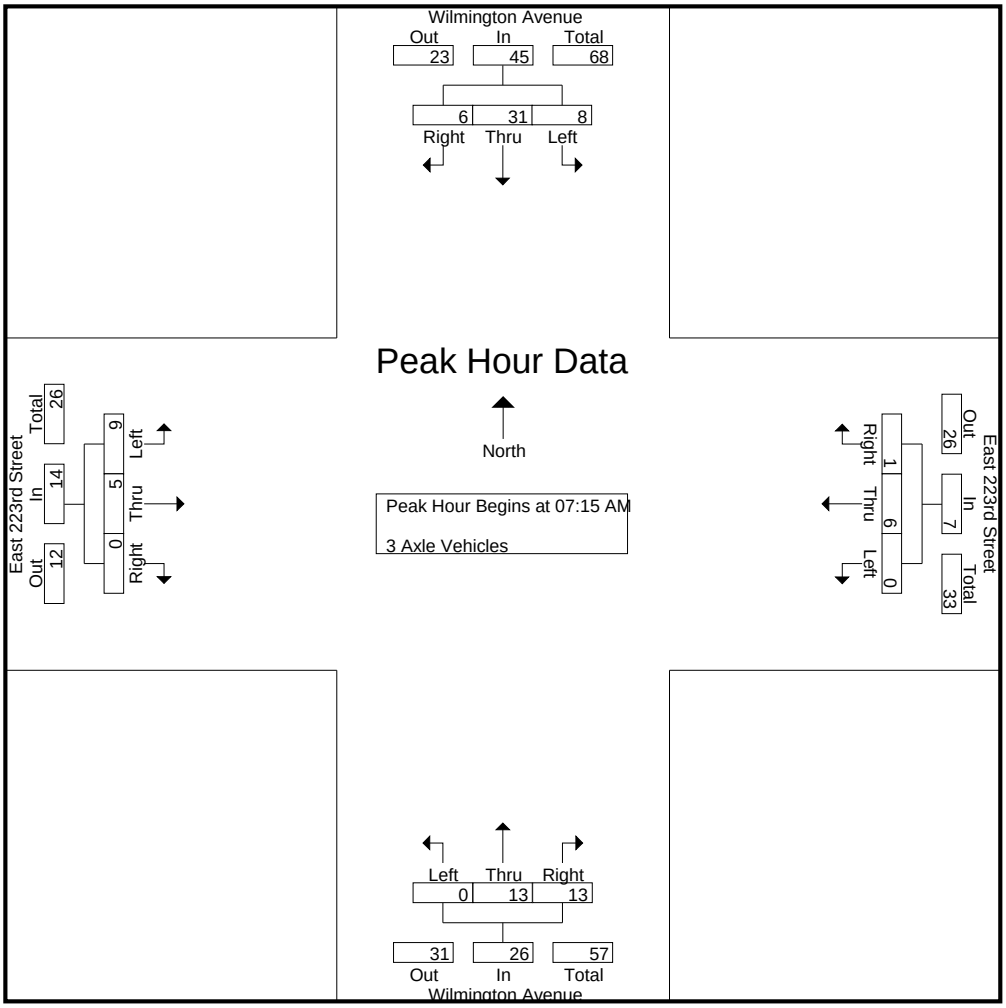

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	**3**	6	**3**	**12**	0	**3**	0	**3**	0	2	**5**	7	0	0	0	0
+15 mins.	3	8	1	12	0	0	0	0	0	2	1	3	2	**2**	0	4
+30 mins.	2	**9**	0	11	0	1	**1**	2	0	4	2	6	**4**	1	0	**5**
+45 mins.	0	8	2	10	0	2	0	2	0	**5**	5	**10**	3	2	0	5
Total Volume	8	31	6	45	0	6	1	7	0	13	13	26	9	5	0	14
% App. Total	17.8	68.9	13.3		0	85.7	14.3		0	50	50		64.3	35.7	0	
PHF	.667	.861	.500	.938	.000	.500	.250	.583	.000	.650	.650	.650	.563	.625	.000	.700

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City of Carson
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Groups Printed- 4+ Axle Trucks

	Wilmington Avenue Southbound				East 223rd Street Westbound				Wilmington Avenue Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	3	22	1	26	2	0	1	3	0	13	1	14	4	1	0	5	48
07:15 AM	1	21	3	25	3	1	1	5	0	16	0	16	1	0	0	1	47
07:30 AM	0	16	3	19	0	0	0	0	1	12	1	14	6	2	0	8	41
07:45 AM	2	14	5	21	0	1	0	1	0	7	0	7	5	2	0	7	36
Total	6	73	12	91	5	2	2	9	1	48	2	51	16	5	0	21	172
08:00 AM	1	23	3	27	0	1	2	3	0	11	1	12	5	3	0	8	50
08:15 AM	2	13	1	16	0	2	1	3	0	16	2	18	2	2	0	4	41
08:30 AM	2	24	5	31	1	5	1	7	1	10	2	13	7	7	0	14	65
08:45 AM	2	34	3	39	4	0	2	6	2	17	1	20	1	1	0	2	67
Total	7	94	12	113	5	8	6	19	3	54	6	63	15	13	0	28	223
Grand Total	13	167	24	204	10	10	8	28	4	102	8	114	31	18	0	49	395
Apprch %	6.4	81.9	11.8		35.7	35.7	28.6		3.5	89.5	7		63.3	36.7	0		
Total %	3.3	42.3	6.1	51.6	2.5	2.5	2	7.1	1	25.8	2	28.9	7.8	4.6	0	12.4	

	Wilmington Avenue Southbound				East 223rd Street Westbound				Wilmington Avenue Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	1	21	3	25	**3**	**1**	1	**5**	0	**16**	0	**16**	1	0	0	1	47
07:30 AM	0	16	3	19	0	0	0	0	**1**	12	**1**	14	**6**	2	0	**8**	41
07:45 AM	**2**	14	**5**	21	0	1	0	1	0	7	0	7	5	2	0	7	36
08:00 AM	1	**23**	3	**27**	0	1	**2**	3	0	11	1	12	5	**3**	0	8	**50**
Total Volume	4	74	14	92	3	3	3	9	1	46	2	49	17	7	0	24	174
% App. Total	4.3	80.4	15.2		33.3	33.3	33.3		2	93.9	4.1		70.8	29.2	0		
PHF	.500	.804	.700	.852	.250	.750	.375	.450	.250	.719	.500	.766	.708	.583	.000	.750	.870

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City of Carson
N/S: Wilmington Avenue
E/W: East 223rd Street
Weather: Clear

File Name : 03_CRS_Wilmington_E 223rd AM
Site Code : 22520115
Start Date : 2/25/2020
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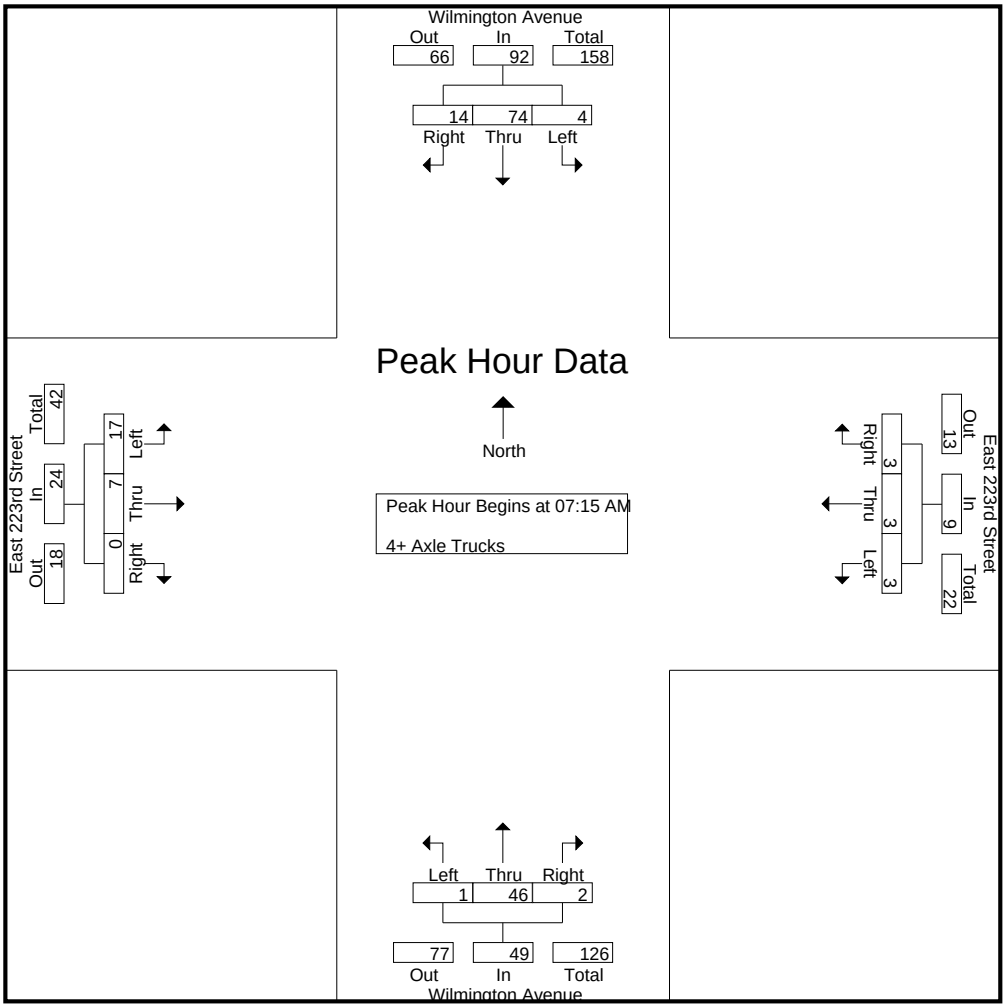

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	1	21	3	25	**3**	**1**	1	**5**	0	**16**	0	**16**	1	0	0	1
+15 mins.	0	16	3	19	0	0	0	0	**1**	12	**1**	14	**6**	2	0	**8**
+30 mins.	**2**	14	**5**	21	0	1	0	1	0	7	0	7	5	2	0	7
+45 mins.	1	**23**	3	**27**	0	1	**2**	3	0	11	1	12	5	**3**	0	8
Total Volume	4	74	14	92	3	3	3	9	1	46	2	49	17	7	0	24
% App. Total	4.3	80.4	15.2		33.3	33.3	33.3		2	93.9	4.1		70.8	29.2	0	
PHF	.500	.804	.700	.852	.250	.750	.375	.450	.250	.719	.500	.766	.708	.583	.000	.750

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City of Carson
N/S: Wilmington Avenue
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Weather: Clear

File Name : 03_CRS_Wilmington_E 223rd PM
Site Code : 22520115
Start Date : 2/25/2020
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Wilmington Avenue Southbound				East 223rd Street Westbound				Wilmington Avenue Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	26	173	99	298	21	62	22	105	2	163	72	237	75	211	5	291	931
04:15 PM	24	192	77	293	23	52	22	97	2	184	68	254	63	195	2	260	904
04:30 PM	27	172	84	283	54	88	44	186	3	172	53	228	72	208	4	284	981
04:45 PM	34	233	127	394	31	50	36	117	4	195	72	271	73	188	2	263	1045
Total	111	770	387	1268	129	252	124	505	11	714	265	990	283	802	13	1098	3861
05:00 PM	31	222	120	373	36	34	13	83	1	167	69	237	65	207	0	272	965
05:15 PM	31	197	136	364	21	67	18	106	6	138	48	192	65	197	2	264	926
05:30 PM	26	189	136	351	28	58	19	105	1	173	101	275	62	195	3	260	991
05:45 PM	14	165	118	297	19	57	13	89	3	177	84	264	65	225	4	294	944
Total	102	773	510	1385	104	216	63	383	11	655	302	968	257	824	9	1090	3826
Grand Total	213	1543	897	2653	233	468	187	888	22	1369	567	1958	540	1626	22	2188	7687
Apprch %	8	58.2	33.8		26.2	52.7	21.1		1.1	69.9	29		24.7	74.3	1		
Total %	2.8	20.1	11.7	34.5	3	6.1	2.4	11.6	0.3	17.8	7.4	25.5	7	21.2	0.3	28.5	
Passenger Vehicles	193	1356	857	2406	210	461	169	840	21	1236	533	1790	508	1569	19	2096	7132
% Passenger Vehicles	90.6	87.9	95.5	90.7	90.1	98.5	90.4	94.6	95.5	90.3	94	91.4	94.1	96.5	86.4	95.8	92.8
Large 2 Axle Vehicles	3	51	12	66	5	2	7	14	0	29	10	39	5	25	1	31	150
% Large 2 Axle Vehicles	1.4	3.3	1.3	2.5	2.1	0.4	3.7	1.6	0	2.1	1.8	2	0.9	1.5	4.5	1.4	2
3 Axle Vehicles	8	51	6	65	6	3	5	14	0	26	6	32	9	19	0	28	139
% 3 Axle Vehicles	3.8	3.3	0.7	2.5	2.6	0.6	2.7	1.6	0	1.9	1.1	1.6	1.7	1.2	0	1.3	1.8
4+ Axle Trucks	9	85	22	116	12	2	6	20	1	78	18	97	18	13	2	33	266
% 4+ Axle Trucks	4.2	5.5	2.5	4.4	5.2	0.4	3.2	2.3	4.5	5.7	3.2	5	3.3	0.8	9.1	1.5	3.5

	Wilmington Avenue Southbound				East 223rd Street Westbound				Wilmington Avenue Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	**34**	**233**	127	**394**	31	50	**36**	**117**	4	**195**	72	271	**73**	188	2	263	**1045**
05:00 PM	31	222	120	373	**36**	34	13	83	1	167	69	237	65	**207**	0	**272**	965
05:15 PM	31	197	**136**	364	21	**67**	18	106	**6**	138	48	192	65	197	2	264	926
05:30 PM	26	189	136	351	28	58	19	105	1	173	**101**	**275**	62	195	**3**	260	991
Total Volume	122	841	519	1482	116	209	86	411	12	673	290	975	265	787	7	1059	3927
% App. Total	8.2	56.7	35		28.2	50.9	20.9		1.2	69	29.7		25	74.3	0.7		
PHF	.897	.902	.954	.940	.806	.780	.597	.878	.500	.863	.718	.886	.908	.950	.583	.973	.939

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Site Code : 22520115
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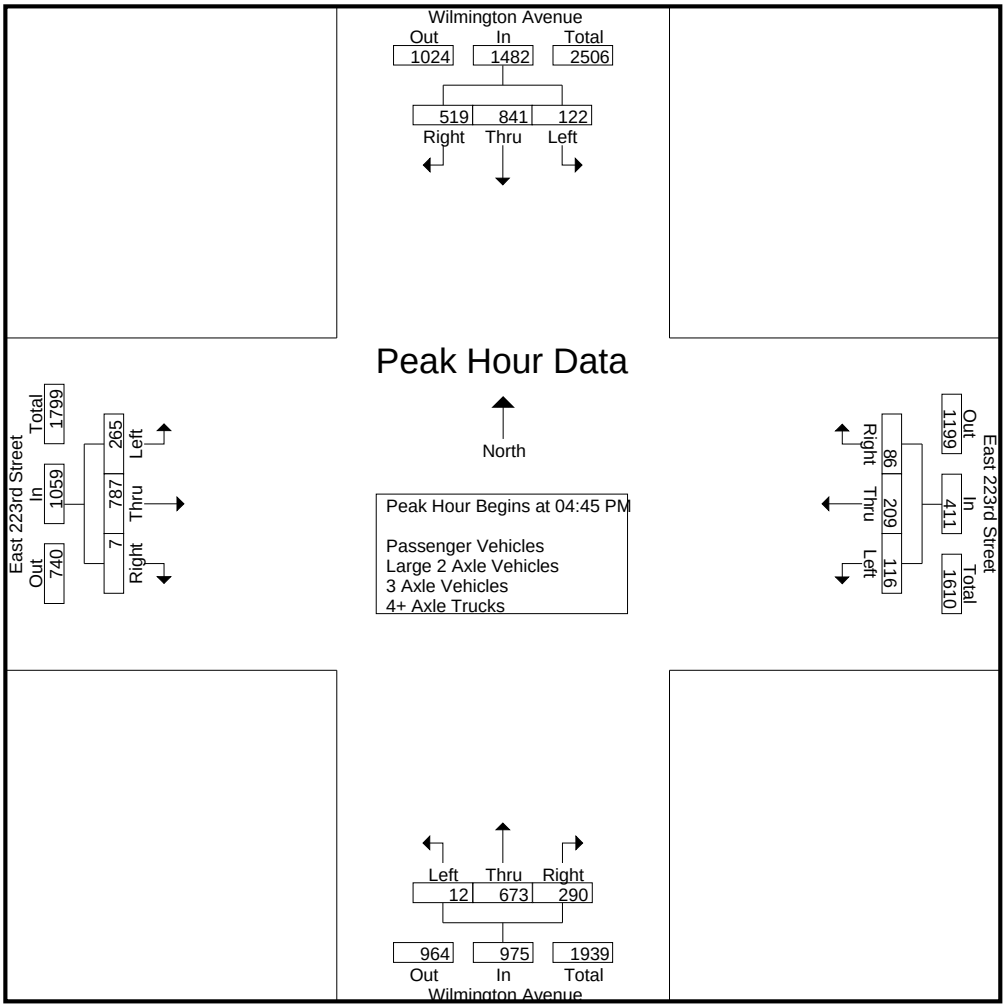

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	**34**	**233**	127	**394**	21	62	22	105	2	163	**72**	237	**75**	**211**	**5**	**291**
+15 mins.	31	222	120	373	23	52	22	97	2	184	68	254	63	195	2	260
+30 mins.	31	197	**136**	364	**54**	**88**	**44**	**186**	3	172	53	228	72	208	4	284
+45 mins.	26	189	136	351	31	50	36	117	**4**	**195**	72	**271**	73	188	2	263
Total Volume	122	841	519	1482	129	252	124	505	11	714	265	990	283	802	13	1098
% App. Total	8.2	56.7	35		25.5	49.9	24.6		1.1	72.1	26.8		25.8	73	1.2	
PHF	.897	.902	.954	.940	.597	.716	.705	.679	.688	.915	.920	.913	.943	.950	.650	.943

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Groups Printed- Passenger Vehicles

	Wilmington Avenue Southbound				East 223rd Street Westbound				Wilmington Avenue Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	18	143	90	251	19	59	21	99	2	136	66	204	71	205	3	279	833
04:15 PM	23	165	75	263	21	51	20	92	2	157	65	224	59	184	2	245	824
04:30 PM	23	144	79	246	51	88	42	181	3	156	52	211	65	200	4	269	907
04:45 PM	32	197	125	354	26	49	31	106	4	179	68	251	68	179	2	249	960
Total	96	649	369	1114	117	247	114	478	11	628	251	890	263	768	11	1042	3524
05:00 PM	29	196	116	341	33	34	12	79	1	157	63	221	61	200	0	261	902
05:15 PM	28	181	129	338	19	66	16	101	6	127	42	175	63	191	2	256	870
05:30 PM	26	171	129	326	26	58	17	101	1	160	95	256	59	189	2	250	933
05:45 PM	14	159	114	287	15	56	10	81	2	164	82	248	62	221	4	287	903
Total	97	707	488	1292	93	214	55	362	10	608	282	900	245	801	8	1054	3608
Grand Total	193	1356	857	2406	210	461	169	840	21	1236	533	1790	508	1569	19	2096	7132
Apprch %	8	56.4	35.6		25	54.9	20.1		1.2	69.1	29.8		24.2	74.9	0.9		
Total %	2.7	19	12	33.7	2.9	6.5	2.4	11.8	0.3	17.3	7.5	25.1	7.1	22	0.3	29.4	

	Wilmington Avenue Southbound				East 223rd Street Westbound				Wilmington Avenue Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	**32**	**197**	125	**354**	26	49	**31**	**106**	4	**179**	68	251	**68**	179	**2**	249	**960**
05:00 PM	29	196	116	341	**33**	34	12	79	1	157	63	221	61	**200**	0	**261**	902
05:15 PM	28	181	**129**	338	19	**66**	16	101	**6**	127	42	175	63	191	2	256	870
05:30 PM	26	171	129	326	26	58	17	101	1	160	**95**	**256**	59	189	2	250	933
Total Volume	115	745	499	1359	104	207	76	387	12	623	268	903	251	759	6	1016	3665
% App. Total	8.5	54.8	36.7		26.9	53.5	19.6		1.3	69	29.7		24.7	74.7	0.6		
PHF	.898	.945	.967	.960	.788	.784	.613	.913	.500	.870	.705	.882	.923	.949	.750	.973	.954

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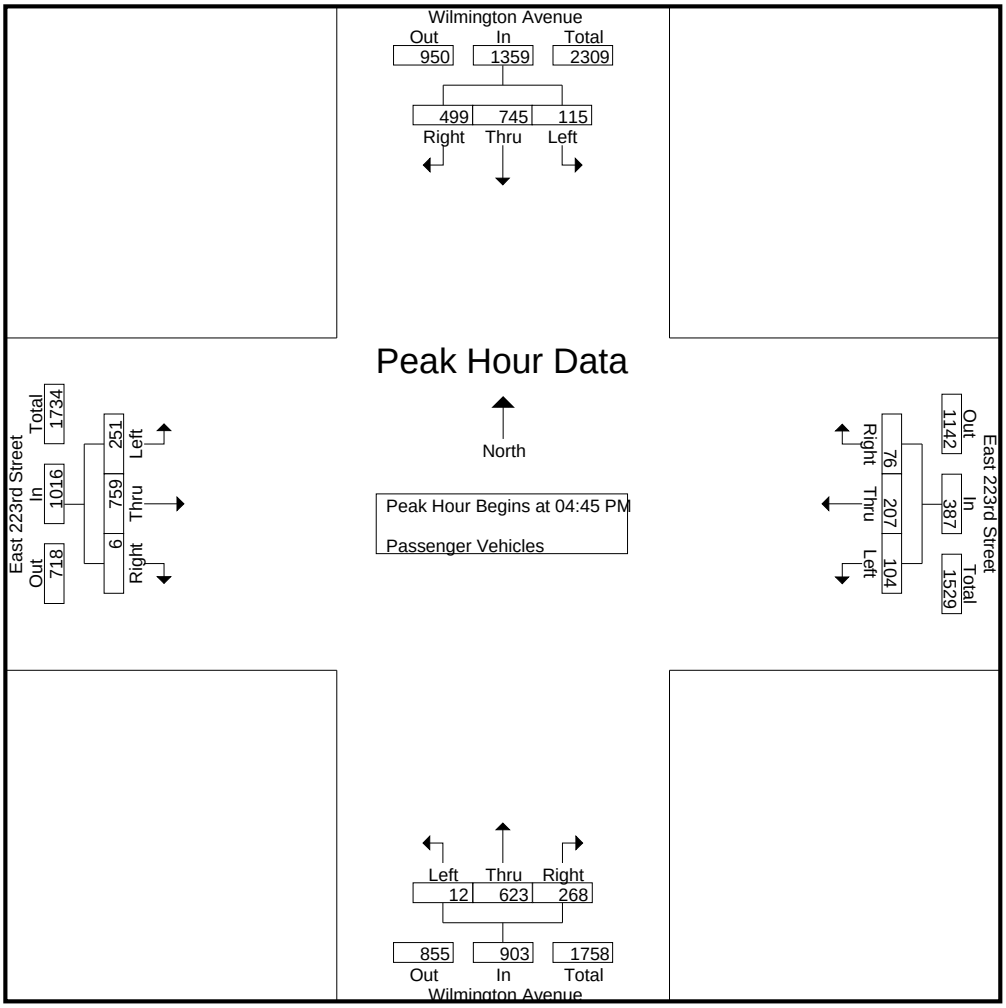

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	**32**	**197**	125	**354**	26	49	**31**	**106**	4	**179**	68	251	**68**	179	**2**	249
+15 mins.	29	196	116	341	**33**	34	12	79	1	157	63	221	61	**200**	0	**261**
+30 mins.	28	181	**129**	338	19	**66**	16	101	**6**	127	42	175	63	191	2	256
+45 mins.	26	171	129	326	26	58	17	101	1	160	**95**	**256**	59	189	2	250
Total Volume	115	745	499	1359	104	207	76	387	12	623	268	903	251	759	6	1016
% App. Total	8.5	54.8	36.7		26.9	53.5	19.6		1.3	69	29.7		24.7	74.7	0.6	
PHF	.898	.945	.967	.960	.788	.784	.613	.913	.500	.870	.705	.882	.923	.949	.750	.973

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Weather: Clear

File Name : 03_CRS_Wilmington_E 223rd PM
Site Code : 22520115
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Groups Printed- Large 2 Axle Vehicles

	Wilmington Avenue Southbound				East 223rd Street Westbound				Wilmington Avenue Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	11	4	15	0	2	0	2	0	8	3	11	1	3	1	5	33
04:15 PM	0	6	0	6	0	0	1	1	0	5	1	6	1	4	0	5	18
04:30 PM	2	7	4	13	1	0	1	2	0	5	0	5	0	5	0	5	25
04:45 PM	0	11	0	11	3	0	3	6	0	6	1	7	2	2	0	4	28
Total	2	35	8	45	4	2	5	11	0	24	5	29	4	14	1	19	104
05:00 PM	0	9	1	10	0	0	0	0	0	0	1	1	1	3	0	4	15
05:15 PM	1	4	2	7	0	0	1	1	0	2	3	5	0	3	0	3	16
05:30 PM	0	2	1	3	1	0	0	1	0	2	0	2	0	4	0	4	10
05:45 PM	0	1	0	1	0	0	1	1	0	1	1	2	0	1	0	1	5
Total	1	16	4	21	1	0	2	3	0	5	5	10	1	11	0	12	46
Grand Total	3	51	12	66	5	2	7	14	0	29	10	39	5	25	1	31	150
Apprch %	4.5	77.3	18.2		35.7	14.3	50		0	74.4	25.6		16.1	80.6	3.2		
Total %	2	34	8	44	3.3	1.3	4.7	9.3	0	19.3	6.7	26	3.3	16.7	0.7	20.7	

	Wilmington Avenue Southbound				East 223rd Street Westbound				Wilmington Avenue Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	**11**	0	**11**	**3**	0	**3**	**6**	0	**6**	1	**7**	**2**	2	0	**4**	**28**
05:00 PM	0	9	1	10	0	0	0	0	0	0	1	1	1	3	0	4	15
05:15 PM	**1**	4	**2**	7	0	0	1	1	0	2	**3**	5	0	3	0	3	16
05:30 PM	0	2	1	3	1	0	0	1	0	2	0	2	0	**4**	0	4	10
Total Volume	1	26	4	31	4	0	4	8	0	10	5	15	3	12	0	15	69
% App. Total	3.2	83.9	12.9		50	0	50		0	66.7	33.3		20	80	0		
PHF	.250	.591	.500	.705	.333	.000	.333	.333	.000	.417	.417	.536	.375	.750	.000	.938	.616

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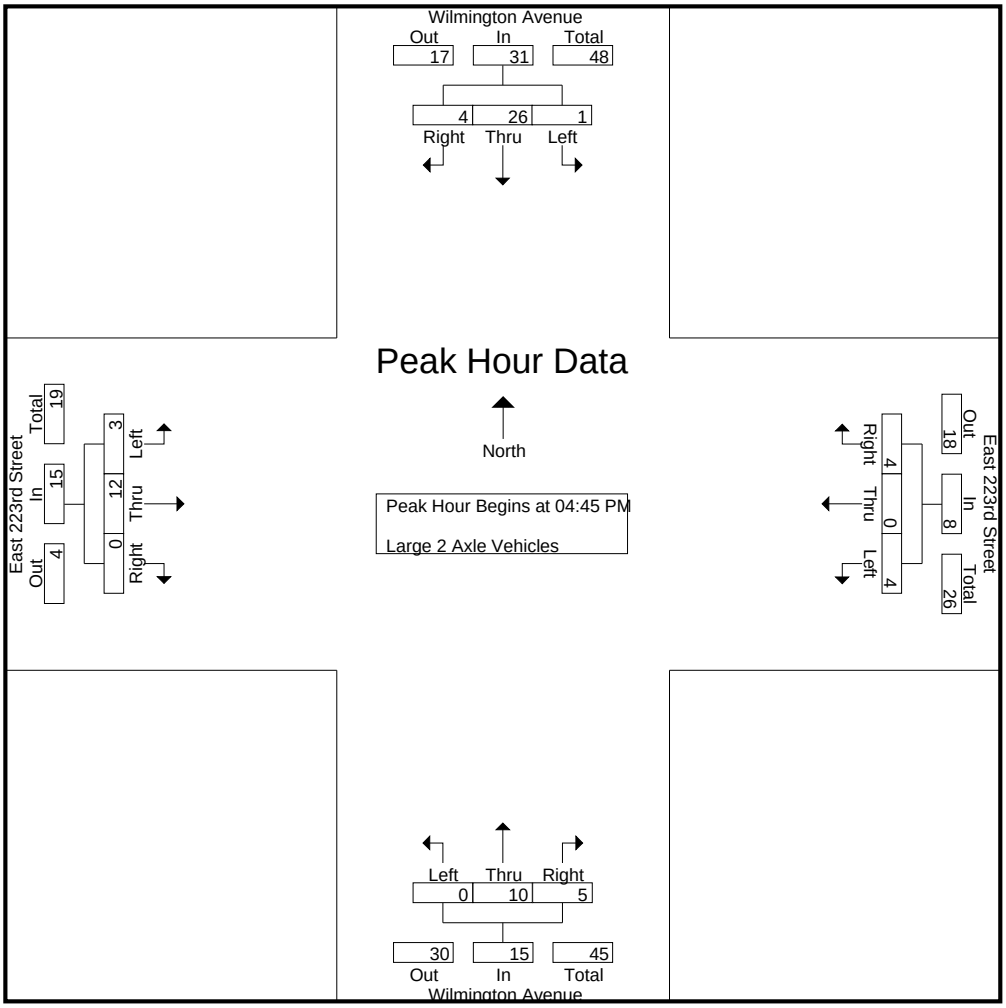

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	0	**11**	0	**11**	**3**	0	**3**	**6**	0	**6**	1	**7**	**2**	2	0	**4**
+15 mins.	0	9	1	10	0	0	0	0	0	0	1	1	1	3	0	4
+30 mins.	**1**	4	**2**	7	0	0	1	1	0	2	**3**	5	0	3	0	3
+45 mins.	0	2	1	3	1	0	0	1	0	2	0	2	0	**4**	0	4
Total Volume	1	26	4	31	4	0	4	8	0	10	5	15	3	12	0	15
% App. Total	3.2	83.9	12.9		50	0	50		0	66.7	33.3		20	80	0	
PHF	.250	.591	.500	.705	.333	.000	.333	.333	.000	.417	.417	.536	.375	.750	.000	.938

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File Name : 03_CRS_Wilmington_E 223rd PM
Site Code : 22520115
Start Date : 2/25/2020
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Groups Printed- 3 Axle Vehicles

	Wilmington Avenue Southbound				East 223rd Street Westbound				Wilmington Avenue Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	4	11	0	15	1	0	1	2	0	3	0	3	1	1	0	2	22
04:15 PM	1	6	0	7	0	0	1	1	0	3	0	3	0	3	0	3	14
04:30 PM	1	7	1	9	0	0	1	1	0	3	1	4	3	2	0	5	19
04:45 PM	1	11	1	13	0	1	1	2	0	5	1	6	1	5	0	6	27
Total	7	35	2	44	1	1	4	6	0	14	2	16	5	11	0	16	82
05:00 PM	1	9	0	10	1	0	0	1	0	4	2	6	2	2	0	4	21
05:15 PM	0	4	2	6	1	1	0	2	0	1	0	1	0	2	0	2	11
05:30 PM	0	2	1	3	1	0	0	1	0	3	1	4	1	2	0	3	11
05:45 PM	0	1	1	2	2	1	1	4	0	4	1	5	1	2	0	3	14
Total	1	16	4	21	5	2	1	8	0	12	4	16	4	8	0	12	57
Grand Total	8	51	6	65	6	3	5	14	0	26	6	32	9	19	0	28	139
Apprch %	12.3	78.5	9.2		42.9	21.4	35.7		0	81.2	18.8		32.1	67.9	0		
Total %	5.8	36.7	4.3	46.8	4.3	2.2	3.6	10.1	0	18.7	4.3	23	6.5	13.7	0	20.1	

	Wilmington Avenue Southbound				East 223rd Street Westbound				Wilmington Avenue Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	**1**	**11**	1	**13**	0	**1**	**1**	**2**	0	**5**	1	**6**	1	**5**	0	**6**	**27**
05:00 PM	1	9	0	10	**1**	0	0	1	0	4	**2**	6	**2**	2	0	4	21
05:15 PM	0	4	**2**	6	1	1	0	2	0	1	0	1	0	2	0	2	11
05:30 PM	0	2	1	3	1	0	0	1	0	3	1	4	1	2	0	3	11
Total Volume	2	26	4	32	3	2	1	6	0	13	4	17	4	11	0	15	70
% App. Total	6.2	81.2	12.5		50	33.3	16.7		0	76.5	23.5		26.7	73.3	0		
PHF	.500	.591	.500	.615	.750	.500	.250	.750	.000	.650	.500	.708	.500	.550	.000	.625	.648

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City of Carson
N/S: Wilmington Avenue
E/W: East 223rd Street
Weather: Clear

File Name : 03_CRS_Wilmington_E 223rd PM
Site Code : 22520115
Start Date : 2/25/2020
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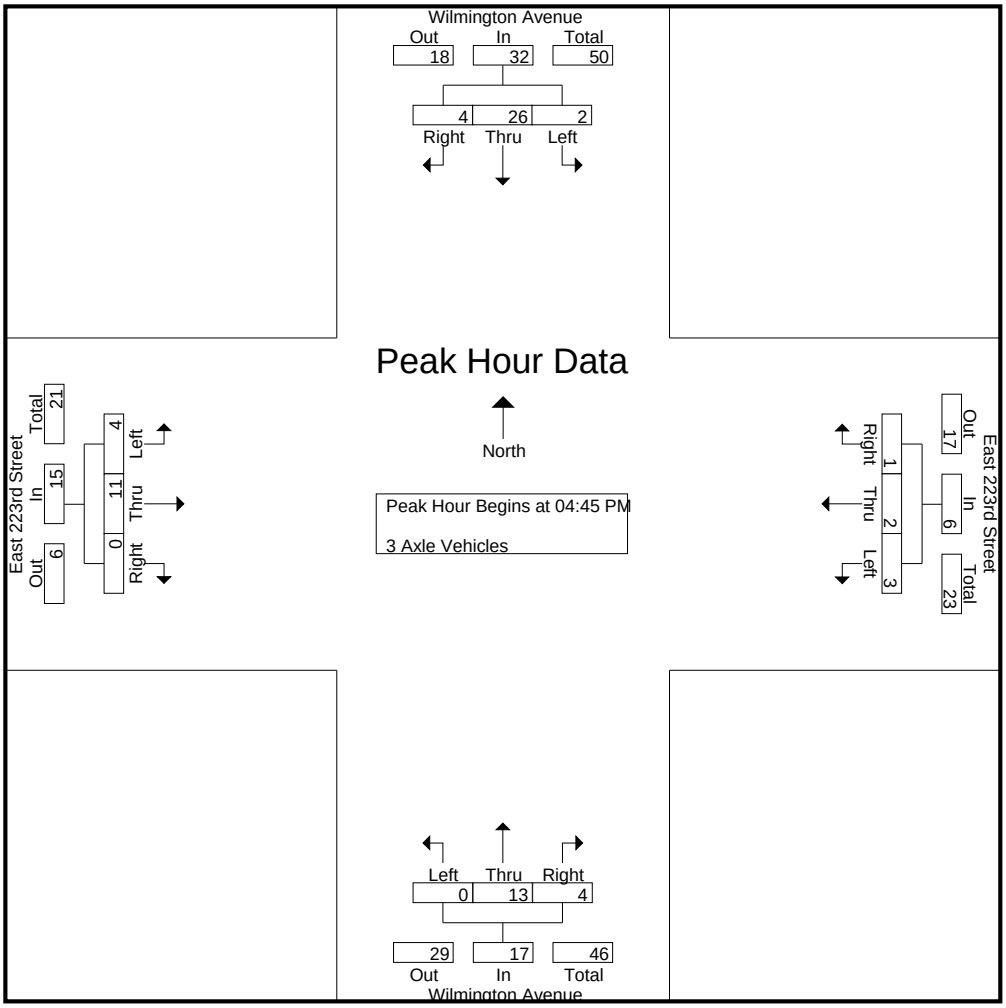

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	**1**	**11**	1	**13**	0	**1**	**1**	**2**	0	**5**	1	**6**	1	**5**	0	**6**
+15 mins.	1	9	0	10	**1**	0	0	1	0	4	**2**	6	**2**	2	0	4
+30 mins.	0	4	**2**	6	1	1	0	2	0	1	0	1	0	2	0	2
+45 mins.	0	2	1	3	1	0	0	1	0	3	1	4	1	2	0	3
Total Volume	2	26	4	32	3	2	1	6	0	13	4	17	4	11	0	15
% App. Total	6.2	81.2	12.5		50	33.3	16.7		0	76.5	23.5		26.7	73.3	0	
PHF	.500	.591	.500	.615	.750	.500	.250	.750	.000	.650	.500	.708	.500	.550	.000	.625

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City of Carson
N/S: Wilmington Avenue
E/W: East 223rd Street
Weather: Clear

File Name : 03_CRS_Wilmington_E 223rd PM
Site Code : 22520115
Start Date : 2/25/2020
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Groups Printed- 4+ Axle Trucks

	Wilmington Avenue Southbound				East 223rd Street Westbound				Wilmington Avenue Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	4	8	5	17	1	1	0	2	0	16	3	19	2	2	1	5	43
04:15 PM	0	15	2	17	2	1	0	3	0	19	2	21	3	4	0	7	48
04:30 PM	1	14	0	15	2	0	0	2	0	8	0	8	4	1	0	5	30
04:45 PM	1	14	1	16	2	0	1	3	0	5	2	7	2	2	0	4	30
Total	6	51	8	65	7	2	1	10	0	48	7	55	11	9	1	21	151
05:00 PM	1	8	3	12	2	0	1	3	0	6	3	9	1	2	0	3	27
05:15 PM	2	8	3	13	1	0	1	2	0	8	3	11	2	1	0	3	29
05:30 PM	0	14	5	19	0	0	2	2	0	8	5	13	2	0	1	3	37
05:45 PM	0	4	3	7	2	0	1	3	1	8	0	9	2	1	0	3	22
Total	3	34	14	51	5	0	5	10	1	30	11	42	7	4	1	12	115
Grand Total	9	85	22	116	12	2	6	20	1	78	18	97	18	13	2	33	266
Apprch %	7.8	73.3	19		60	10	30		1	80.4	18.6		54.5	39.4	6.1		
Total %	3.4	32	8.3	43.6	4.5	0.8	2.3	7.5	0.4	29.3	6.8	36.5	6.8	4.9	0.8	12.4	

	Wilmington Avenue Southbound				East 223rd Street Westbound				Wilmington Avenue Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	1	**14**	1	16	**2**	0	1	**3**	0	5	2	7	**2**	**2**	0	**4**	30
05:00 PM	1	8	3	12	2	0	1	3	0	6	3	9	1	2	0	3	27
05:15 PM	**2**	8	3	13	1	0	1	2	0	**8**	3	11	2	1	0	3	29
05:30 PM	0	14	**5**	**19**	0	0	**2**	2	0	8	**5**	**13**	2	0	**1**	3	**37**
Total Volume	4	44	12	60	5	0	5	10	0	27	13	40	7	5	1	13	123
% App. Total	6.7	73.3	20		50	0	50		0	67.5	32.5		53.8	38.5	7.7		
PHF	.500	.786	.600	.789	.625	.000	.625	.833	.000	.844	.650	.769	.875	.625	.250	.813	.831

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City of Carson
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Weather: Clear

File Name : 03_CRS_Wilmington_E 223rd PM
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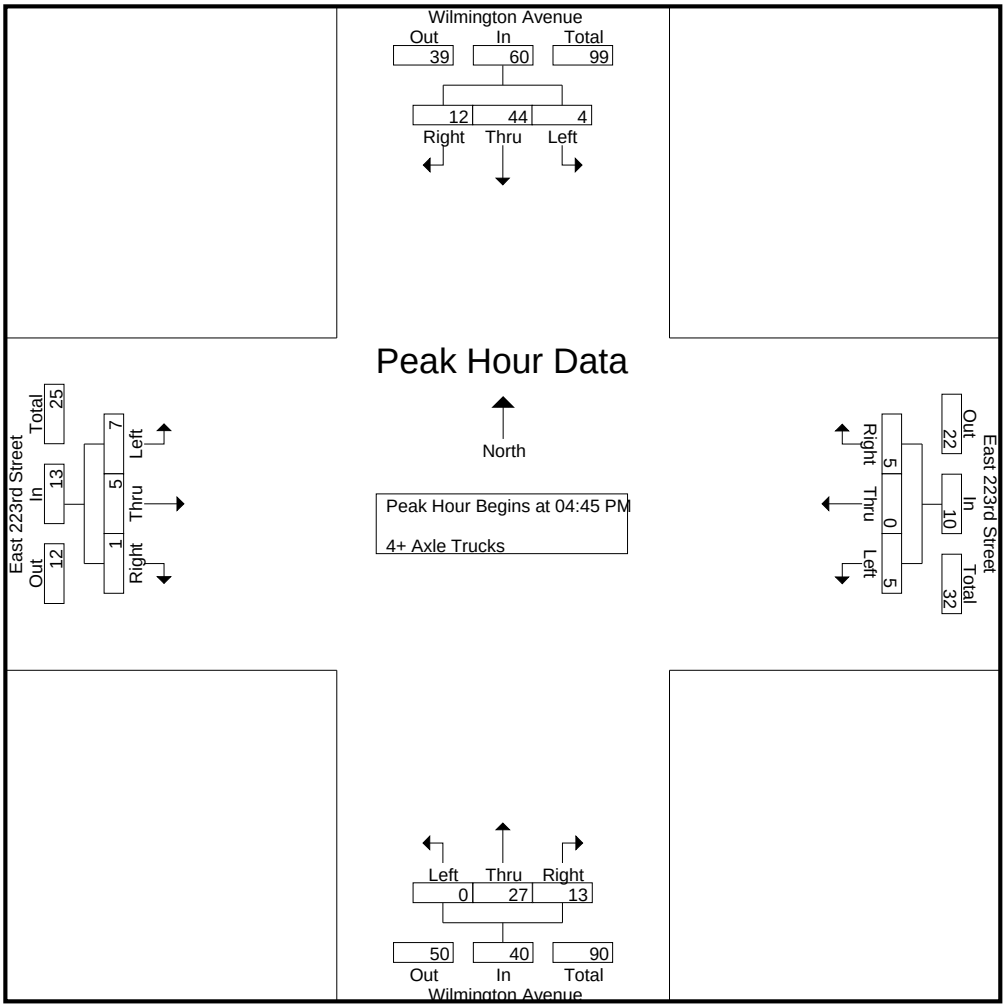

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	1	**14**	1	16	**2**	0	1	**3**	0	5	2	7	**2**	**2**	0	**4**
+15 mins.	1	8	3	12	2	0	1	3	0	6	3	9	1	2	0	3
+30 mins.	**2**	8	3	13	1	0	1	2	0	**8**	3	11	2	1	0	3
+45 mins.	0	14	**5**	**19**	0	0	**2**	2	0	8	**5**	**13**	2	0	**1**	3
Total Volume	4	44	12	60	5	0	5	10	0	27	13	40	7	5	1	13
% App. Total	6.7	73.3	20		50	0	50		0	67.5	32.5		53.8	38.5	7.7	
PHF	.500	.786	.600	.789	.625	.000	.625	.833	.000	.844	.650	.769	.875	.625	.250	.813

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City of Carson
N/S: Alameda Street
E/W: I-405 Northbound Ramps
Weather: Clear

File Name : 04_CRS_Alameda_405N AM
Site Code : 22520115
Start Date : 2/25/2020
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Alameda Street Southbound			I-405 Northbound Ramps Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	12	146	158	61	30	91	94	11	105	354
07:15 AM	17	211	228	65	24	89	105	8	113	430
07:30 AM	15	202	217	51	23	74	111	17	128	419
07:45 AM	29	230	259	59	41	100	182	34	216	575
Total	73	789	862	236	118	354	492	70	562	1778
08:00 AM	12	153	165	65	53	118	135	36	171	454
08:15 AM	10	147	157	62	36	98	138	30	168	423
08:30 AM	17	127	144	71	24	95	132	15	147	386
08:45 AM	11	132	143	84	36	120	97	9	106	369
Total	50	559	609	282	149	431	502	90	592	1632
Grand Total	123	1348	1471	518	267	785	994	160	1154	3410
Apprch %	8.4	91.6		66	34		86.1	13.9		
Total %	3.6	39.5	43.1	15.2	7.8	23	29.1	4.7	33.8	
Passenger Vehicles	114	970	1084	341	233	574	716	137	853	2511
% Passenger Vehicles	92.7	72	73.7	65.8	87.3	73.1	72	85.6	73.9	73.6
Large 2 Axle Vehicles	3	32	35	27	5	32	28	3	31	98
% Large 2 Axle Vehicles	2.4	2.4	2.4	5.2	1.9	4.1	2.8	1.9	2.7	2.9
3 Axle Vehicles	3	32	35	42	8	50	76	4	80	165
% 3 Axle Vehicles	2.4	2.4	2.4	8.1	3	6.4	7.6	2.5	6.9	4.8
4+ Axle Trucks	3	314	317	108	21	129	174	16	190	636
% 4+ Axle Trucks	2.4	23.3	21.5	20.8	7.9	16.4	17.5	10	16.5	18.7

	Alameda Street Southbound			I-405 Northbound Ramps Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	17	211	228	**65**	24	89	105	8	113	430
07:30 AM	15	202	217	51	23	74	111	17	128	419
07:45 AM	**29**	**230**	**259**	59	41	100	**182**	34	**216**	**575**
08:00 AM	12	153	165	65	**53**	**118**	135	**36**	171	454
Total Volume	73	796	869	240	141	381	533	95	628	1878
% App. Total	8.4	91.6		63	37		84.9	15.1		
PHF	.629	.865	.839	.923	.665	.807	.732	.660	.727	.817

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City of Carson
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Weather: Clear

File Name : 04_CRS_Alameda_405N AM
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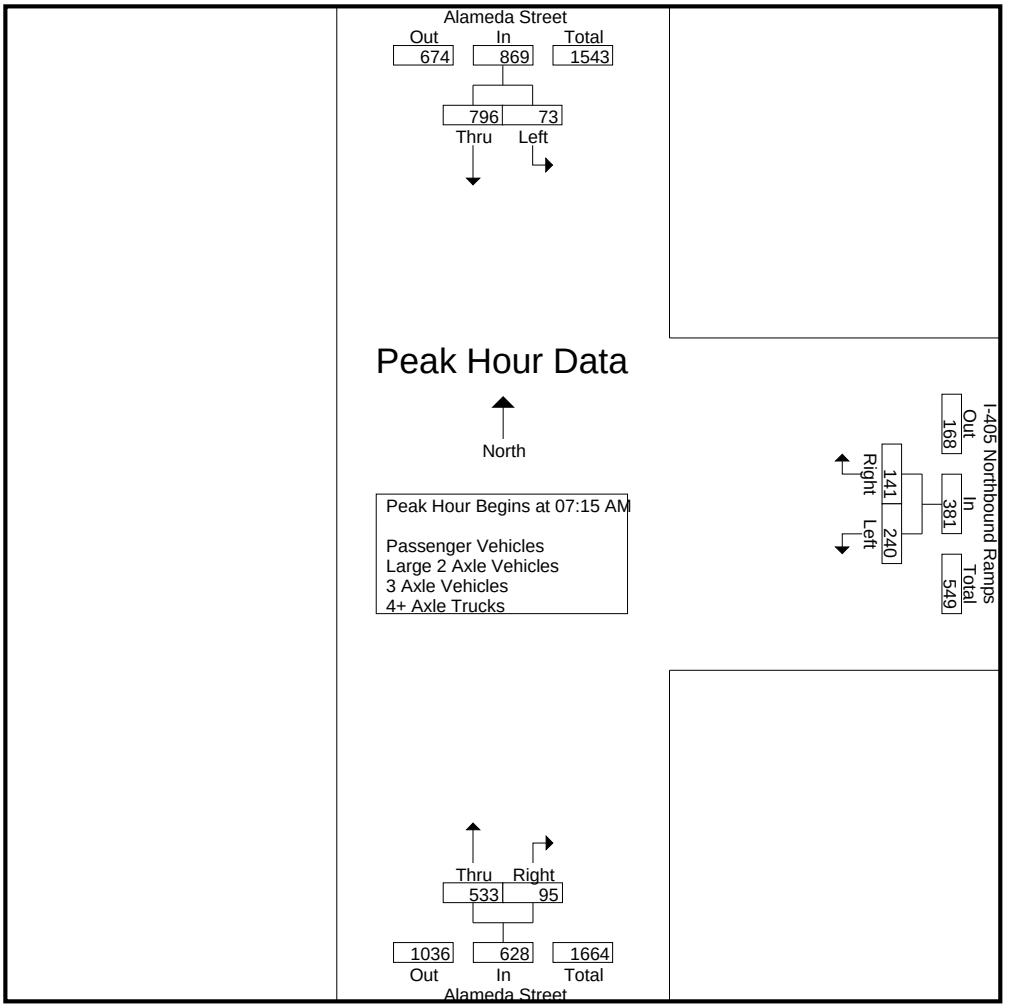

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			08:00 AM			07:45 AM		
+0 mins.	17	211	228	65	**53**	118	**182**	34	**216**
+15 mins.	15	202	217	62	36	98	135	**36**	171
+30 mins.	**29**	**230**	**259**	71	24	95	138	30	168
+45 mins.	12	153	165	**84**	36	**120**	132	15	147
Total Volume	73	796	869	282	149	431	587	115	702
% App. Total	8.4	91.6		65.4	34.6		83.6	16.4	
PHF	.629	.865	.839	.839	.703	.898	.806	.799	.813

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City of Carson
N/S: Alameda Street
E/W: I-405 Northbound Ramps
Weather: Clear

File Name : 04_CRS_Alameda_405N AM
Site Code : 22520115
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Groups Printed- Passenger Vehicles

	Alameda Street Southbound			I-405 Northbound Ramps Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	11	108	119	42	30	72	65	10	75	266
07:15 AM	17	150	167	46	19	65	82	6	88	320
07:30 AM	15	147	162	43	21	64	87	16	103	329
07:45 AM	26	177	203	44	41	85	154	33	187	475
Total	69	582	651	175	111	286	388	65	453	1390
08:00 AM	11	113	124	46	48	94	108	30	138	356
08:15 AM	10	104	114	36	29	65	96	27	123	302
08:30 AM	15	84	99	39	19	58	74	9	83	240
08:45 AM	9	87	96	45	26	71	50	6	56	223
Total	45	388	433	166	122	288	328	72	400	1121
Grand Total	114	970	1084	341	233	574	716	137	853	2511
Apprch %	10.5	89.5		59.4	40.6		83.9	16.1		
Total %	4.5	38.6	43.2	13.6	9.3	22.9	28.5	5.5	34	

	Alameda Street Southbound			I-405 Northbound Ramps Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	17	150	167	**46**	19	65	82	6	88	320
07:30 AM	15	147	162	43	21	64	87	16	103	329
07:45 AM	**26**	**177**	**203**	44	41	85	**154**	**33**	**187**	**475**
08:00 AM	11	113	124	46	**48**	**94**	108	30	138	356
Total Volume	69	587	656	179	129	308	431	85	516	1480
% App. Total	10.5	89.5		58.1	41.9		83.5	16.5		
PHF	.663	.829	.808	.973	.672	.819	.700	.644	.690	.779

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City of Carson
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E/W: I-405 Northbound Ramps
Weather: Clear

File Name : 04_CRS_Alameda_405N AM
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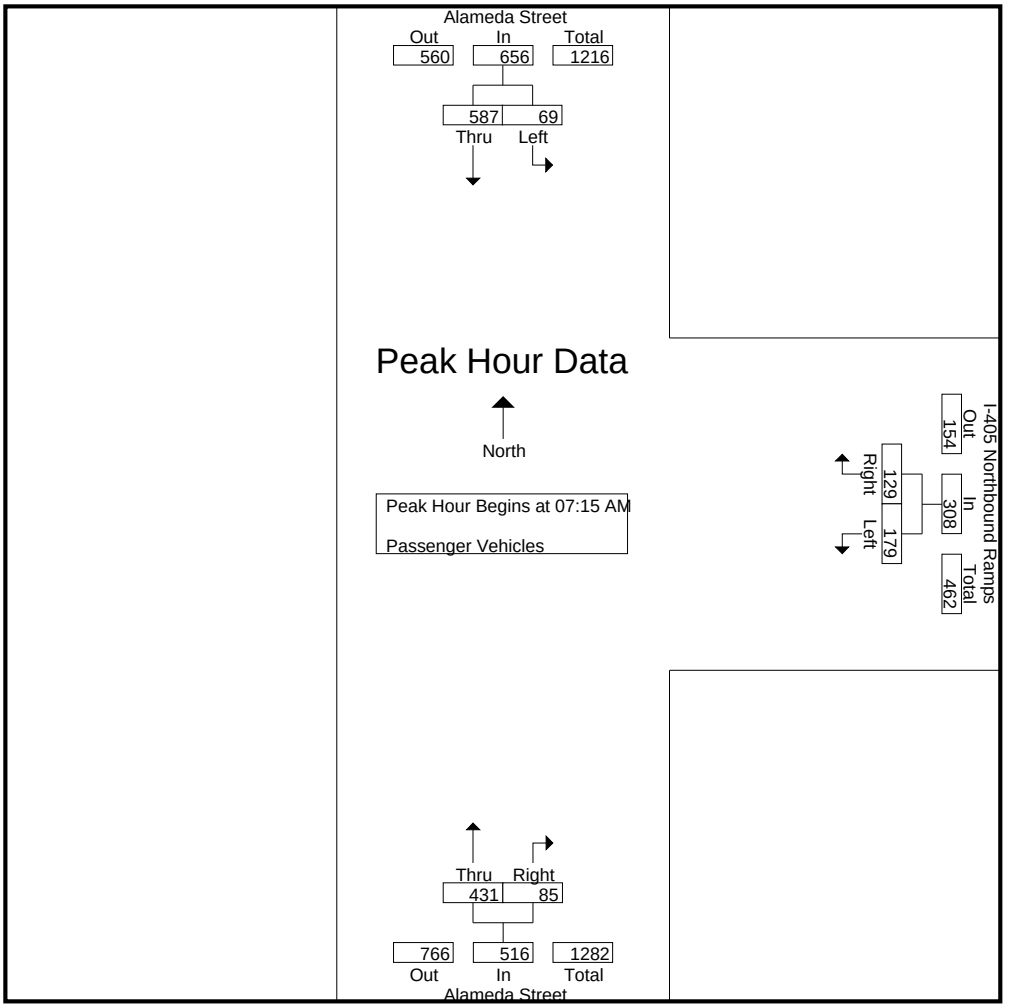

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	17	150	167	**46**	19	65	82	6	88
+15 mins.	15	147	162	43	21	64	87	16	103
+30 mins.	**26**	**177**	**203**	44	41	85	**154**	**33**	**187**
+45 mins.	11	113	124	46	**48**	**94**	108	30	138
Total Volume	69	587	656	179	129	308	431	85	516
% App. Total	10.5	89.5		58.1	41.9		83.5	16.5	
PHF	.663	.829	.808	.973	.672	.819	.700	.644	.690

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City of Carson
N/S: Alameda Street
E/W: I-405 Northbound Ramps
Weather: Clear

File Name : 04_CRS_Alameda_405N AM
Site Code : 22520115
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Groups Printed- Large 2 Axle Vehicles

	Alameda Street Southbound			I-405 Northbound Ramps Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	0	3	3	1	0	1	3	0	3	7
07:15 AM	0	2	2	3	0	3	2	0	2	7
07:30 AM	0	4	4	0	1	1	3	0	3	8
07:45 AM	2	6	8	3	0	3	3	0	3	14
Total	2	15	17	7	1	8	11	0	11	36
08:00 AM	0	5	5	4	1	5	2	2	4	14
08:15 AM	0	4	4	3	1	4	6	0	6	14
08:30 AM	1	3	4	6	0	6	6	1	7	17
08:45 AM	0	5	5	7	2	9	3	0	3	17
Total	1	17	18	20	4	24	17	3	20	62
Grand Total	3	32	35	27	5	32	28	3	31	98
Apprch %	8.6	91.4		84.4	15.6		90.3	9.7		
Total %	3.1	32.7	35.7	27.6	5.1	32.7	28.6	3.1	31.6	

	Alameda Street Southbound			I-405 Northbound Ramps Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	2	2	3	0	3	2	0	2	7
07:30 AM	0	4	4	0	**1**	1	**3**	0	3	8
07:45 AM	**2**	**6**	**8**	3	0	3	3	0	3	**14**
08:00 AM	0	5	5	**4**	1	**5**	2	**2**	**4**	14
Total Volume	2	17	19	10	2	12	10	2	12	43
% App. Total	10.5	89.5		83.3	16.7		83.3	16.7		
PHF	.250	.708	.594	.625	.500	.600	.833	.250	.750	.768

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City of Carson
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File Name : 04_CRS_Alameda_405N AM
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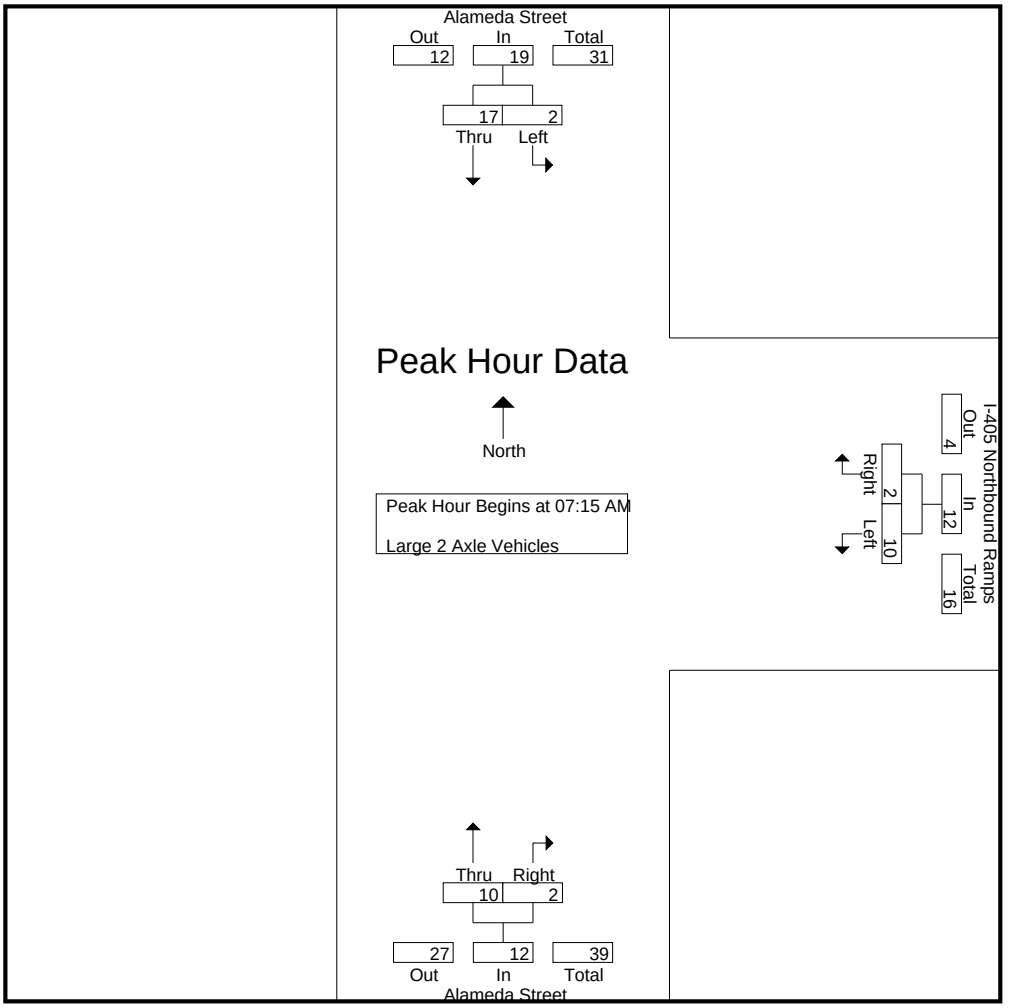

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	0	2	2	3	0	3	2	0	2
+15 mins.	0	4	4	0	**1**	1	**3**	0	3
+30 mins.	**2**	**6**	**8**	3	0	3	3	0	3
+45 mins.	0	5	5	**4**	1	**5**	2	**2**	**4**
Total Volume	2	17	19	10	2	12	10	2	12
% App. Total	10.5	89.5		83.3	16.7		83.3	16.7	
PHF	.250	.708	.594	.625	.500	.600	.833	.250	.750

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City of Carson
N/S: Alameda Street
E/W: I-405 Northbound Ramps
Weather: Clear

File Name : 04_CRS_Alameda_405N AM
Site Code : 22520115
Start Date : 2/25/2020
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Groups Printed- 3 Axle Vehicles

	Alameda Street Southbound			I-405 Northbound Ramps Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	1	3	4	6	0	6	10	0	10	20
07:15 AM	0	2	2	5	1	6	13	0	13	21
07:30 AM	0	4	4	4	1	5	6	0	6	15
07:45 AM	1	6	7	4	0	4	6	1	7	18
Total	2	15	17	19	2	21	35	1	36	74
08:00 AM	0	5	5	5	0	5	13	1	14	24
08:15 AM	0	4	4	7	1	8	6	1	7	19
08:30 AM	0	3	3	3	3	6	7	1	8	17
08:45 AM	1	5	6	8	2	10	15	0	15	31
Total	1	17	18	23	6	29	41	3	44	91
Grand Total	3	32	35	42	8	50	76	4	80	165
Apprch %	8.6	91.4		84	16		95	5		
Total %	1.8	19.4	21.2	25.5	4.8	30.3	46.1	2.4	48.5	

	Alameda Street Southbound			I-405 Northbound Ramps Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	2	2	**5**	**1**	**6**	**13**	0	13	21
07:30 AM	0	4	4	4	1	5	6	0	6	15
07:45 AM	**1**	**6**	**7**	4	0	4	6	**1**	7	18
08:00 AM	0	5	5	5	0	5	13	1	**14**	**24**
Total Volume	1	17	18	18	2	20	38	2	40	78
% App. Total	5.6	94.4		90	10		95	5		
PHF	.250	.708	.643	.900	.500	.833	.731	.500	.714	.813

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City of Carson
N/S: Alameda Street
E/W: I-405 Northbound Ramps
Weather: Clear

File Name : 04_CRS_Alameda_405N AM
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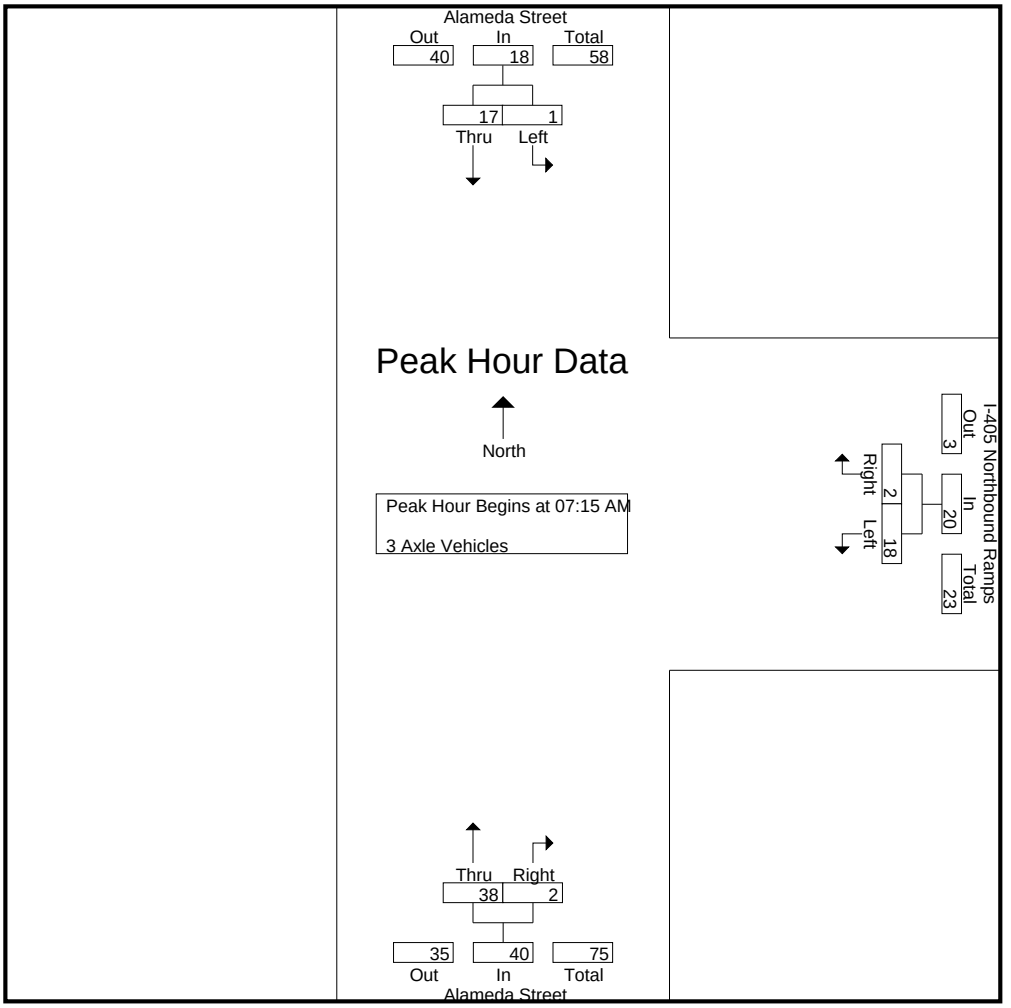

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	0	2	2	**5**	**1**	**6**	**13**	0	13
+15 mins.	0	4	4	4	1	5	6	0	6
+30 mins.	**1**	**6**	**7**	4	0	4	6	**1**	7
+45 mins.	0	5	5	5	0	5	13	1	**14**
Total Volume	1	17	18	18	2	20	38	2	40
% App. Total	5.6	94.4		90	10		95	5	
PHF	.250	.708	.643	.900	.500	.833	.731	.500	.714

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City of Carson
N/S: Alameda Street
E/W: I-405 Northbound Ramps
Weather: Clear

File Name : 04_CRS_Alameda_405N AM
Site Code : 22520115
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Groups Printed- 4+ Axle Trucks

	Alameda Street Southbound			I-405 Northbound Ramps Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	0	32	32	12	0	12	16	1	17	61
07:15 AM	0	57	57	11	4	15	8	2	10	82
07:30 AM	0	47	47	4	0	4	15	1	16	67
07:45 AM	0	41	41	8	0	8	19	0	19	68
Total	0	177	177	35	4	39	58	4	62	278
08:00 AM	1	30	31	10	4	14	12	3	15	60
08:15 AM	0	35	35	16	5	21	30	2	32	88
08:30 AM	1	37	38	23	2	25	45	4	49	112
08:45 AM	1	35	36	24	6	30	29	3	32	98
Total	3	137	140	73	17	90	116	12	128	358
Grand Total	3	314	317	108	21	129	174	16	190	636
Apprch %	0.9	99.1		83.7	16.3		91.6	8.4		
Total %	0.5	49.4	49.8	17	3.3	20.3	27.4	2.5	29.9	

	Alameda Street Southbound			I-405 Northbound Ramps Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	**57**	**57**	**11**	**4**	**15**	8	2	10	**82**
07:30 AM	0	47	47	4	0	4	15	1	16	67
07:45 AM	0	41	41	8	0	8	**19**	0	**19**	68
08:00 AM	**1**	30	31	10	4	14	12	**3**	15	60
Total Volume	1	175	176	33	8	41	54	6	60	277
% App. Total	0.6	99.4		80.5	19.5		90	10		
PHF	.250	.768	.772	.750	.500	.683	.711	.500	.789	.845

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File Name : 04_CRS_Alameda_405N AM
Site Code : 22520115
Start Date : 2/25/2020
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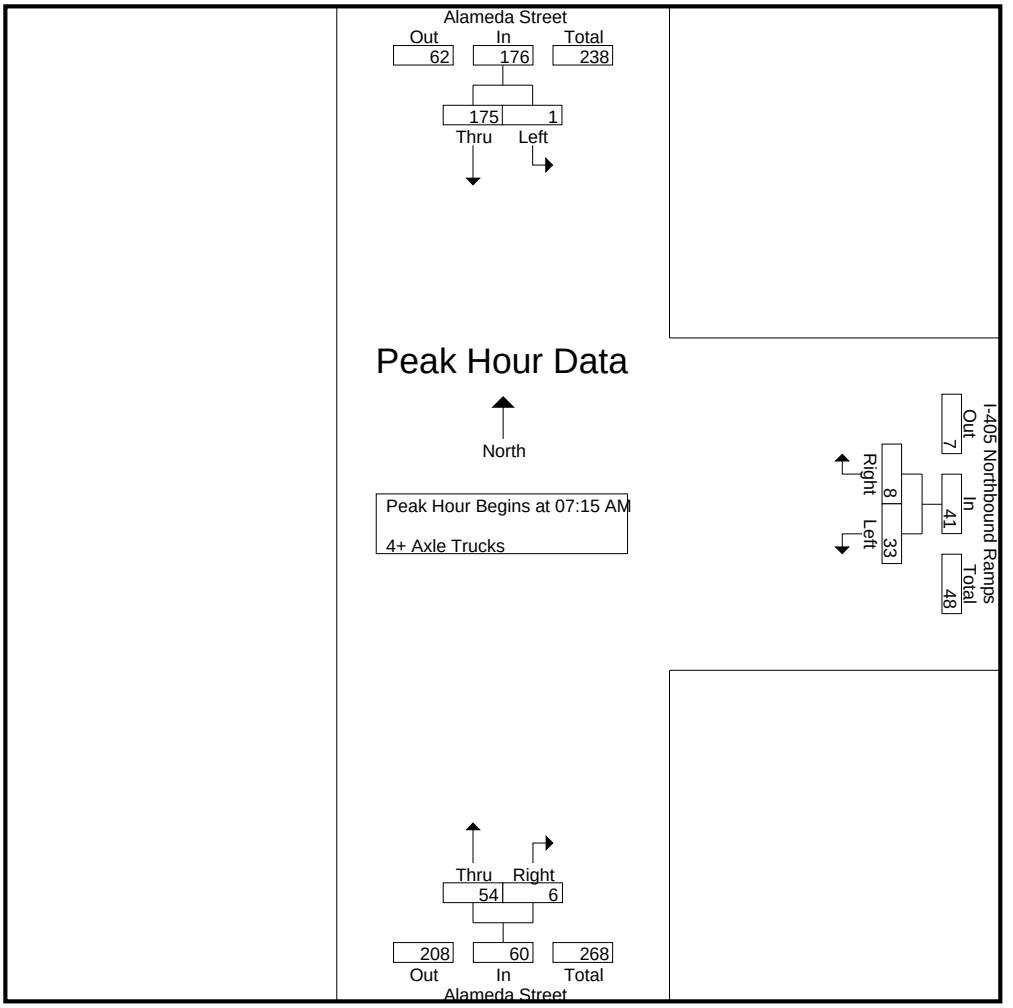

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	0	**57**	**57**	**11**	**4**	**15**	8	2	10
+15 mins.	0	47	47	4	0	4	15	1	16
+30 mins.	0	41	41	8	0	8	**19**	0	**19**
+45 mins.	**1**	30	31	10	4	14	12	**3**	15
Total Volume	1	175	176	33	8	41	54	6	60
% App. Total	0.6	99.4		80.5	19.5		90	10	
PHF	.250	.768	.772	.750	.500	.683	.711	.500	.789

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City of Carson
N/S: Alameda Street
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Weather: Clear

File Name : 04_CRS_Alameda_405N PM
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Alameda Street Southbound			I-405 Northbound Ramps Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	31	137	168	83	42	125	193	45	238	531
04:15 PM	26	163	189	96	63	159	175	27	202	550
04:30 PM	30	163	193	91	55	146	228	57	285	624
04:45 PM	24	175	199	91	39	130	225	76	301	630
Total	111	638	749	361	199	560	821	205	1026	2335
05:00 PM	26	170	196	88	52	140	221	45	266	602
05:15 PM	32	165	197	71	42	113	222	32	254	564
05:30 PM	26	149	175	68	45	113	194	41	235	523
05:45 PM	22	173	195	62	53	115	206	35	241	551
Total	106	657	763	289	192	481	843	153	996	2240
Grand Total	217	1295	1512	650	391	1041	1664	358	2022	4575
Apprch %	14.4	85.6		62.4	37.6		82.3	17.7		
Total %	4.7	28.3	33	14.2	8.5	22.8	36.4	7.8	44.2	
Passenger Vehicles	206	931	1137	501	327	828	1254	273	1527	3492
% Passenger Vehicles	94.9	71.9	75.2	77.1	83.6	79.5	75.4	76.3	75.5	76.3
Large 2 Axle Vehicles	2	21	23	20	6	26	25	5	30	79
% Large 2 Axle Vehicles	0.9	1.6	1.5	3.1	1.5	2.5	1.5	1.4	1.5	1.7
3 Axle Vehicles	7	21	28	21	33	54	154	38	192	274
% 3 Axle Vehicles	3.2	1.6	1.9	3.2	8.4	5.2	9.3	10.6	9.5	6
4+ Axle Trucks	2	322	324	108	25	133	231	42	273	730
% 4+ Axle Trucks	0.9	24.9	21.4	16.6	6.4	12.8	13.9	11.7	13.5	16

	Alameda Street Southbound			I-405 Northbound Ramps Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	30	163	193	**91**	**55**	**146**	**228**	57	285	624
04:45 PM	24	**175**	**199**	91	39	130	225	**76**	**301**	**630**
05:00 PM	26	170	196	88	52	140	221	45	266	602
05:15 PM	**32**	165	197	71	42	113	222	32	254	564
Total Volume	112	673	785	341	188	529	896	210	1106	2420
% App. Total	14.3	85.7		64.5	35.5		81	19		
PHF	.875	.961	.986	.937	.855	.906	.982	.691	.919	.960

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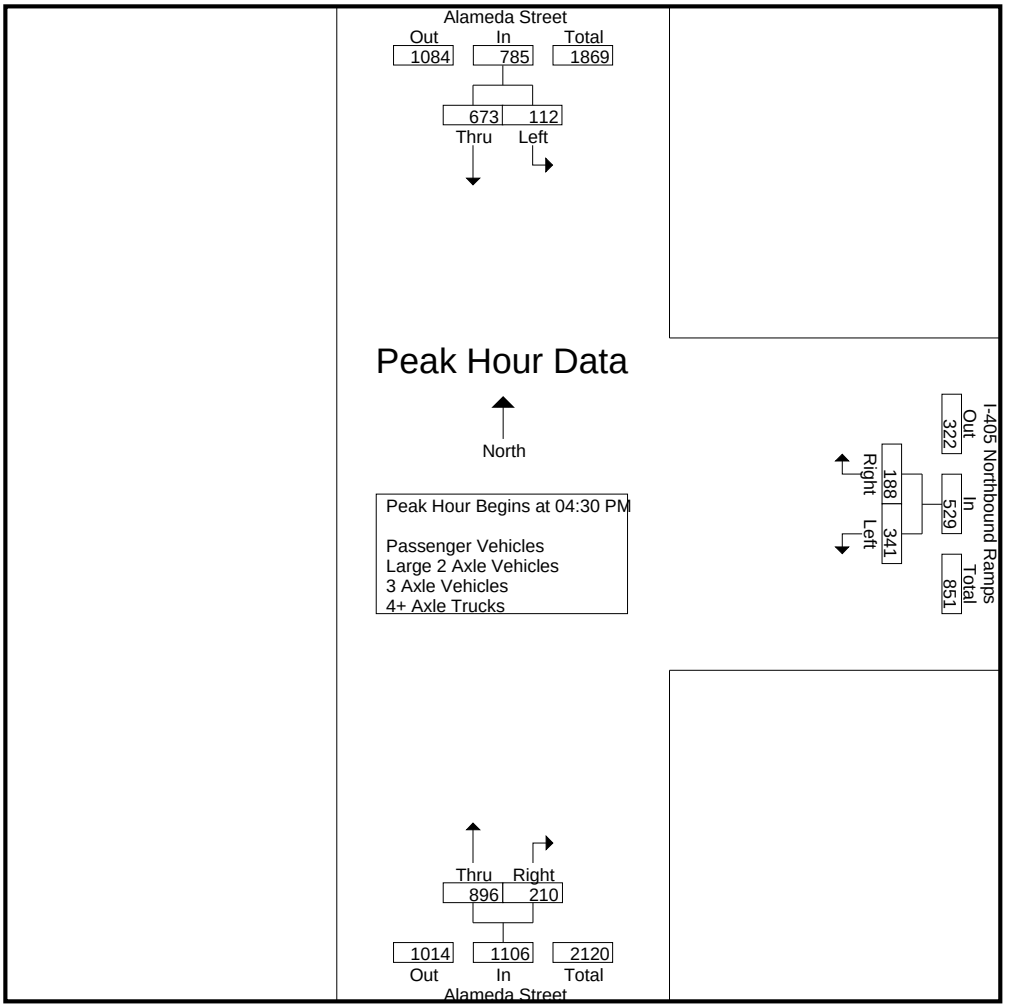

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM			04:15 PM			04:30 PM		
+0 mins.	30	163	193	**96**	**63**	**159**	**228**	57	285
+15 mins.	24	**175**	**199**	91	55	146	225	**76**	**301**
+30 mins.	26	170	196	91	39	130	221	45	266
+45 mins.	**32**	165	197	88	52	140	222	32	254
Total Volume	112	673	785	366	209	575	896	210	1106
% App. Total	14.3	85.7		63.7	36.3		81	19	
PHF	.875	.961	.986	.953	.829	.904	.982	.691	.919

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City of Carson
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Groups Printed- Passenger Vehicles

	Alameda Street Southbound			I-405 Northbound Ramps Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	28	99	127	56	33	89	115	33	148	364
04:15 PM	24	120	144	80	43	123	114	20	134	401
04:30 PM	30	120	150	69	42	111	166	48	214	475
04:45 PM	23	131	154	73	34	107	178	49	227	488
Total	105	470	575	278	152	430	573	150	723	1728
05:00 PM	26	123	149	69	47	116	182	33	215	480
05:15 PM	30	123	153	59	37	96	185	28	213	462
05:30 PM	24	110	134	53	42	95	156	35	191	420
05:45 PM	21	105	126	42	49	91	158	27	185	402
Total	101	461	562	223	175	398	681	123	804	1764
Grand Total	206	931	1137	501	327	828	1254	273	1527	3492
Apprch %	18.1	81.9		60.5	39.5		82.1	17.9		
Total %	5.9	26.7	32.6	14.3	9.4	23.7	35.9	7.8	43.7	

	Alameda Street Southbound			I-405 Northbound Ramps Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	**30**	120	150	69	42	111	166	48	214	475
04:45 PM	23	**131**	**154**	**73**	34	107	178	**49**	**227**	**488**
05:00 PM	26	123	149	69	**47**	**116**	182	33	215	480
05:15 PM	30	123	153	59	37	96	**185**	28	213	462
Total Volume	109	497	606	270	160	430	711	158	869	1905
% App. Total	18	82		62.8	37.2		81.8	18.2		
PHF	.908	.948	.984	.925	.851	.927	.961	.806	.957	.976

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File Name : 04_CRS_Alameda_405N PM
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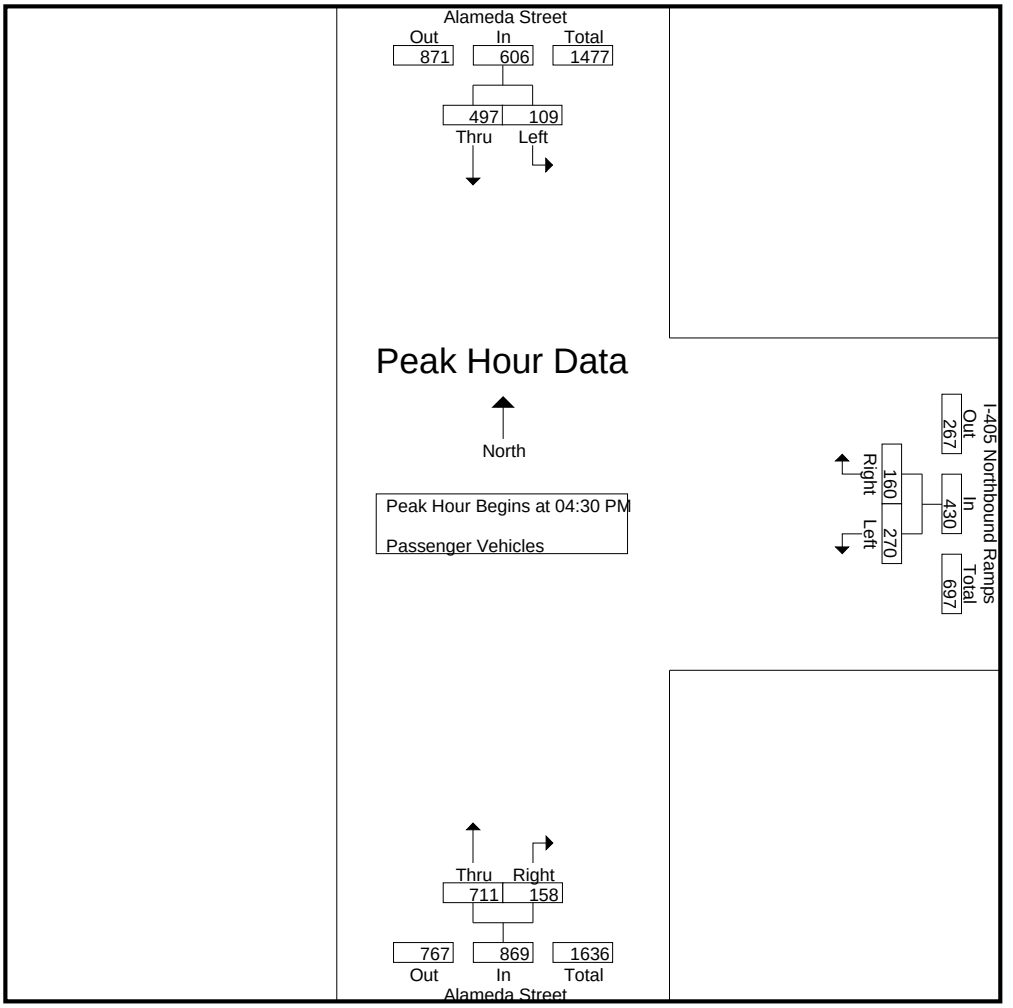

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM			04:30 PM			04:30 PM		
+0 mins.	**30**	120	150	69	42	111	166	48	214
+15 mins.	23	**131**	**154**	**73**	34	107	178	**49**	**227**
+30 mins.	26	123	149	69	**47**	**116**	182	33	215
+45 mins.	30	123	153	59	37	96	**185**	28	213
Total Volume	109	497	606	270	160	430	711	158	869
% App. Total	18	82		62.8	37.2		81.8	18.2	
PHF	.908	.948	.984	.925	.851	.927	.961	.806	.957

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City of Carson
N/S: Alameda Street
E/W: I-405 Northbound Ramps
Weather: Clear

File Name : 04_CRS_Alameda_405N PM
Site Code : 22520115
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Groups Printed- Large 2 Axle Vehicles

	Alameda Street Southbound			I-405 Northbound Ramps Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	1	6	7	2	2	4	3	3	6	17
04:15 PM	0	2	2	3	0	3	4	0	4	9
04:30 PM	0	5	5	7	1	8	4	1	5	18
04:45 PM	0	1	1	1	1	2	2	0	2	5
Total	1	14	15	13	4	17	13	4	17	49
05:00 PM	0	2	2	1	0	1	4	1	5	8
05:15 PM	0	0	0	1	0	1	0	0	0	1
05:30 PM	0	1	1	1	1	2	3	0	3	6
05:45 PM	1	4	5	4	1	5	5	0	5	15
Total	1	7	8	7	2	9	12	1	13	30
Grand Total	2	21	23	20	6	26	25	5	30	79
Apprch %	8.7	91.3		76.9	23.1		83.3	16.7		
Total %	2.5	26.6	29.1	25.3	7.6	32.9	31.6	6.3	38	

	Alameda Street Southbound			I-405 Northbound Ramps Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	0	**5**	**5**	**7**	**1**	**8**	**4**	**1**	**5**	**18**
04:45 PM	0	1	1	1	1	2	2	0	2	5
05:00 PM	0	2	2	1	0	1	4	1	5	8
05:15 PM	0	0	0	1	0	1	0	0	0	1
Total Volume	0	8	8	10	2	12	10	2	12	32
% App. Total	0	100		83.3	16.7		83.3	16.7		
PHF	.000	.400	.400	.357	.500	.375	.625	.500	.600	.444

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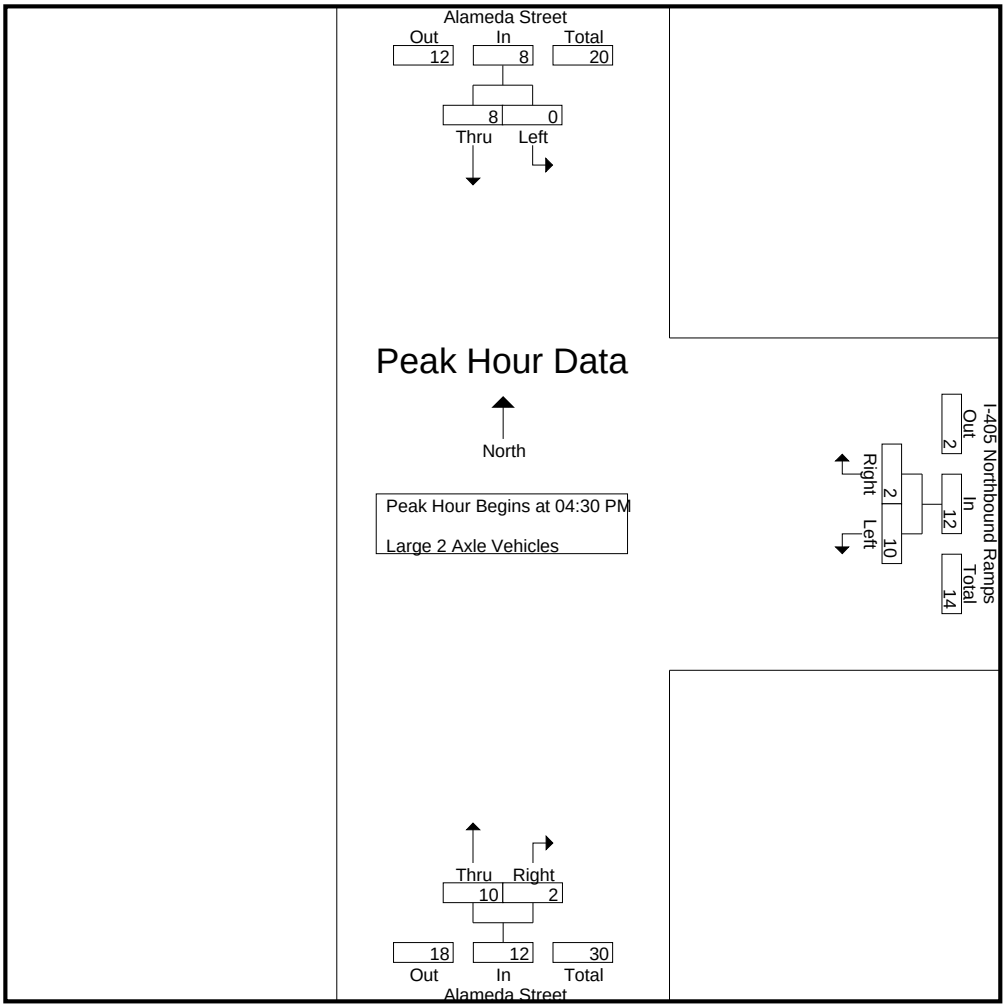

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM			04:30 PM			04:30 PM		
+0 mins.	0	**5**	**5**	**7**	**1**	**8**	**4**	**1**	**5**
+15 mins.	0	1	1	1	1	2	2	0	2
+30 mins.	0	2	2	1	0	1	4	1	5
+45 mins.	0	0	0	1	0	1	0	0	0
Total Volume	0	8	8	10	2	12	10	2	12
% App. Total	0	100		83.3	16.7		83.3	16.7	
PHF	.000	.400	.400	.357	.500	.375	.625	.500	.600

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Groups Printed- 3 Axle Vehicles

	Alameda Street Southbound			I-405 Northbound Ramps Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	2	6	8	5	4	9	22	3	25	42
04:15 PM	2	2	4	3	15	18	26	3	29	51
04:30 PM	0	5	5	3	5	8	17	2	19	32
04:45 PM	0	1	1	2	2	4	19	23	42	47
Total	4	14	18	13	26	39	84	31	115	172
05:00 PM	0	2	2	1	3	4	17	4	21	27
05:15 PM	2	0	2	2	1	3	18	0	18	23
05:30 PM	1	1	2	2	2	4	16	1	17	23
05:45 PM	0	4	4	3	1	4	19	2	21	29
Total	3	7	10	8	7	15	70	7	77	102
Grand Total	7	21	28	21	33	54	154	38	192	274
Apprch %	25	75		38.9	61.1		80.2	19.8		
Total %	2.6	7.7	10.2	7.7	12	19.7	56.2	13.9	70.1	

	Alameda Street Southbound			I-405 Northbound Ramps Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	0	**5**	**5**	**3**	**5**	**8**	17	2	19	32
04:45 PM	0	1	1	2	2	4	**19**	**23**	**42**	**47**
05:00 PM	0	2	2	1	3	4	17	4	21	27
05:15 PM	**2**	0	2	2	1	3	18	0	18	23
Total Volume	2	8	10	8	11	19	71	29	100	129
% App. Total	20	80		42.1	57.9		71	29		
PHF	.250	.400	.500	.667	.550	.594	.934	.315	.595	.686

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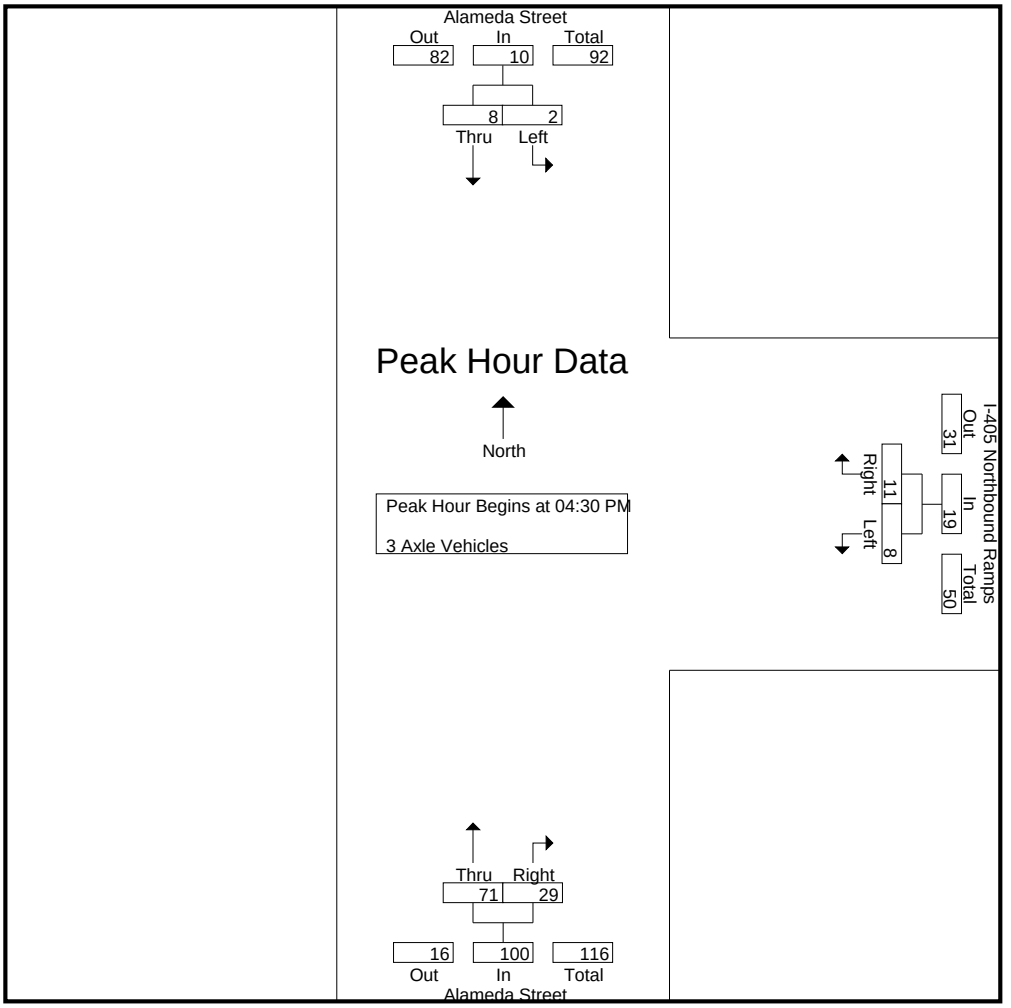

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM			04:30 PM			04:30 PM		
+0 mins.	0	**5**	**5**	**3**	**5**	**8**	17	2	19
+15 mins.	0	1	1	2	2	4	**19**	**23**	**42**
+30 mins.	0	2	2	1	3	4	17	4	21
+45 mins.	**2**	0	2	2	1	3	18	0	18
Total Volume	2	8	10	8	11	19	71	29	100
% App. Total	20	80		42.1	57.9		71	29	
PHF	.250	.400	.500	.667	.550	.594	.934	.315	.595

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Groups Printed- 4+ Axle Trucks

	Alameda Street Southbound			I-405 Northbound Ramps Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	0	26	26	20	3	23	53	6	59	108
04:15 PM	0	39	39	10	5	15	31	4	35	89
04:30 PM	0	33	33	12	7	19	41	6	47	99
04:45 PM	1	42	43	15	2	17	26	4	30	90
Total	1	140	141	57	17	74	151	20	171	386
05:00 PM	0	43	43	17	2	19	18	7	25	87
05:15 PM	0	42	42	9	4	13	19	4	23	78
05:30 PM	1	37	38	12	0	12	19	5	24	74
05:45 PM	0	60	60	13	2	15	24	6	30	105
Total	1	182	183	51	8	59	80	22	102	344
Grand Total	2	322	324	108	25	133	231	42	273	730
Apprch %	0.6	99.4		81.2	18.8		84.6	15.4		
Total %	0.3	44.1	44.4	14.8	3.4	18.2	31.6	5.8	37.4	

	Alameda Street Southbound			I-405 Northbound Ramps Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	0	33	33	12	**7**	**19**	**41**	6	**47**	**99**
04:45 PM	**1**	42	**43**	15	2	17	26	4	30	90
05:00 PM	0	**43**	43	**17**	2	19	18	**7**	25	87
05:15 PM	0	42	42	9	4	13	19	4	23	78
Total Volume	1	160	161	53	15	68	104	21	125	354
% App. Total	0.6	99.4		77.9	22.1		83.2	16.8		
PHF	.250	.930	.936	.779	.536	.895	.634	.750	.665	.894

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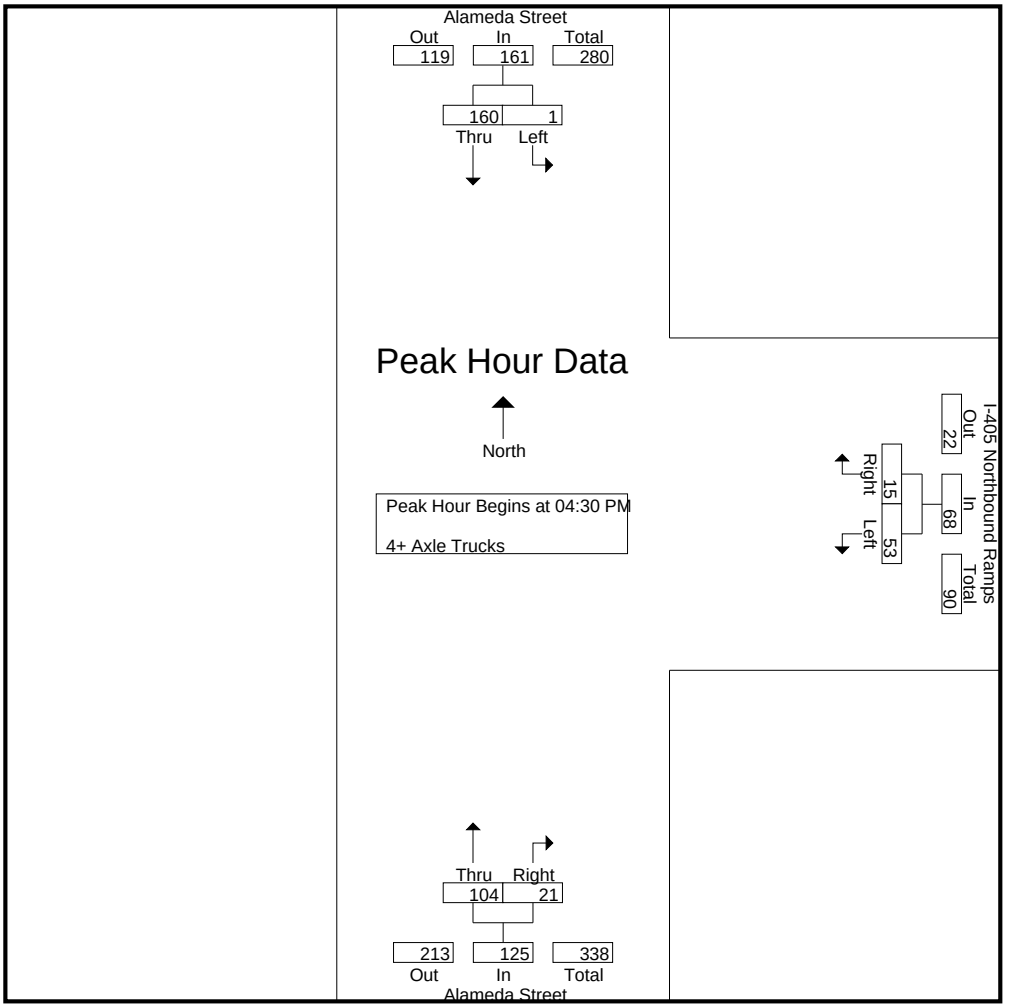
(951) 268-6268

City of Carson
N/S: Alameda Street
E/W: I-405 Northbound Ramps
Weather: Clear

File Name : 04_CRS_Alameda_405N PM
Site Code : 22520115
Start Date : 2/25/2020
Page No : 2



Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM			04:30 PM			04:30 PM		
+0 mins.	0	33	33	12	**7**	**19**	**41**	6	**47**
+15 mins.	**1**	42	**43**	15	2	17	26	4	30
+30 mins.	0	**43**	43	**17**	2	19	18	**7**	25
+45 mins.	0	42	42	9	4	13	19	4	23
Total Volume	1	160	161	53	15	68	104	21	125
% App. Total	0.6	99.4		77.9	22.1		83.2	16.8	
PHF	.250	.930	.936	.779	.536	.895	.634	.750	.665

Counts Unlimited
PO Box 1178
Corona, CA 92878
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City of Carson
N/S: I-405 SB Ramps/Gated Buisness DW
E/W: East 223rd Street
Weather: Clear

File Name : 05_CRS_405S_E 223rd AM
Site Code : 22520115
Start Date : 2/25/2020
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	I-405 Southbound Ramps Southbound				East 223rd Street Westbound				Gated Buisness Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	13	0	18	31	2	165	8	175	1	3	3	7	68	57	1	126	339
07:15 AM	20	0	20	40	1	191	11	203	0	0	0	0	98	102	0	200	443
07:30 AM	15	0	17	32	0	218	13	231	2	1	0	3	127	113	0	240	506
07:45 AM	22	1	26	49	1	179	7	187	0	1	1	2	95	75	0	170	408
Total	70	1	81	152	4	753	39	796	3	5	4	12	388	347	1	736	1696
08:00 AM	22	1	24	47	2	159	8	169	0	0	1	1	100	93	0	193	410
08:15 AM	24	0	30	54	0	151	4	155	1	0	2	3	114	106	0	220	432
08:30 AM	19	0	14	33	1	164	5	170	0	0	2	2	117	90	0	207	412
08:45 AM	17	0	14	31	0	146	12	158	0	1	1	2	74	77	1	152	343
Total	82	1	82	165	3	620	29	652	1	1	6	8	405	366	1	772	1597
Grand Total	152	2	163	317	7	1373	68	1448	4	6	10	20	793	713	2	1508	3293
Apprch %	47.9	0.6	51.4		0.5	94.8	4.7		20	30	50		52.6	47.3	0.1		
Total %	4.6	0.1	4.9	9.6	0.2	41.7	2.1	44	0.1	0.2	0.3	0.6	24.1	21.7	0.1	45.8	
Passenger Vehicles	146	2	121	269	7	1323	59	1389	4	6	10	20	548	691	2	1241	2919
% Passenger Vehicles	96.1	100	74.2	84.9	100	96.4	86.8	95.9	100	100	100	100	69.1	96.9	100	82.3	88.6
Large 2 Axle Vehicles	6	0	5	11	0	18	2	20	0	0	0	0	19	16	0	35	66
% Large 2 Axle Vehicles	3.9	0	3.1	3.5	0	1.3	2.9	1.4	0	0	0	0	2.4	2.2	0	2.3	2
3 Axle Vehicles	0	0	15	15	0	11	1	12	0	0	0	0	19	3	0	22	49
% 3 Axle Vehicles	0	0	9.2	4.7	0	0.8	1.5	0.8	0	0	0	0	2.4	0.4	0	1.5	1.5
4+ Axle Trucks	0	0	22	22	0	21	6	27	0	0	0	0	207	3	0	210	259
% 4+ Axle Trucks	0	0	13.5	6.9	0	1.5	8.8	1.9	0	0	0	0	26.1	0.4	0	13.9	7.9

	I-405 Southbound Ramps Southbound				East 223rd Street Westbound				Gated Buisness Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	20	0	20	40	1	191	11	203	0	0	0	0	98	102	0	200	443
07:30 AM	15	0	17	32	0	**218**	**13**	**231**	**2**	**1**	0	**3**	**127**	**113**	0	**240**	**506**
07:45 AM	**22**	**1**	**26**	**49**	1	179	7	187	0	1	**1**	2	95	75	0	170	408
08:00 AM	22	1	24	47	**2**	159	8	169	0	0	1	1	100	93	0	193	410
Total Volume	79	2	87	168	4	747	39	790	2	2	2	6	420	383	0	803	1767
% App. Total	47	1.2	51.8		0.5	94.6	4.9		33.3	33.3	33.3		52.3	47.7	0		
PHF	.898	.500	.837	.857	.500	.857	.750	.855	.250	.500	.500	.500	.827	.847	.000	.836	.873

Counts Unlimited
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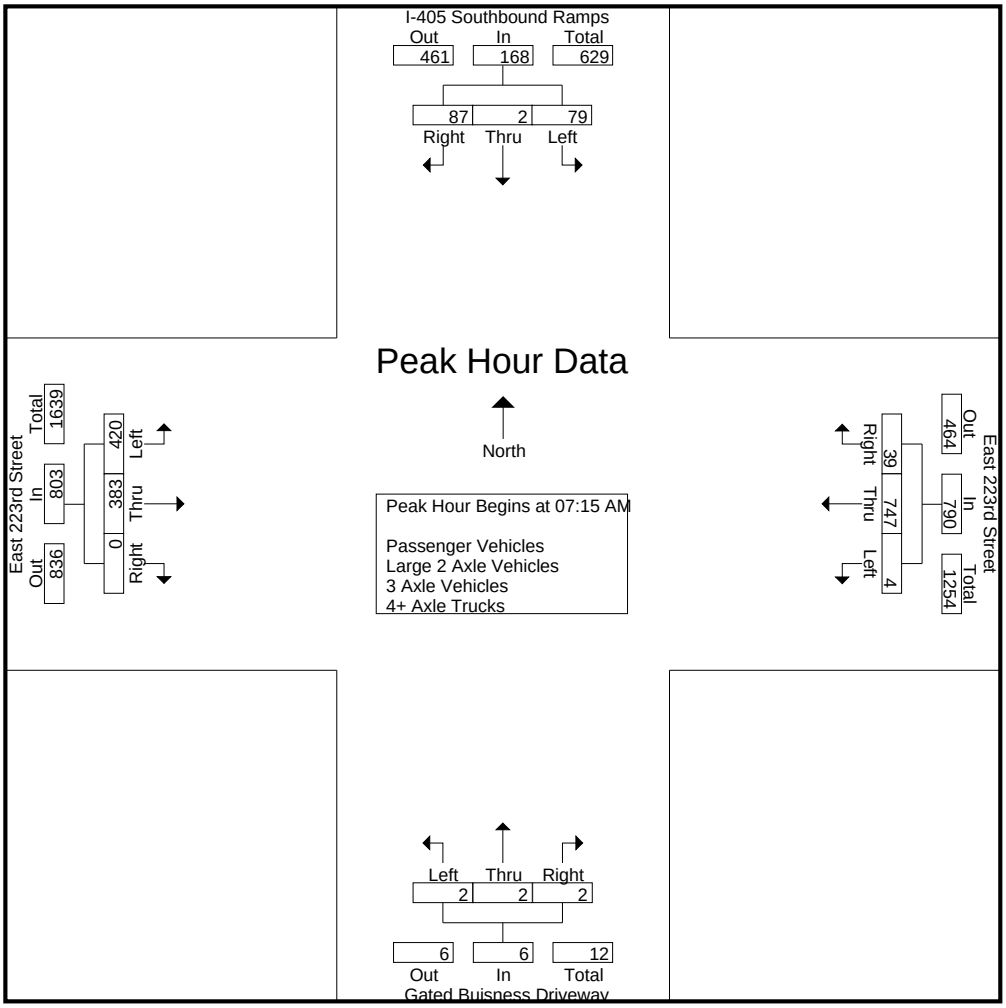
City of Carson
N/S: I-405 SB Ramps/Gated Buisness DW
E/W: East 223rd Street
Weather: Clear

File Name : 05_CRS_405S_E 223rd AM
Site Code : 22520115
Start Date : 2/25/2020
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				07:00 AM				07:00 AM				07:30 AM			
+0 mins.	22	**1**	26	49	**2**	165	8	175	1	**3**	**3**	**7**	**127**	**113**	0	**240**
+15 mins.	22	1	24	47	1	191	11	203	0	0	0	0	95	75	0	170
+30 mins.	**24**	0	**30**	**54**	0	**218**	**13**	**231**	**2**	1	0	3	100	93	0	193
+45 mins.	19	0	14	33	1	179	7	187	0	1	1	2	114	106	0	220
Total Volume	87	2	94	183	4	753	39	796	3	5	4	12	436	387	0	823
% App. Total	47.5	1.1	51.4		0.5	94.6	4.9		25	41.7	33.3		53	47	0	
PHF	.906	.500	.783	.847	.500	.864	.750	.861	.375	.417	.333	.429	.858	.856	.000	.857

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City of Carson
N/S: I-405 SB Ramps/Gated Buisness DW
E/W: East 223rd Street
Weather: Clear

File Name : 05_CRS_405S_E 223rd AM
Site Code : 22520115
Start Date : 2/25/2020
Page No : 1

Groups Printed- Passenger Vehicles

	I-405 Southbound Ramps Southbound				East 223rd Street Westbound				Gated Buisness Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	12	0	12	24	2	155	7	164	1	3	3	7	42	56	1	99	294
07:15 AM	20	0	15	35	1	185	9	195	0	0	0	0	71	100	0	171	401
07:30 AM	14	0	10	24	0	216	12	228	2	1	0	3	90	111	0	201	456
07:45 AM	22	1	21	44	1	172	6	179	0	1	1	2	75	74	0	149	374
Total	68	1	58	127	4	728	34	766	3	5	4	12	278	341	1	620	1525
08:00 AM	20	1	21	42	2	154	5	161	0	0	1	1	67	91	0	158	362
08:15 AM	22	0	23	45	0	144	4	148	1	0	2	3	82	102	0	184	380
08:30 AM	19	0	10	29	1	158	4	163	0	0	2	2	78	86	0	164	358
08:45 AM	17	0	9	26	0	139	12	151	0	1	1	2	43	71	1	115	294
Total	78	1	63	142	3	595	25	623	1	1	6	8	270	350	1	621	1394
Grand Total	146	2	121	269	7	1323	59	1389	4	6	10	20	548	691	2	1241	2919
Apprch %	54.3	0.7	45		0.5	95.2	4.2		20	30	50		44.2	55.7	0.2		
Total %	5	0.1	4.1	9.2	0.2	45.3	2	47.6	0.1	0.2	0.3	0.7	18.8	23.7	0.1	42.5	

	I-405 Southbound Ramps Southbound				East 223rd Street Westbound				Gated Buisness Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	20	0	15	35	1	185	9	195	0	0	0	0	71	100	0	171	401
07:30 AM	14	0	10	24	0	**216**	**12**	**228**	**2**	**1**	0	**3**	**90**	**111**	0	**201**	**456**
07:45 AM	**22**	**1**	**21**	**44**	1	172	6	179	0	1	**1**	2	75	74	0	149	374
08:00 AM	20	1	21	42	**2**	154	5	161	0	0	1	1	67	91	0	158	362
Total Volume	76	2	67	145	4	727	32	763	2	2	2	6	303	376	0	679	1593
% App. Total	52.4	1.4	46.2		0.5	95.3	4.2		33.3	33.3	33.3		44.6	55.4	0		
PHF	.864	.500	.798	.824	.500	.841	.667	.837	.250	.500	.500	.500	.842	.847	.000	.845	.873

Counts Unlimited
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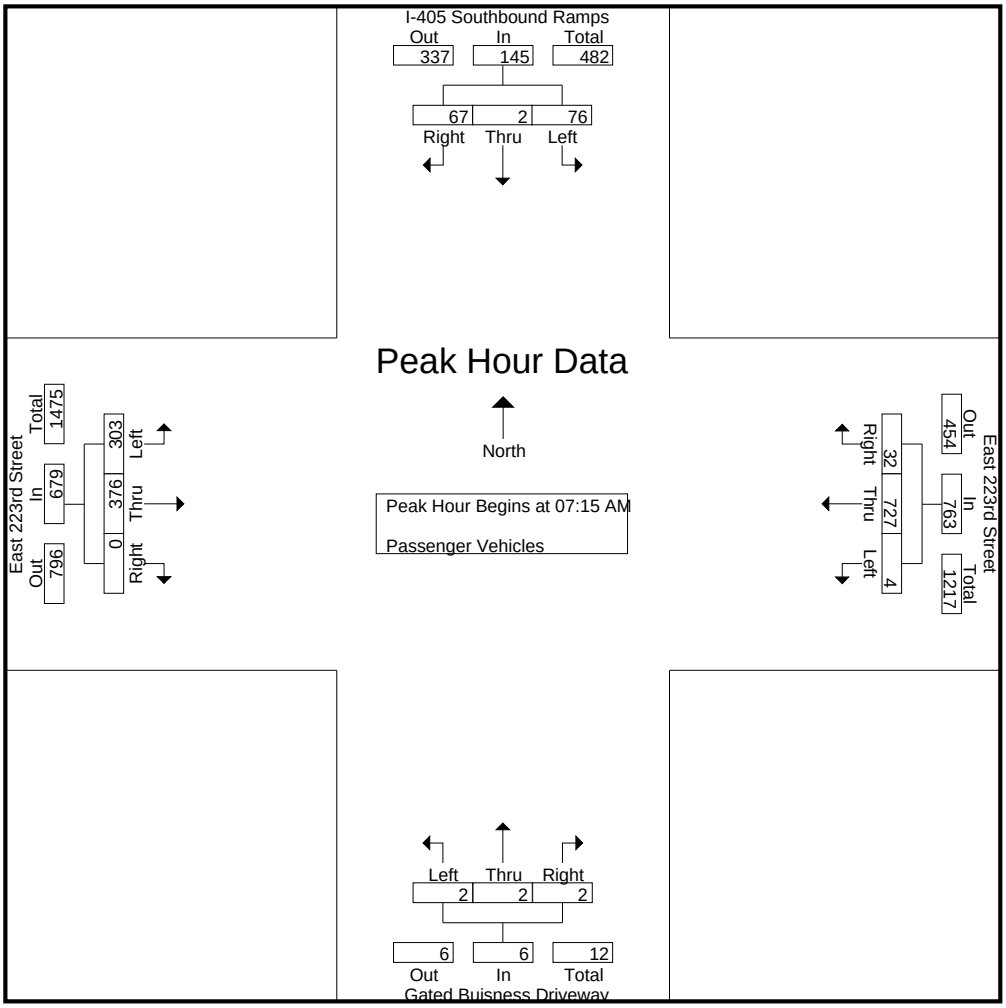
City of Carson
N/S: I-405 SB Ramps/Gated Buisness DW
E/W: East 223rd Street
Weather: Clear

File Name : 05_CRS_405S_E 223rd AM
Site Code : 22520115
Start Date : 2/25/2020
Page No : 2



Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	20	0	15	35	1	185	9	195	0	0	0	0	71	100	0	171
+15 mins.	14	0	10	24	0	**216**	**12**	**228**	**2**	**1**	0	**3**	**90**	**111**	0	**201**
+30 mins.	**22**	**1**	**21**	**44**	1	172	6	179	0	1	**1**	2	75	74	0	149
+45 mins.	20	1	21	42	**2**	154	5	161	0	0	1	1	67	91	0	158
Total Volume	76	2	67	145	4	727	32	763	2	2	2	6	303	376	0	679
% App. Total	52.4	1.4	46.2		0.5	95.3	4.2		33.3	33.3	33.3		44.6	55.4	0	
PHF	.864	.500	.798	.824	.500	.841	.667	.837	.250	.500	.500	.500	.842	.847	.000	.845

Counts Unlimited
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City of Carson
N/S: I-405 SB Ramps/Gated Buisness DW
E/W: East 223rd Street
Weather: Clear

File Name : 05_CRS_405S_E 223rd AM
Site Code : 22520115
Start Date : 2/25/2020
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	I-405 Southbound Ramps Southbound				East 223rd Street Westbound				Gated Buisness Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	1	0	0	1	0	4	0	4	0	0	0	0	1	1	0	2	7
07:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	1	2	0	3	4
07:30 AM	1	0	0	1	0	0	0	0	0	0	0	0	4	1	0	5	6
07:45 AM	0	0	1	1	0	2	0	2	0	0	0	0	2	1	0	3	6
Total	2	0	1	3	0	7	0	7	0	0	0	0	8	5	0	13	23
08:00 AM	2	0	2	4	0	3	2	5	0	0	0	0	0	2	0	2	11
08:15 AM	2	0	0	2	0	4	0	4	0	0	0	0	3	3	0	6	12
08:30 AM	0	0	1	1	0	3	0	3	0	0	0	0	4	2	0	6	10
08:45 AM	0	0	1	1	0	1	0	1	0	0	0	0	4	4	0	8	10
Total	4	0	4	8	0	11	2	13	0	0	0	0	11	11	0	22	43
Grand Total	6	0	5	11	0	18	2	20	0	0	0	0	19	16	0	35	66
Apprch %	54.5	0	45.5		0	90	10		0	0	0		54.3	45.7	0		
Total %	9.1	0	7.6	16.7	0	27.3	3	30.3	0	0	0	0	28.8	24.2	0	53	

	I-405 Southbound Ramps Southbound				East 223rd Street Westbound				Gated Buisness Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	1	**2**	0	3	4
07:30 AM	1	0	0	1	0	0	0	0	0	0	0	0	**4**	1	0	**5**	6
07:45 AM	0	0	1	1	0	2	0	2	0	0	0	0	2	1	0	3	6
08:00 AM	**2**	0	**2**	**4**	0	**3**	**2**	**5**	0	0	0	0	0	2	0	2	**11**
Total Volume	3	0	3	6	0	6	2	8	0	0	0	0	7	6	0	13	27
% App. Total	50	0	50		0	75	25		0	0	0		53.8	46.2	0		
PHF	.375	.000	.375	.375	.000	.500	.250	.400	.000	.000	.000	.000	.438	.750	.000	.650	.614

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City of Carson
N/S: I-405 SB Ramps/Gated Buisness DW
E/W: East 223rd Street
Weather: Clear

File Name : 05_CRS_405S_E 223rd AM
Site Code : 22520115
Start Date : 2/25/2020
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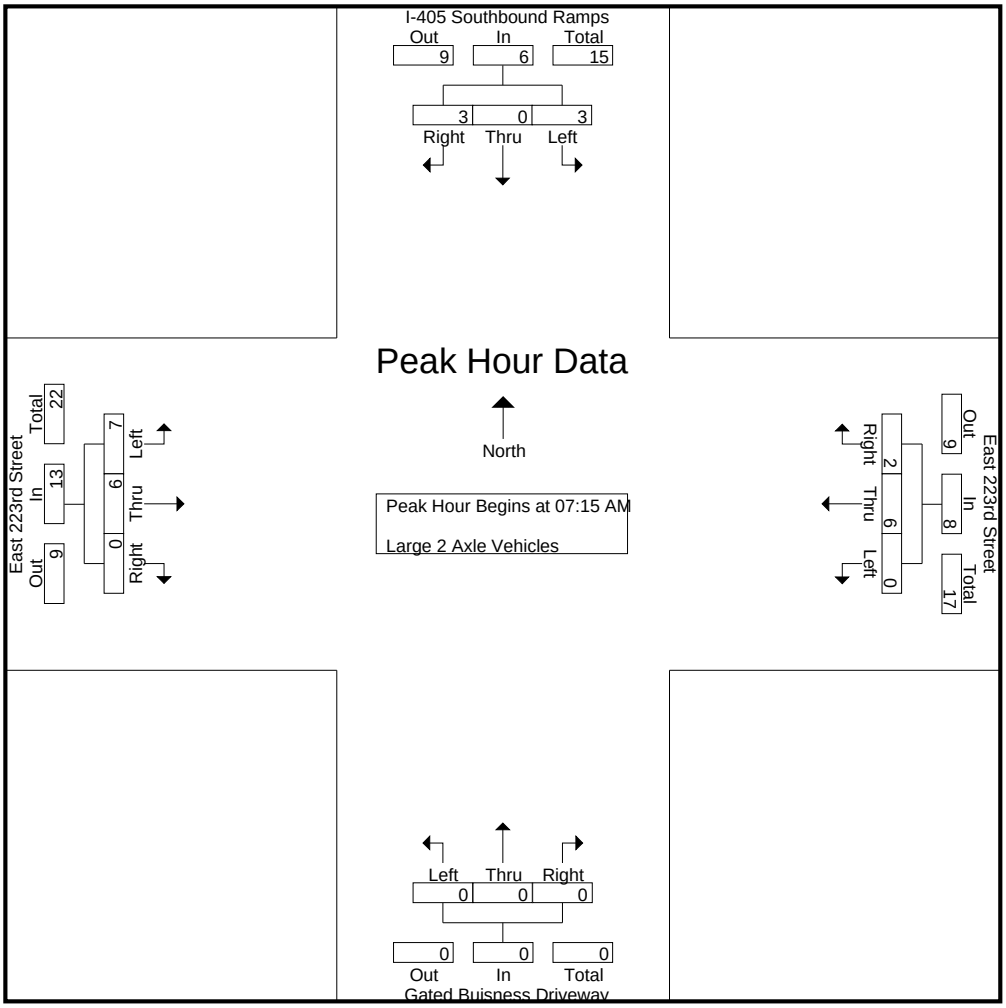

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	0	0	0	0	1	0	1	0	0	0	0	1	**2**	0	3
+15 mins.	1	0	0	1	0	0	0	0	0	0	0	0	**4**	1	0	**5**
+30 mins.	0	0	1	1	0	2	0	2	0	0	0	0	2	1	0	3
+45 mins.	**2**	0	**2**	**4**	0	**3**	**2**	**5**	0	0	0	0	0	2	0	2
Total Volume	3	0	3	6	0	6	2	8	0	0	0	0	7	6	0	13
% App. Total	50	0	50		0	75	25		0	0	0		53.8	46.2	0	
PHF	.375	.000	.375	.375	.000	.500	.250	.400	.000	.000	.000	.000	.438	.750	.000	.650

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City of Carson
N/S: I-405 SB Ramps/Gated Buisness DW
E/W: East 223rd Street
Weather: Clear

File Name : 05_CRS_405S_E 223rd AM
Site Code : 22520115
Start Date : 2/25/2020
Page No : 1

Groups Printed- 3 Axle Vehicles

	I-405 Southbound Ramps Southbound				East 223rd Street Westbound				Gated Buisness Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	3	3	0	2	0	2	0	0	0	0	1	0	0	1	6
07:15 AM	0	0	3	3	0	1	1	2	0	0	0	0	3	0	0	3	8
07:30 AM	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	2
07:45 AM	0	0	1	1	0	3	0	3	0	0	0	0	4	0	0	4	8
Total	0	0	9	9	0	6	1	7	0	0	0	0	8	0	0	8	24
08:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	1	2
08:15 AM	0	0	3	3	0	1	0	1	0	0	0	0	3	1	0	4	8
08:30 AM	0	0	2	2	0	3	0	3	0	0	0	0	4	1	0	5	10
08:45 AM	0	0	1	1	0	0	0	0	0	0	0	0	3	1	0	4	5
Total	0	0	6	6	0	5	0	5	0	0	0	0	11	3	0	14	25
Grand Total	0	0	15	15	0	11	1	12	0	0	0	0	19	3	0	22	49
Apprch %	0	0	100		0	91.7	8.3		0	0	0		86.4	13.6	0		
Total %	0	0	30.6	30.6	0	22.4	2	24.5	0	0	0	0	38.8	6.1	0	44.9	

	I-405 Southbound Ramps Southbound				East 223rd Street Westbound				Gated Buisness Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	**3**	**3**	0	1	**1**	2	0	0	0	0	3	0	0	3	**8**
07:30 AM	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	2
07:45 AM	0	0	1	1	0	**3**	0	**3**	0	0	0	0	**4**	0	0	**4**	8
08:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	1	2
Total Volume	0	0	6	6	0	5	1	6	0	0	0	0	8	0	0	8	20
% App. Total	0	0	100		0	83.3	16.7		0	0	0		100	0	0		
PHF	.000	.000	.500	.500	.000	.417	.250	.500	.000	.000	.000	.000	.500	.000	.000	.500	.625

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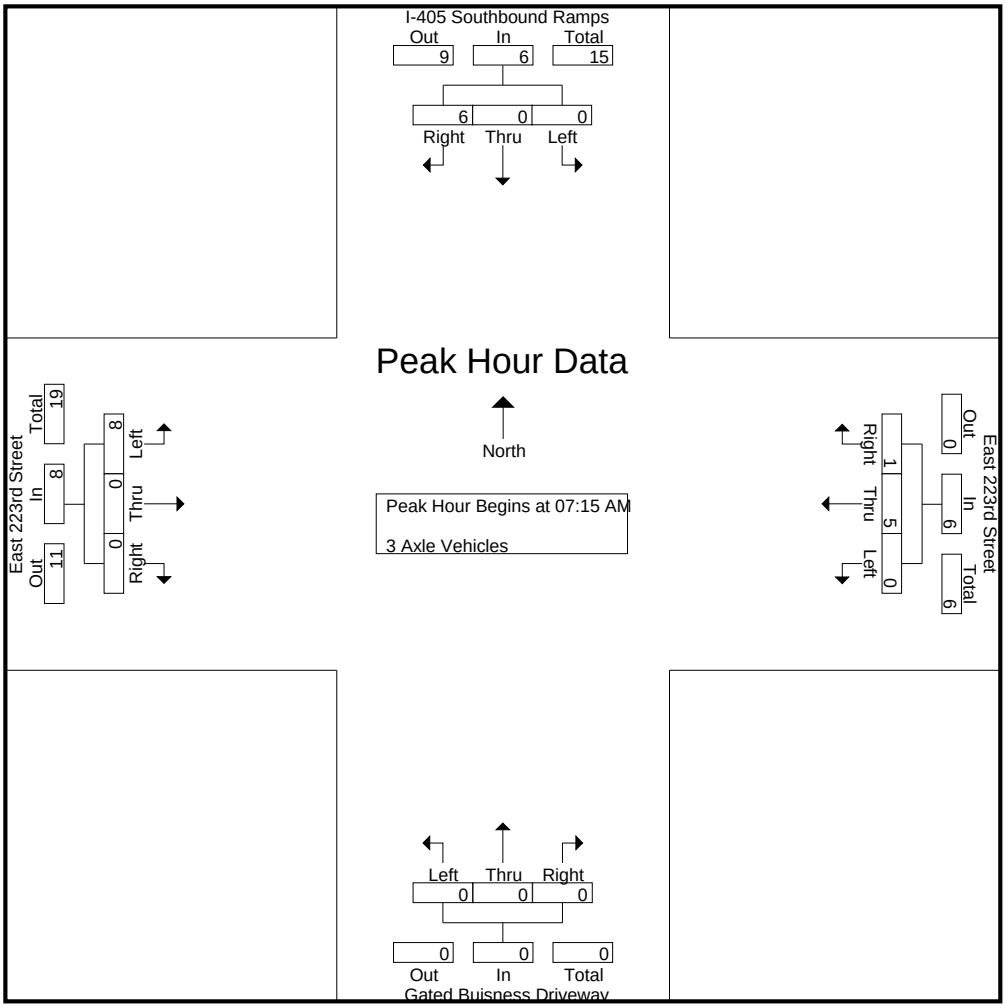
City of Carson
N/S: I-405 SB Ramps/Gated Buisness DW
E/W: East 223rd Street
Weather: Clear

File Name : 05_CRS_405S_E 223rd AM
Site Code : 22520115
Start Date : 2/25/2020
Page No : 2



Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	0	**3**	**3**	0	1	**1**	2	0	0	0	0	3	0	0	3
+15 mins.	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	1	1	0	**3**	0	**3**	0	0	0	0	**4**	0	0	**4**
+45 mins.	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	1
Total Volume	0	0	6	6	0	5	1	6	0	0	0	0	8	0	0	8
% App. Total	0	0	100		0	83.3	16.7		0	0	0		100	0	0	
PHF	.000	.000	.500	.500	.000	.417	.250	.500	.000	.000	.000	.000	.500	.000	.000	.500

Counts Unlimited
PO Box 1178
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City of Carson
N/S: I-405 SB Ramps/Gated Buisness DW
E/W: East 223rd Street
Weather: Clear

File Name : 05_CRS_405S_E 223rd AM
Site Code : 22520115
Start Date : 2/25/2020
Page No : 1

Groups Printed- 4+ Axle Trucks

	I-405 Southbound Ramps Southbound				East 223rd Street Westbound				Gated Buisness Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	3	3	0	4	1	5	0	0	0	0	24	0	0	24	32
07:15 AM	0	0	2	2	0	4	1	5	0	0	0	0	23	0	0	23	30
07:30 AM	0	0	5	5	0	2	1	3	0	0	0	0	33	1	0	34	42
07:45 AM	0	0	3	3	0	2	1	3	0	0	0	0	14	0	0	14	20
Total	0	0	13	13	0	12	4	16	0	0	0	0	94	1	0	95	124
08:00 AM	0	0	1	1	0	1	1	2	0	0	0	0	32	0	0	32	35
08:15 AM	0	0	4	4	0	2	0	2	0	0	0	0	26	0	0	26	32
08:30 AM	0	0	1	1	0	0	1	1	0	0	0	0	31	1	0	32	34
08:45 AM	0	0	3	3	0	6	0	6	0	0	0	0	24	1	0	25	34
Total	0	0	9	9	0	9	2	11	0	0	0	0	113	2	0	115	135
Grand Total	0	0	22	22	0	21	6	27	0	0	0	0	207	3	0	210	259
Apprch %	0	0	100		0	77.8	22.2		0	0	0		98.6	1.4	0		
Total %	0	0	8.5	8.5	0	8.1	2.3	10.4	0	0	0	0	79.9	1.2	0	81.1	

	I-405 Southbound Ramps Southbound				East 223rd Street Westbound				Gated Buisness Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	2	2	0	**4**	**1**	**5**	0	0	0	0	23	0	0	23	30
07:30 AM	0	0	**5**	**5**	0	2	1	3	0	0	0	0	**33**	**1**	0	**34**	**42**
07:45 AM	0	0	3	3	0	2	1	3	0	0	0	0	14	0	0	14	20
08:00 AM	0	0	1	1	0	1	1	2	0	0	0	0	32	0	0	32	35
Total Volume	0	0	11	11	0	9	4	13	0	0	0	0	102	1	0	103	127
% App. Total	0	0	100		0	69.2	30.8		0	0	0		99	1	0		
PHF	.000	.000	.550	.550	.000	.563	1.00	.650	.000	.000	.000	.000	.773	.250	.000	.757	.756

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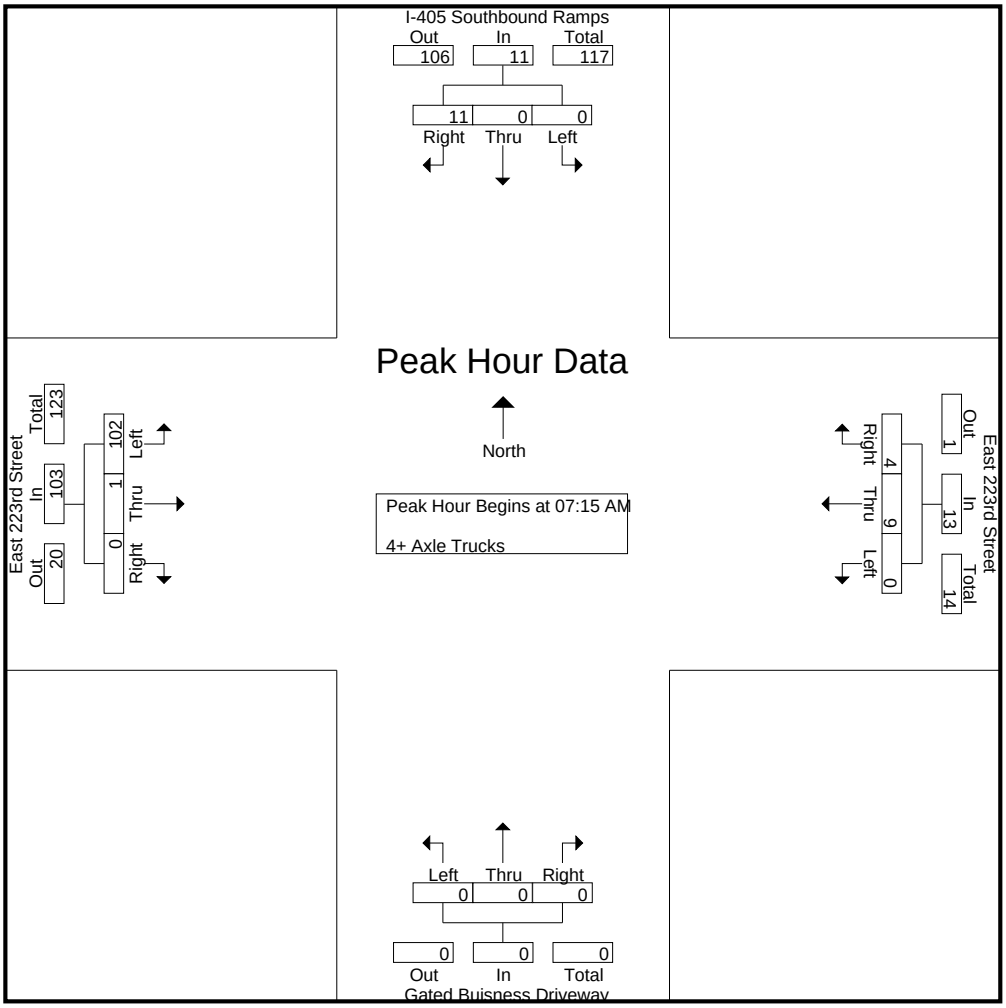
City of Carson
N/S: I-405 SB Ramps/Gated Buisness DW
E/W: East 223rd Street
Weather: Clear

File Name : 05_CRS_405S_E 223rd AM
Site Code : 22520115
Start Date : 2/25/2020
Page No : 2



Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	0	2	2	0	**4**	**1**	**5**	0	0	0	0	23	0	0	23
+15 mins.	0	0	**5**	**5**	0	2	1	3	0	0	0	0	**33**	**1**	0	**34**
+30 mins.	0	0	3	3	0	2	1	3	0	0	0	0	14	0	0	14
+45 mins.	0	0	1	1	0	1	1	2	0	0	0	0	32	0	0	32
Total Volume	0	0	11	11	0	9	4	13	0	0	0	0	102	1	0	103
% App. Total	0	0	100		0	69.2	30.8		0	0	0		99	1	0	
PHF	.000	.000	.550	.550	.000	.563	1.000	.650	.000	.000	.000	.000	.773	.250	.000	.757

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City of Carson
N/S: I-405 SB Ramps/Gated Buisness DW
E/W: East 223rd Street
Weather: Clear

File Name : 05_CRS_405S_E 223rd PM
Site Code : 22520115
Start Date : 2/25/2020
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	I-405 Southbound Ramps Southbound				East 223rd Street Westbound				Gated Buisness Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	24	0	7	31	0	72	21	93	1	3	0	4	177	236	0	413	541
04:15 PM	27	0	5	32	1	50	16	67	0	1	1	2	179	269	2	450	551
04:30 PM	32	0	10	42	1	54	26	81	0	0	2	2	202	261	0	463	588
04:45 PM	24	0	4	28	0	65	20	85	0	1	0	1	200	282	1	483	597
Total	107	0	26	133	2	241	83	326	1	5	3	9	758	1048	3	1809	2277
05:00 PM	29	0	3	32	1	59	32	92	3	3	1	7	182	237	2	421	552
05:15 PM	39	0	1	40	0	65	28	93	1	5	0	6	172	229	0	401	540
05:30 PM	19	0	5	24	3	63	11	77	1	1	0	2	204	217	1	422	525
05:45 PM	36	0	3	39	0	59	21	80	0	2	0	2	177	238	1	416	537
Total	123	0	12	135	4	246	92	342	5	11	1	17	735	921	4	1660	2154
Grand Total	230	0	38	268	6	487	175	668	6	16	4	26	1493	1969	7	3469	4431
Apprch %	85.8	0	14.2		0.9	72.9	26.2		23.1	61.5	15.4		43	56.8	0.2		
Total %	5.2	0	0.9	6	0.1	11	3.9	15.1	0.1	0.4	0.1	0.6	33.7	44.4	0.2	78.3	
Passenger Vehicles	227	0	19	246	6	452	155	613	6	16	4	26	1269	1931	7	3207	4092
% Passenger Vehicles	98.7	0	50	91.8	100	92.8	88.6	91.8	100	100	100	100	85	98.1	100	92.4	92.3
Large 2 Axle Vehicles	3	0	1	4	0	3	3	6	0	0	0	0	20	29	0	49	59
% Large 2 Axle Vehicles	1.3	0	2.6	1.5	0	0.6	1.7	0.9	0	0	0	0	1.3	1.5	0	1.4	1.3
3 Axle Vehicles	0	0	3	3	0	8	1	9	0	0	0	0	35	2	0	37	49
% 3 Axle Vehicles	0	0	7.9	1.1	0	1.6	0.6	1.3	0	0	0	0	2.3	0.1	0	1.1	1.1
4+ Axle Trucks	0	0	15	15	0	24	16	40	0	0	0	0	169	7	0	176	231
% 4+ Axle Trucks	0	0	39.5	5.6	0	4.9	9.1	6	0	0	0	0	11.3	0.4	0	5.1	5.2

	I-405 Southbound Ramps Southbound				East 223rd Street Westbound				Gated Buisness Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	27	0	5	32	**1**	50	16	67	0	1	1	2	179	269	**2**	450	551
04:30 PM	**32**	0	**10**	**42**	1	54	26	81	0	0	**2**	2	**202**	261	0	463	588
04:45 PM	24	0	4	28	0	**65**	20	85	0	1	0	1	200	**282**	1	**483**	**597**
05:00 PM	29	0	3	32	1	59	**32**	**92**	**3**	**3**	1	**7**	182	237	2	421	552
Total Volume	112	0	22	134	3	228	94	325	3	5	4	12	763	1049	5	1817	2288
% App. Total	83.6	0	16.4		0.9	70.2	28.9		25	41.7	33.3		42	57.7	0.3		
PHF	.875	.000	.550	.798	.750	.877	.734	.883	.250	.417	.500	.429	.944	.930	.625	.940	.958

Counts Unlimited
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City of Carson
N/S: I-405 SB Ramps/Gated Buisness DW
E/W: East 223rd Street
Weather: Clear

File Name : 05_CRS_405S_E 223rd PM
Site Code : 22520115
Start Date : 2/25/2020
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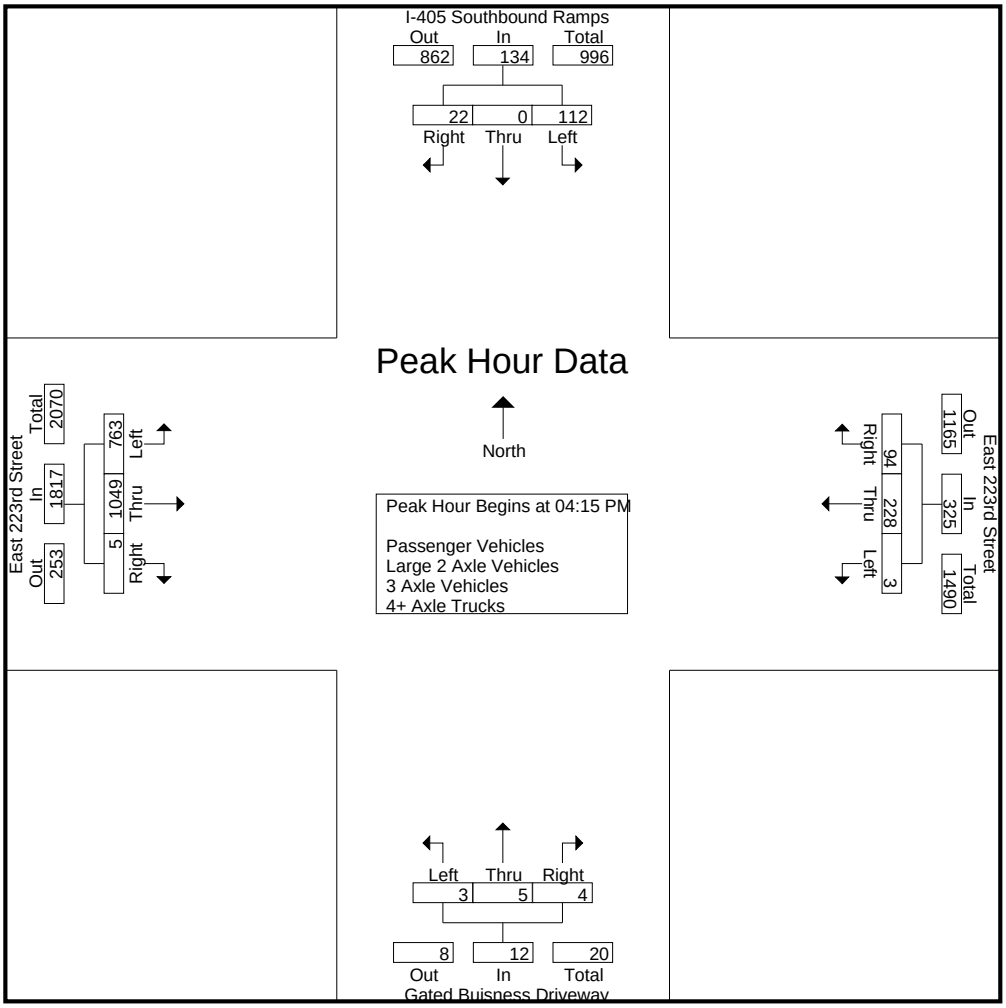

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				05:00 PM				04:15 PM			
+0 mins.	32	0	**10**	**42**	**1**	54	26	81	**3**	3	**1**	**7**	179	269	**2**	450
+15 mins.	24	0	4	28	0	**65**	20	85	1	**5**	0	6	**202**	261	0	463
+30 mins.	29	0	3	32	1	59	**32**	92	1	1	0	2	200	**282**	1	**483**
+45 mins.	**39**	0	1	40	0	65	28	**93**	0	2	0	2	182	237	2	421
Total Volume	124	0	18	142	2	243	106	351	5	11	1	17	763	1049	5	1817
% App. Total	87.3	0	12.7		0.6	69.2	30.2		29.4	64.7	5.9		42	57.7	0.3	
PHF	.795	.000	.450	.845	.500	.935	.828	.944	.417	.550	.250	.607	.944	.930	.625	.940

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City of Carson
N/S: I-405 SB Ramps/Gated Buisness DW
E/W: East 223rd Street
Weather: Clear

File Name : 05_CRS_405S_E 223rd PM
Site Code : 22520115
Start Date : 2/25/2020
Page No : 1

Groups Printed- Passenger Vehicles

	I-405 Southbound Ramps Southbound				East 223rd Street Westbound				Gated Buisness Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	23	0	3	26	0	65	17	82	1	3	0	4	138	224	0	362	474
04:15 PM	26	0	3	29	1	45	14	60	0	1	1	2	155	264	2	421	512
04:30 PM	32	0	6	38	1	50	21	72	0	0	2	2	168	255	0	423	535
04:45 PM	24	0	2	26	0	59	18	77	0	1	0	1	172	280	1	453	557
Total	105	0	14	119	2	219	70	291	1	5	3	9	633	1023	3	1659	2078
05:00 PM	29	0	1	30	1	55	29	85	3	3	1	7	151	230	2	383	505
05:15 PM	39	0	1	40	0	63	27	90	1	5	0	6	150	226	0	376	512
05:30 PM	18	0	2	20	3	61	10	74	1	1	0	2	188	215	1	404	500
05:45 PM	36	0	1	37	0	54	19	73	0	2	0	2	147	237	1	385	497
Total	122	0	5	127	4	233	85	322	5	11	1	17	636	908	4	1548	2014
Grand Total	227	0	19	246	6	452	155	613	6	16	4	26	1269	1931	7	3207	4092
Apprch %	92.3	0	7.7		1	73.7	25.3		23.1	61.5	15.4		39.6	60.2	0.2		
Total %	5.5	0	0.5	6	0.1	11	3.8	15	0.1	0.4	0.1	0.6	31	47.2	0.2	78.4	

	I-405 Southbound Ramps Southbound				East 223rd Street Westbound				Gated Buisness Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	26	0	3	29	**1**	45	14	60	0	1	1	2	155	264	**2**	421	512
04:30 PM	**32**	0	**6**	**38**	1	50	21	72	0	0	**2**	2	168	255	0	423	535
04:45 PM	24	0	2	26	0	**59**	18	77	0	1	0	1	**172**	**280**	1	**453**	**557**
05:00 PM	29	0	1	30	1	55	**29**	**85**	**3**	**3**	1	**7**	151	230	2	383	505
Total Volume	111	0	12	123	3	209	82	294	3	5	4	12	646	1029	5	1680	2109
% App. Total	90.2	0	9.8		1	71.1	27.9		25	41.7	33.3		38.5	61.2	0.3		
PHF	.867	.000	.500	.809	.750	.886	.707	.865	.250	.417	.500	.429	.939	.919	.625	.927	.947

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City of Carson
N/S: I-405 SB Ramps/Gated Buisness DW
E/W: East 223rd Street
Weather: Clear

File Name : 05_CRS_405S_E 223rd PM
Site Code : 22520115
Start Date : 2/25/2020
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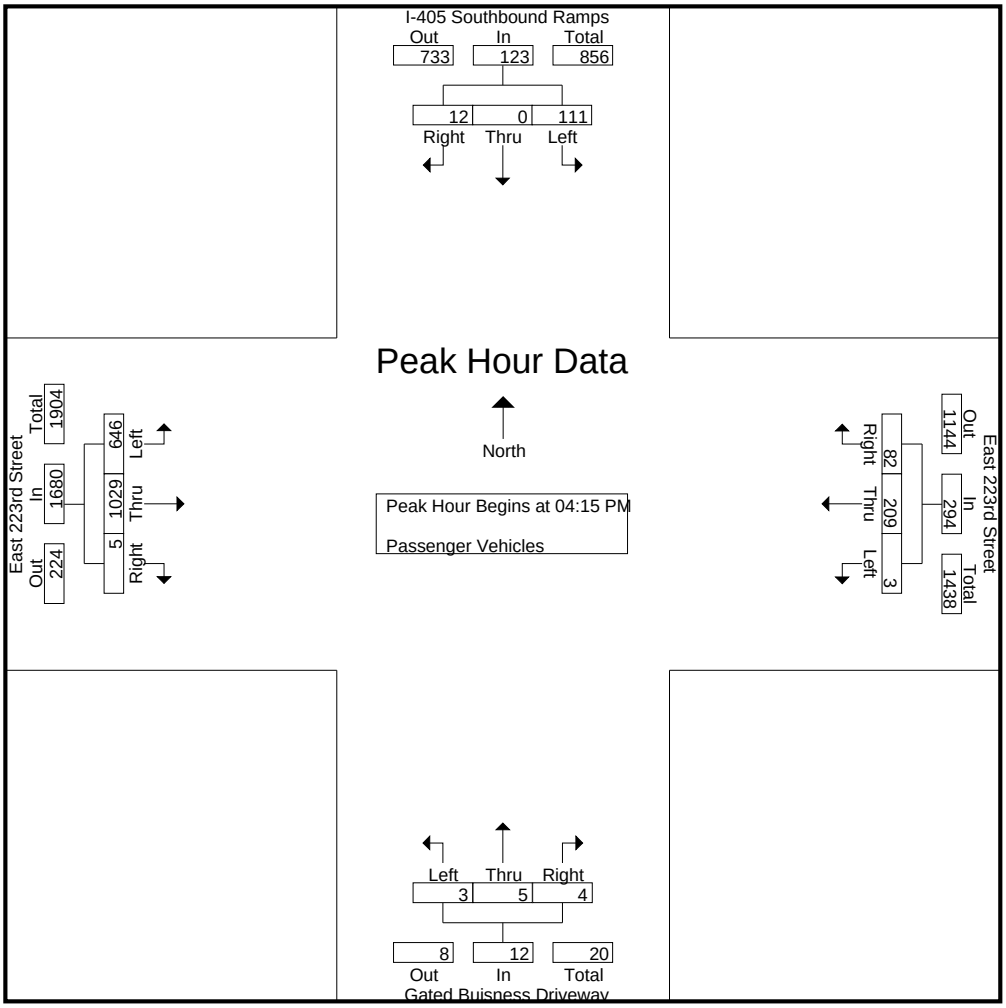

Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	26	0	3	29	**1**	45	14	60	0	1	1	2	155	264	**2**	421
+15 mins.	**32**	0	**6**	**38**	1	50	21	72	0	0	**2**	2	168	255	0	423
+30 mins.	24	0	2	26	0	**59**	18	77	0	1	0	1	**172**	**280**	1	**453**
+45 mins.	29	0	1	30	1	55	**29**	**85**	**3**	**3**	1	**7**	151	230	2	383
Total Volume	111	0	12	123	3	209	82	294	3	5	4	12	646	1029	5	1680
% App. Total	90.2	0	9.8		1	71.1	27.9		25	41.7	33.3		38.5	61.2	0.3	
PHF	.867	.000	.500	.809	.750	.886	.707	.865	.250	.417	.500	.429	.939	.919	.625	.927

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City of Carson
N/S: I-405 SB Ramps/Gated Buisness DW
E/W: East 223rd Street
Weather: Clear

File Name : 05_CRS_405S_E 223rd PM
Site Code : 22520115
Start Date : 2/25/2020
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	I-405 Southbound Ramps Southbound				East 223rd Street Westbound				Gated Buisness Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	1	0	0	1	0	0	0	0	0	0	0	0	5	10	0	15	16
04:15 PM	1	0	0	1	0	1	1	2	0	0	0	0	2	4	0	6	9
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	6	6
04:45 PM	0	0	0	0	0	2	0	2	0	0	0	0	3	2	0	5	7
Total	2	0	0	2	0	3	1	4	0	0	0	0	10	22	0	32	38
05:00 PM	0	0	1	1	0	0	0	0	0	0	0	0	3	4	0	7	8
05:15 PM	0	0	0	0	0	0	1	1	0	0	0	0	2	1	0	3	4
05:30 PM	1	0	0	1	0	0	1	1	0	0	0	0	2	1	0	3	5
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	4	4
Total	1	0	1	2	0	0	2	2	0	0	0	0	10	7	0	17	21
Grand Total	3	0	1	4	0	3	3	6	0	0	0	0	20	29	0	49	59
Apprch %	75	0	25		0	50	50		0	0	0		40.8	59.2	0		
Total %	5.1	0	1.7	6.8	0	5.1	5.1	10.2	0	0	0	0	33.9	49.2	0	83.1	

	I-405 Southbound Ramps Southbound				East 223rd Street Westbound				Gated Buisness Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	**1**	0	0	**1**	0	1	**1**	**2**	0	0	0	0	2	4	0	6	**9**
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	**6**	0	6	6
04:45 PM	0	0	0	0	0	**2**	0	2	0	0	0	0	**3**	2	0	5	7
05:00 PM	0	0	**1**	1	0	0	0	0	0	0	0	0	3	4	0	**7**	8
Total Volume	1	0	1	2	0	3	1	4	0	0	0	0	8	16	0	24	30
% App. Total	50	0	50		0	75	25		0	0	0		33.3	66.7	0		
PHF	.250	.000	.250	.500	.000	.375	.250	.500	.000	.000	.000	.000	.667	.667	.000	.857	.833

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City of Carson
N/S: I-405 SB Ramps/Gated Buisness DW
E/W: East 223rd Street
Weather: Clear

File Name : 05_CRS_405S_E 223rd PM
Site Code : 22520115
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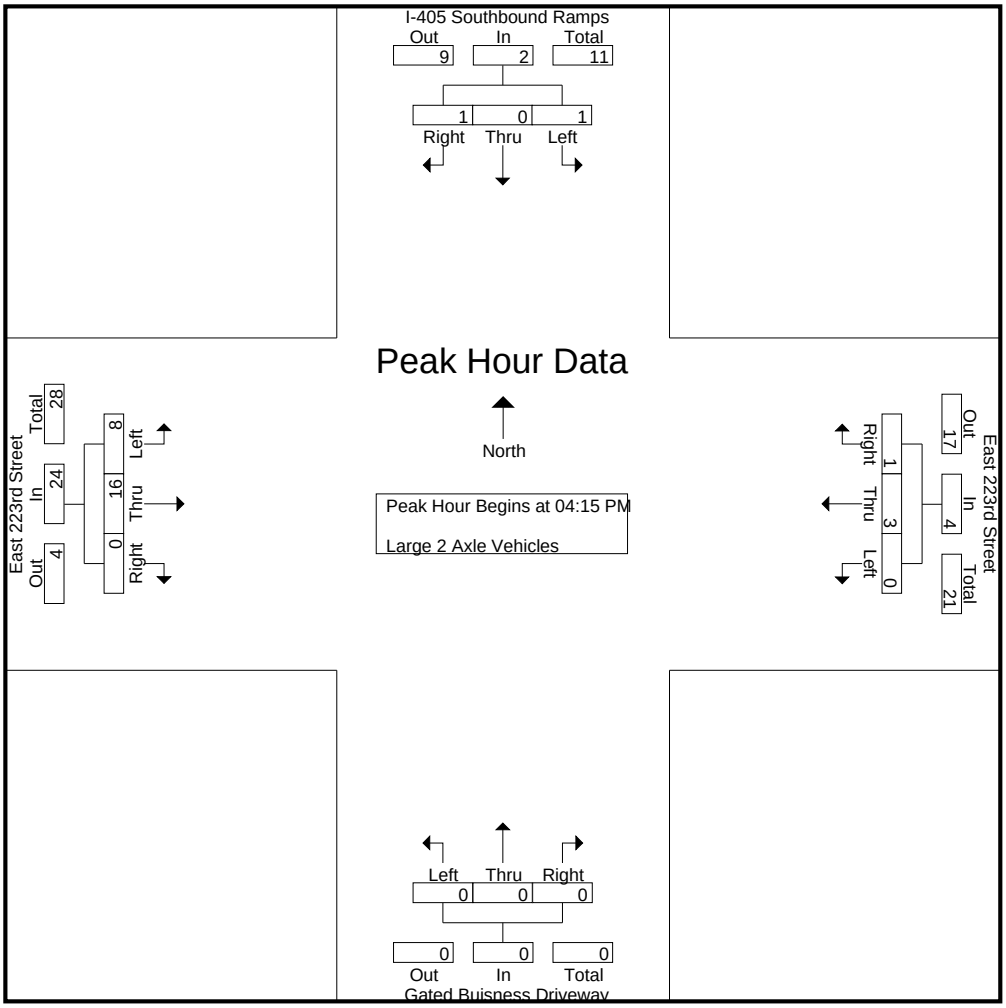

Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	**1**	0	0	**1**	0	1	**1**	**2**	0	0	0	0	2	4	0	6
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	**6**	0	6
+30 mins.	0	0	0	0	0	**2**	0	2	0	0	0	0	**3**	2	0	5
+45 mins.	0	0	**1**	1	0	0	0	0	0	0	0	0	3	4	0	**7**
Total Volume	1	0	1	2	0	3	1	4	0	0	0	0	8	16	0	24
% App. Total	50	0	50		0	75	25		0	0	0		33.3	66.7	0	
PHF	.250	.000	.250	.500	.000	.375	.250	.500	.000	.000	.000	.000	.667	.667	.000	.857

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City of Carson
N/S: I-405 SB Ramps/Gated Buisness DW
E/W: East 223rd Street
Weather: Clear

File Name : 05_CRS_405S_E 223rd PM
Site Code : 22520115
Start Date : 2/25/2020
Page No : 1

Groups Printed- 3 Axle Vehicles

	I-405 Southbound Ramps Southbound				East 223rd Street Westbound				Gated Buisness Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	1	1	0	3	1	4	0	0	0	0	8	0	0	8	13
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	4
04:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	4	0	0	4	5
04:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	5	0	0	5	6
Total	0	0	1	1	0	5	1	6	0	0	0	0	21	0	0	21	28
05:00 PM	0	0	0	0	0	2	0	2	0	0	0	0	4	1	0	5	7
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	3
05:30 PM	0	0	1	1	0	1	0	1	0	0	0	0	2	1	0	3	5
05:45 PM	0	0	1	1	0	0	0	0	0	0	0	0	5	0	0	5	6
Total	0	0	2	2	0	3	0	3	0	0	0	0	14	2	0	16	21
Grand Total	0	0	3	3	0	8	1	9	0	0	0	0	35	2	0	37	49
Apprch %	0	0	100		0	88.9	11.1		0	0	0		94.6	5.4	0		
Total %	0	0	6.1	6.1	0	16.3	2	18.4	0	0	0	0	71.4	4.1	0	75.5	

	I-405 Southbound Ramps Southbound				East 223rd Street Westbound				Gated Buisness Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	4
04:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	4	0	0	4	5
04:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	**5**	0	0	**5**	6
05:00 PM	0	0	0	0	0	**2**	0	**2**	0	0	0	0	4	**1**	0	5	**7**
Total Volume	0	0	0	0	0	4	0	4	0	0	0	0	17	1	0	18	22
% App. Total	0	0	0		0	100	0		0	0	0		94.4	5.6	0		
PHF	.000	.000	.000	.000	.000	.500	.000	.500	.000	.000	.000	.000	.850	.250	.000	.900	.786

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City of Carson
N/S: I-405 SB Ramps/Gated Buisness DW
E/W: East 223rd Street
Weather: Clear

File Name : 05_CRS_405S_E 223rd PM
Site Code : 22520115
Start Date : 2/25/2020
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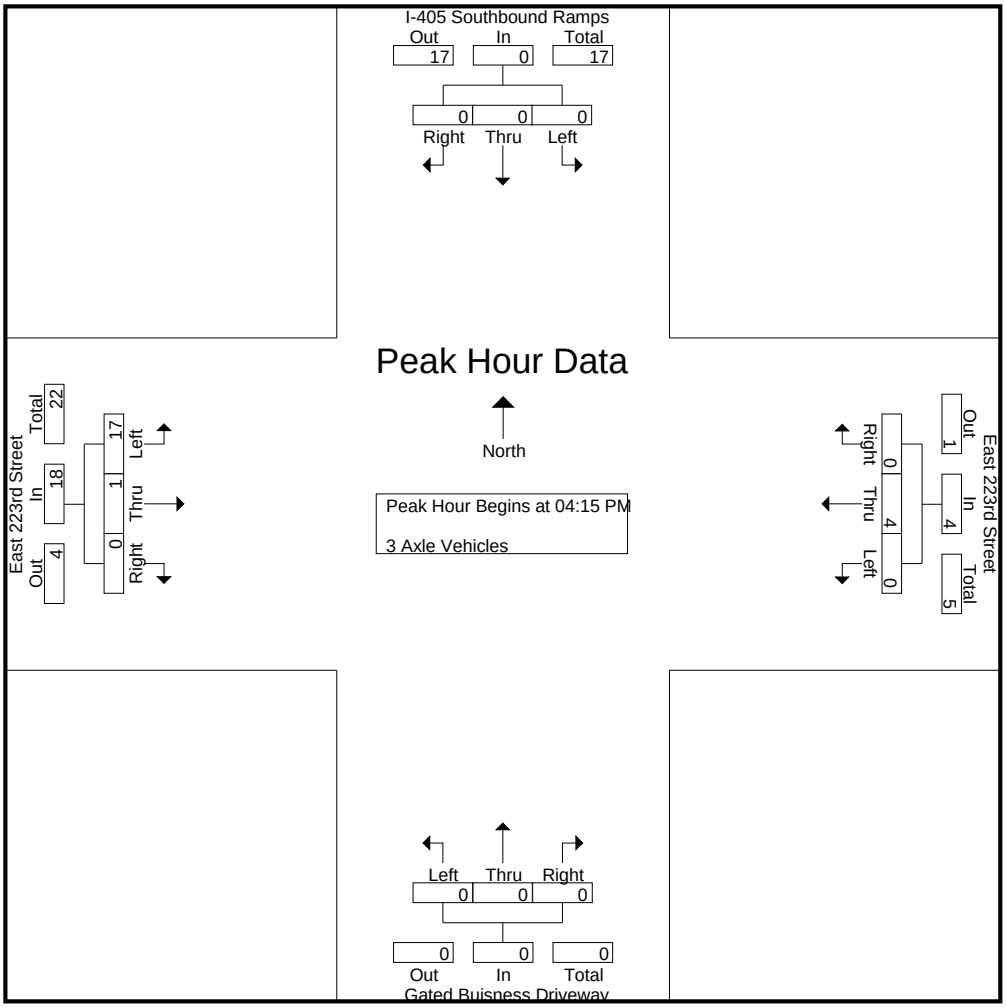

Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4
+15 mins.	0	0	0	0	0	1	0	1	0	0	0	0	4	0	0	4
+30 mins.	0	0	0	0	0	1	0	1	0	0	0	0	**5**	0	0	**5**
+45 mins.	0	0	0	0	0	**2**	0	**2**	0	0	0	0	4	**1**	0	5
Total Volume	0	0	0	0	0	4	0	4	0	0	0	0	17	1	0	18
% App. Total	0	0	0		0	100	0		0	0	0		94.4	5.6	0	
PHF	.000	.000	.000	.000	.000	.500	.000	.500	.000	.000	.000	.000	.850	.250	.000	.900

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City of Carson
N/S: I-405 SB Ramps/Gated Buisness DW
E/W: East 223rd Street
Weather: Clear

File Name : 05_CRS_405S_E 223rd PM
Site Code : 22520115
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Groups Printed- 4+ Axle Trucks

	I-405 Southbound Ramps Southbound				East 223rd Street Westbound				Gated Buisness Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	3	3	0	4	3	7	0	0	0	0	26	2	0	28	38
04:15 PM	0	0	2	2	0	4	1	5	0	0	0	0	18	1	0	19	26
04:30 PM	0	0	4	4	0	3	5	8	0	0	0	0	30	0	0	30	42
04:45 PM	0	0	2	2	0	3	2	5	0	0	0	0	20	0	0	20	27
Total	0	0	11	11	0	14	11	25	0	0	0	0	94	3	0	97	133
05:00 PM	0	0	1	1	0	2	3	5	0	0	0	0	24	2	0	26	32
05:15 PM	0	0	0	0	0	2	0	2	0	0	0	0	17	2	0	19	21
05:30 PM	0	0	2	2	0	1	0	1	0	0	0	0	12	0	0	12	15
05:45 PM	0	0	1	1	0	5	2	7	0	0	0	0	22	0	0	22	30
Total	0	0	4	4	0	10	5	15	0	0	0	0	75	4	0	79	98
Grand Total	0	0	15	15	0	24	16	40	0	0	0	0	169	7	0	176	231
Apprch %	0	0	100		0	60	40		0	0	0		96	4	0		
Total %	0	0	6.5	6.5	0	10.4	6.9	17.3	0	0	0	0	73.2	3	0	76.2	

	I-405 Southbound Ramps Southbound				East 223rd Street Westbound				Gated Buisness Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	0	2	2	0	**4**	1	5	0	0	0	0	18	1	0	19	26
04:30 PM	0	0	**4**	**4**	0	3	**5**	**8**	0	0	0	0	**30**	0	0	**30**	**42**
04:45 PM	0	0	2	2	0	3	2	5	0	0	0	0	20	0	0	20	27
05:00 PM	0	0	1	1	0	2	3	5	0	0	0	0	24	**2**	0	26	32
Total Volume	0	0	9	9	0	12	11	23	0	0	0	0	92	3	0	95	127
% App. Total	0	0	100		0	52.2	47.8		0	0	0		96.8	3.2	0		
PHF	.000	.000	.563	.563	.000	.750	.550	.719	.000	.000	.000	.000	.767	.375	.000	.792	.756

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City of Carson
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Site Code : 22520115
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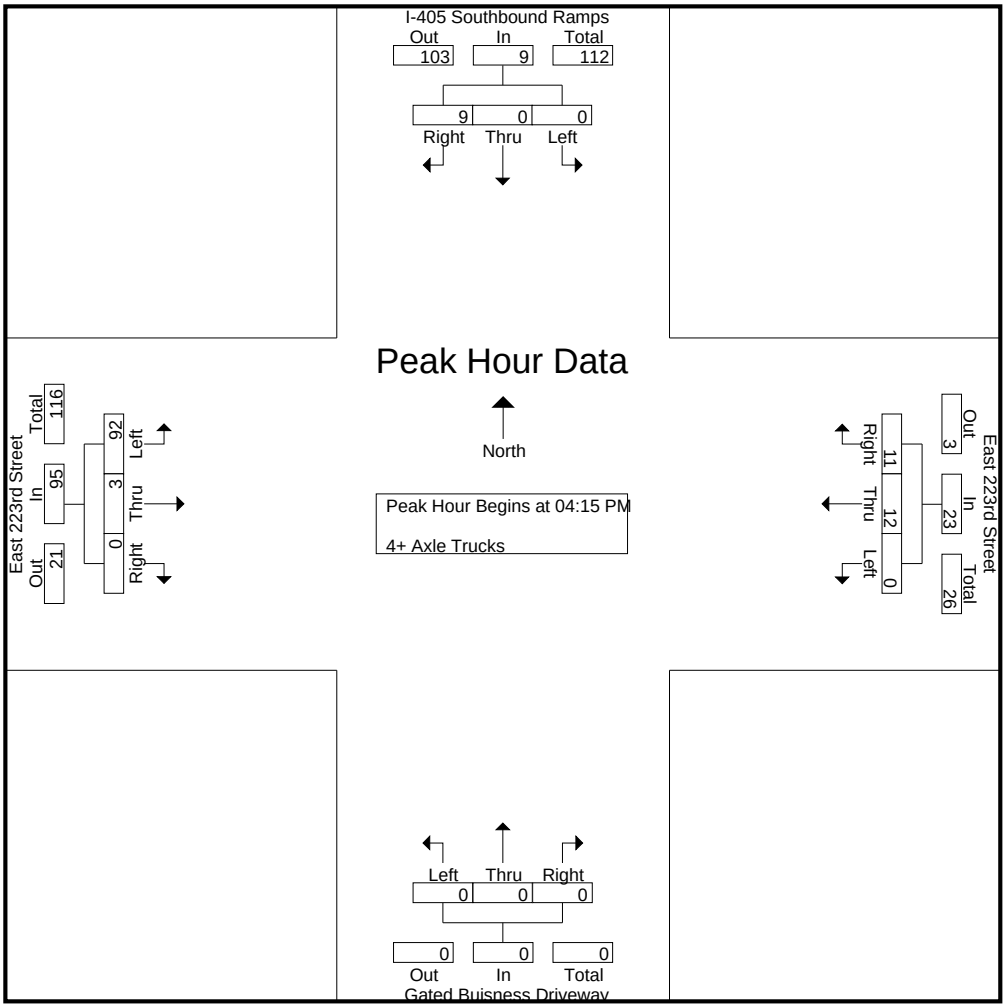

Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:15 PM				04:15 PM			
+0 mins.	0	0	2	2	0	**4**	1	5	0	0	0	0	18	1	0	19
+15 mins.	0	0	**4**	**4**	0	3	**5**	**8**	0	0	0	0	**30**	0	0	**30**
+30 mins.	0	0	2	2	0	3	2	5	0	0	0	0	20	0	0	20
+45 mins.	0	0	1	1	0	2	3	5	0	0	0	0	24	**2**	0	26
Total Volume	0	0	9	9	0	12	11	23	0	0	0	0	92	3	0	95
% App. Total	0	0	100		0	52.2	47.8		0	0	0		96.8	3.2	0	
PHF	.000	.000	.563	.563	.000	.750	.550	.719	.000	.000	.000	.000	.767	.375	.000	.792

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City of Carson
N/S: Alameda Street Connector
E/W: East 223rd Street
Weather: Clear

File Name : 06_CRS_Al Con_E 223rd AM
Site Code : 22520115
Start Date : 2/25/2020
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	East 223rd Street Westbound			Alameda Street Connector Northbound			East 223rd Street Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	32	152	184	27	50	77	80	38	118	379
07:15 AM	26	184	210	25	71	96	130	28	158	464
07:30 AM	40	195	235	31	73	104	175	39	214	553
07:45 AM	28	184	212	51	60	111	112	46	158	481
Total	126	715	841	134	254	388	497	151	648	1877
08:00 AM	29	153	182	31	82	113	120	30	150	445
08:15 AM	34	154	188	43	77	120	143	28	171	479
08:30 AM	33	153	186	28	85	113	131	23	154	453
08:45 AM	25	137	162	30	64	94	97	26	123	379
Total	121	597	718	132	308	440	491	107	598	1756
Grand Total	247	1312	1559	266	562	828	988	258	1246	3633
Apprch %	15.8	84.2		32.1	67.9		79.3	20.7		
Total %	6.8	36.1	42.9	7.3	15.5	22.8	27.2	7.1	34.3	
Passenger Vehicles	197	1264	1461	223	349	572	936	178	1114	3147
% Passenger Vehicles	79.8	96.3	93.7	83.8	62.1	69.1	94.7	69	89.4	86.6
Large 2 Axle Vehicles	4	26	30	16	12	28	20	13	33	91
% Large 2 Axle Vehicles	1.6	2	1.9	6	2.1	3.4	2	5	2.6	2.5
3 Axle Vehicles	19	10	29	11	18	29	7	24	31	89
% 3 Axle Vehicles	7.7	0.8	1.9	4.1	3.2	3.5	0.7	9.3	2.5	2.4
4+ Axle Trucks	27	12	39	16	183	199	25	43	68	306
% 4+ Axle Trucks	10.9	0.9	2.5	6	32.6	24	2.5	16.7	5.5	8.4

	East 223rd Street Westbound			Alameda Street Connector Northbound			East 223rd Street Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	**40**	**195**	**235**	31	73	104	**175**	39	**214**	**553**
07:45 AM	28	184	212	**51**	60	111	112	**46**	158	481
08:00 AM	29	153	182	31	**82**	113	120	30	150	445
08:15 AM	34	154	188	43	77	**120**	143	28	171	479
Total Volume	131	686	817	156	292	448	550	143	693	1958
% App. Total	16	84		34.8	65.2		79.4	20.6		
PHF	.819	.879	.869	.765	.890	.933	.786	.777	.810	.885

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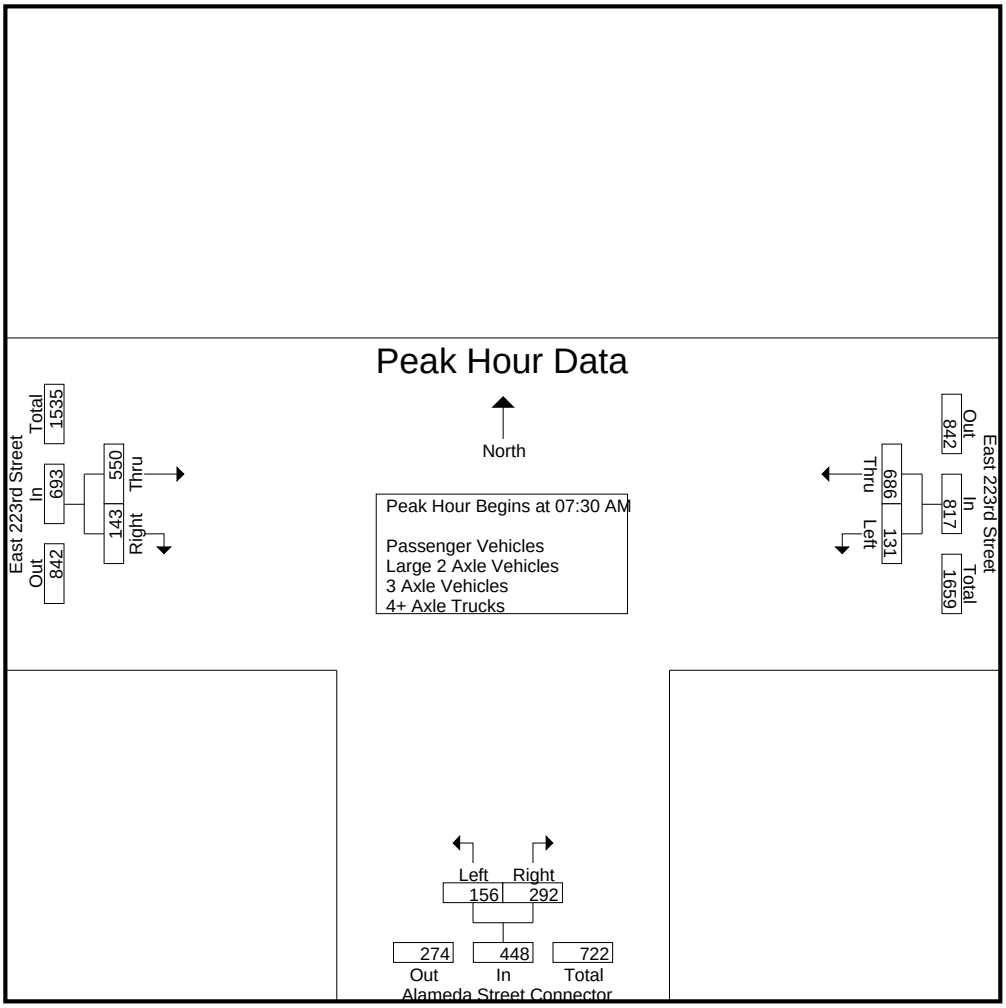

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:45 AM			07:30 AM		
+0 mins.	32	152	184	**51**	60	111	**175**	39	**214**
+15 mins.	26	184	210	31	82	113	112	**46**	158
+30 mins.	**40**	**195**	**235**	43	77	**120**	120	30	150
+45 mins.	28	184	212	28	**85**	113	143	28	171
Total Volume	126	715	841	153	304	457	550	143	693
% App. Total	15	85		33.5	66.5		79.4	20.6	
PHF	.788	.917	.895	.750	.894	.952	.786	.777	.810

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City of Carson
N/S: Alameda Street Connector
E/W: East 223rd Street
Weather: Clear

File Name : 06_CRS_Al Con_E 223rd AM
Site Code : 22520115
Start Date : 2/25/2020
Page No : 1

Groups Printed- Passenger Vehicles

	East 223rd Street Westbound			Alameda Street Connector Northbound			East 223rd Street Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	25	144	169	20	27	47	77	24	101	317
07:15 AM	20	175	195	23	49	72	126	19	145	412
07:30 AM	31	193	224	29	42	71	164	29	193	488
07:45 AM	22	178	200	47	45	92	109	39	148	440
Total	98	690	788	119	163	282	476	111	587	1657
08:00 AM	25	148	173	27	53	80	113	19	132	385
08:15 AM	27	145	172	34	52	86	133	16	149	407
08:30 AM	28	149	177	17	52	69	121	17	138	384
08:45 AM	19	132	151	26	29	55	93	15	108	314
Total	99	574	673	104	186	290	460	67	527	1490
Grand Total	197	1264	1461	223	349	572	936	178	1114	3147
Apprch %	13.5	86.5		39	61		84	16		
Total %	6.3	40.2	46.4	7.1	11.1	18.2	29.7	5.7	35.4	

	East 223rd Street Westbound			Alameda Street Connector Northbound			East 223rd Street Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	**31**	**193**	**224**	29	42	71	**164**	29	**193**	**488**
07:45 AM	22	178	200	**47**	45	**92**	109	**39**	148	440
08:00 AM	25	148	173	27	**53**	80	113	19	132	385
08:15 AM	27	145	172	34	52	86	133	16	149	407
Total Volume	105	664	769	137	192	329	519	103	622	1720
% App. Total	13.7	86.3		41.6	58.4		83.4	16.6		
PHF	.847	.860	.858	.729	.906	.894	.791	.660	.806	.881

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City of Carson
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Site Code : 22520115
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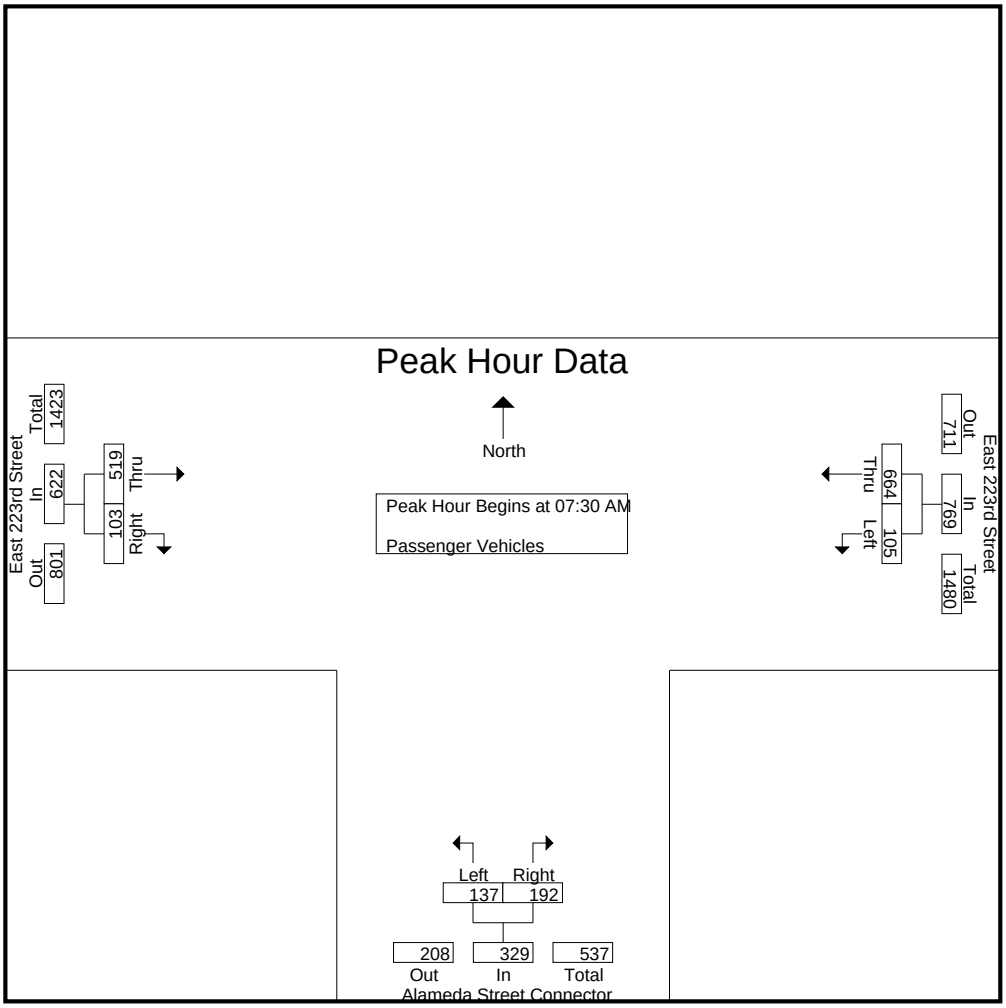

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM			07:30 AM			07:30 AM		
+0 mins.	**31**	**193**	**224**	29	42	71	**164**	29	**193**
+15 mins.	22	178	200	**47**	45	**92**	109	**39**	148
+30 mins.	25	148	173	27	**53**	80	113	19	132
+45 mins.	27	145	172	34	52	86	133	16	149
Total Volume	105	664	769	137	192	329	519	103	622
% App. Total	13.7	86.3		41.6	58.4		83.4	16.6	
PHF	.847	.860	.858	.729	.906	.894	.791	.660	.806

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City of Carson
N/S: Alameda Street Connector
E/W: East 223rd Street
Weather: Clear

File Name : 06_CRS_Al Con_E 223rd AM
Site Code : 22520115
Start Date : 2/25/2020
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	East 223rd Street Westbound			Alameda Street Connector Northbound			East 223rd Street Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	0	5	5	2	1	3	1	1	2	10
07:15 AM	0	3	3	2	1	3	1	1	2	8
07:30 AM	0	1	1	0	1	1	4	3	7	9
07:45 AM	0	4	4	4	0	4	2	2	4	12
Total	0	13	13	8	3	11	8	7	15	39
08:00 AM	2	2	4	0	0	0	2	2	4	8
08:15 AM	0	7	7	3	1	4	5	3	8	19
08:30 AM	1	2	3	3	4	7	2	0	2	12
08:45 AM	1	2	3	2	4	6	3	1	4	13
Total	4	13	17	8	9	17	12	6	18	52
Grand Total	4	26	30	16	12	28	20	13	33	91
Apprch %	13.3	86.7		57.1	42.9		60.6	39.4		
Total %	4.4	28.6	33	17.6	13.2	30.8	22	14.3	36.3	

	East 223rd Street Westbound			Alameda Street Connector Northbound			East 223rd Street Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	0	1	1	0	**1**	1	4	**3**	7	9
07:45 AM	0	4	4	**4**	0	**4**	2	2	4	12
08:00 AM	**2**	2	4	0	0	0	2	2	4	8
08:15 AM	0	**7**	**7**	3	1	4	**5**	3	**8**	**19**
Total Volume	2	14	16	7	2	9	13	10	23	48
% App. Total	12.5	87.5		77.8	22.2		56.5	43.5		
PHF	.250	.500	.571	.438	.500	.563	.650	.833	.719	.632

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City of Carson
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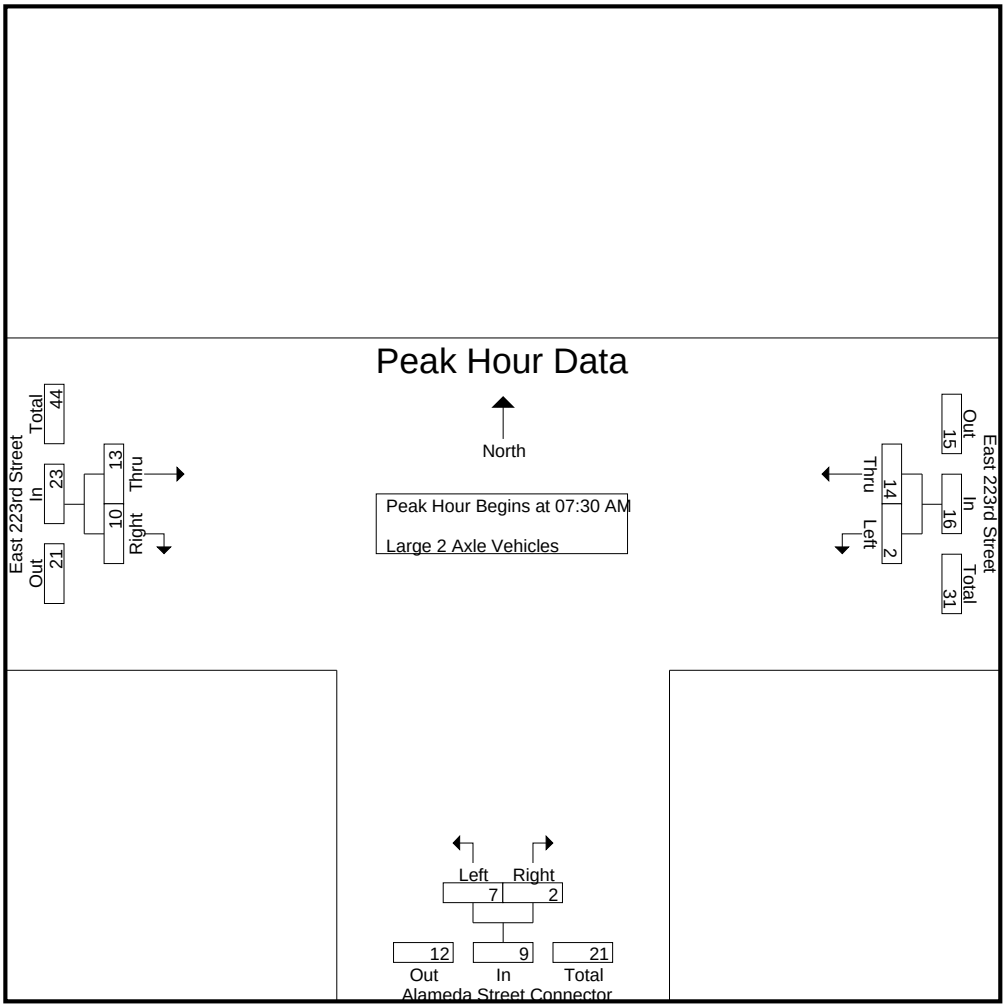

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM			07:30 AM			07:30 AM		
+0 mins.	0	1	1	0	**1**	1	4	**3**	7
+15 mins.	0	4	4	**4**	0	**4**	2	2	4
+30 mins.	**2**	2	4	0	0	0	2	2	4
+45 mins.	0	**7**	**7**	3	1	4	**5**	3	**8**
Total Volume	2	14	16	7	2	9	13	10	23
% App. Total	12.5	87.5		77.8	22.2		56.5	43.5	
PHF	.250	.500	.571	.438	.500	.563	.650	.833	.719

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Weather: Clear

File Name : 06_CRS_Al Con_E 223rd AM
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Page No : 1

Groups Printed- 3 Axle Vehicles

	East 223rd Street Westbound			Alameda Street Connector Northbound			East 223rd Street Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	4	1	5	4	1	5	0	4	4	14
07:15 AM	2	2	4	0	4	4	0	5	5	13
07:30 AM	4	0	4	2	0	2	1	2	3	9
07:45 AM	3	2	5	0	3	3	0	0	0	8
Total	13	5	18	6	8	14	1	11	12	44
08:00 AM	0	2	2	3	1	4	1	8	9	15
08:15 AM	2	1	3	0	2	2	2	2	4	9
08:30 AM	4	2	6	2	3	5	2	0	2	13
08:45 AM	0	0	0	0	4	4	1	3	4	8
Total	6	5	11	5	10	15	6	13	19	45
Grand Total	19	10	29	11	18	29	7	24	31	89
Apprch %	65.5	34.5		37.9	62.1		22.6	77.4		
Total %	21.3	11.2	32.6	12.4	20.2	32.6	7.9	27	34.8	

	East 223rd Street Westbound			Alameda Street Connector Northbound			East 223rd Street Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	**4**	0	4	2	0	2	1	2	3	9
07:45 AM	3	**2**	**5**	0	**3**	3	0	0	0	8
08:00 AM	0	2	2	**3**	1	**4**	1	**8**	**9**	**15**
08:15 AM	2	1	3	0	2	2	**2**	2	4	9
Total Volume	9	5	14	5	6	11	4	12	16	41
% App. Total	64.3	35.7		45.5	54.5		25	75		
PHF	.563	.625	.700	.417	.500	.688	.500	.375	.444	.683

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City of Carson
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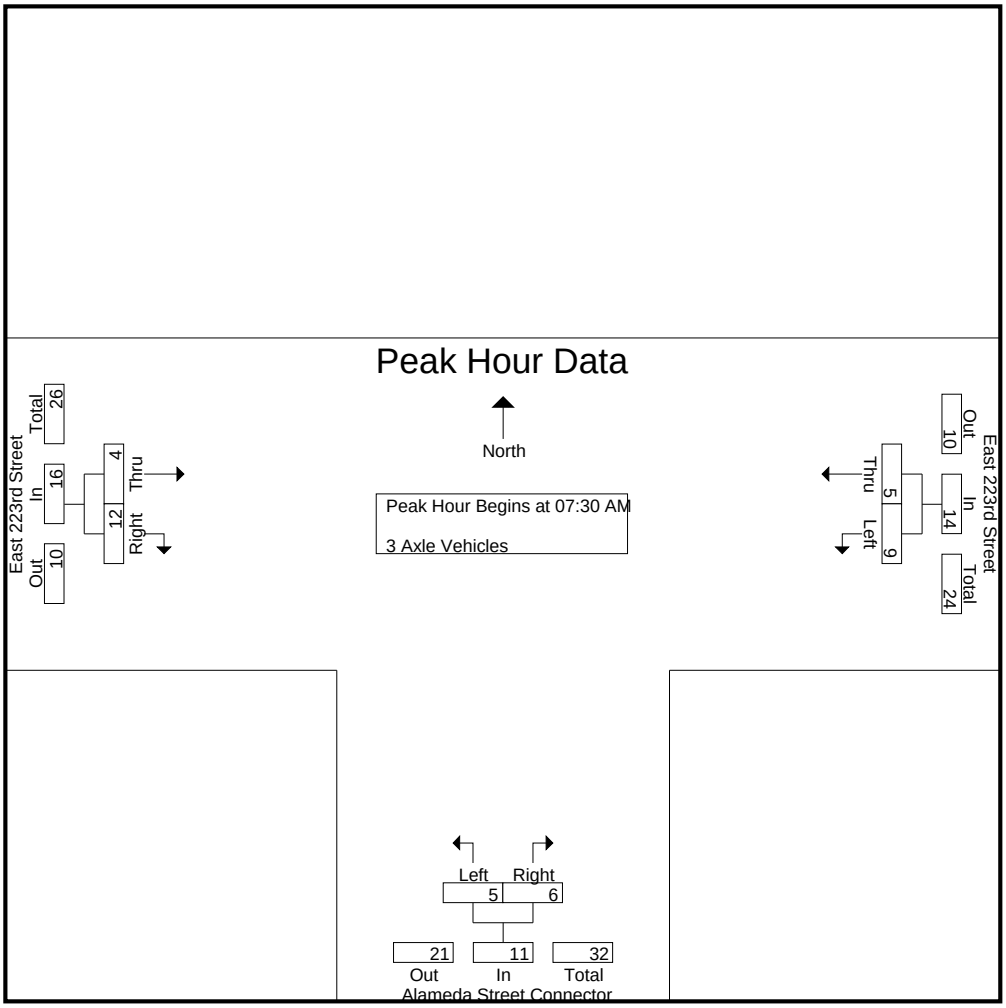

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM			07:30 AM			07:30 AM		
+0 mins.	**4**	0	4	2	0	2	1	2	3
+15 mins.	3	**2**	**5**	0	**3**	3	0	0	0
+30 mins.	0	2	2	**3**	1	**4**	1	**8**	**9**
+45 mins.	2	1	3	0	2	2	**2**	2	4
Total Volume	9	5	14	5	6	11	4	12	16
% App. Total	64.3	35.7		45.5	54.5		25	75	
PHF	.563	.625	.700	.417	.500	.688	.500	.375	.444

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Groups Printed- 4+ Axle Trucks

	East 223rd Street Westbound			Alameda Street Connector Northbound			East 223rd Street Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	3	2	5	1	21	22	2	9	11	38
07:15 AM	4	4	8	0	17	17	3	3	6	31
07:30 AM	5	1	6	0	30	30	6	5	11	47
07:45 AM	3	0	3	0	12	12	1	5	6	21
Total	15	7	22	1	80	81	12	22	34	137
08:00 AM	2	1	3	1	28	29	4	1	5	37
08:15 AM	5	1	6	6	22	28	3	7	10	44
08:30 AM	0	0	0	6	26	32	6	6	12	44
08:45 AM	5	3	8	2	27	29	0	7	7	44
Total	12	5	17	15	103	118	13	21	34	169
Grand Total	27	12	39	16	183	199	25	43	68	306
Apprch %	69.2	30.8		8	92		36.8	63.2		
Total %	8.8	3.9	12.7	5.2	59.8	65	8.2	14.1	22.2	

	East 223rd Street Westbound			Alameda Street Connector Northbound			East 223rd Street Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	**5**	**1**	**6**	0	**30**	**30**	**6**	5	**11**	**47**
07:45 AM	3	0	3	0	12	12	1	5	6	21
08:00 AM	2	1	3	1	28	29	4	1	5	37
08:15 AM	5	1	6	**6**	22	28	3	**7**	10	44
Total Volume	15	3	18	7	92	99	14	18	32	149
% App. Total	83.3	16.7		7.1	92.9		43.8	56.2		
PHF	.750	.750	.750	.292	.767	.825	.583	.643	.727	.793

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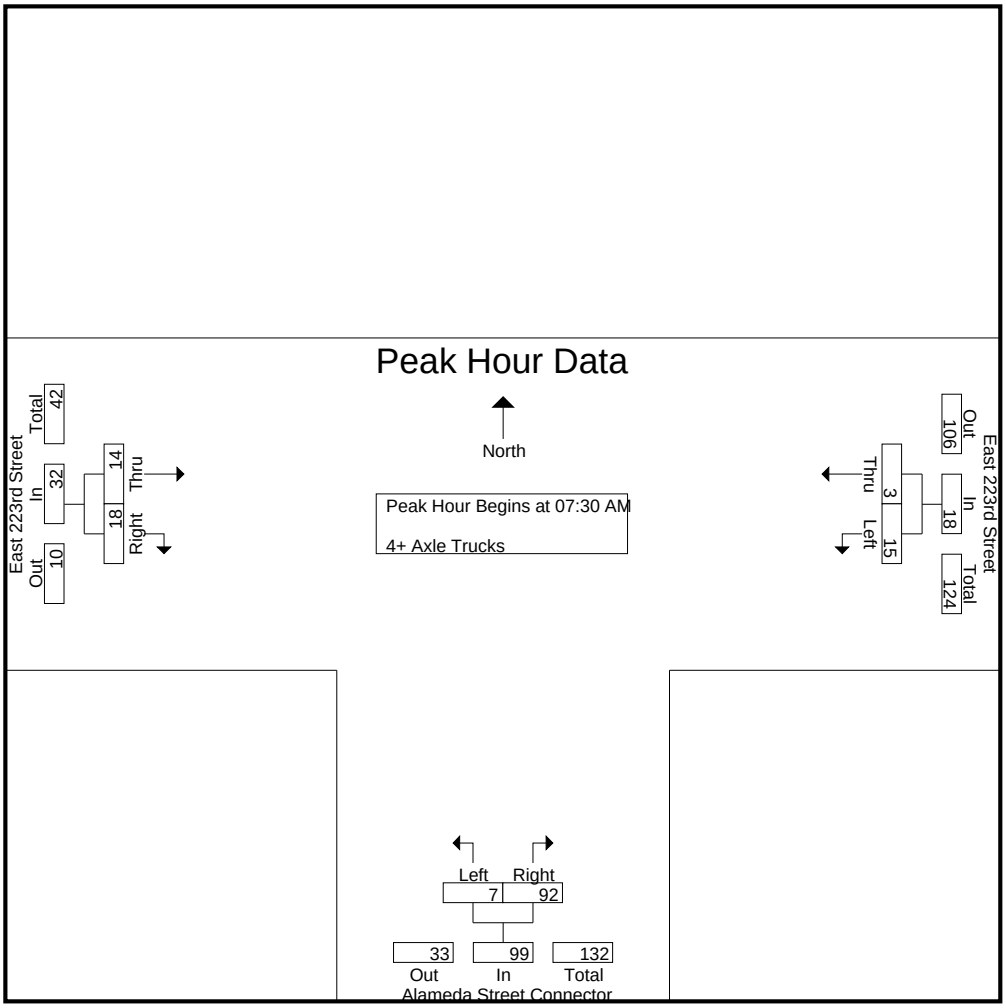

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM			07:30 AM			07:30 AM		
+0 mins.	**5**	**1**	**6**	0	**30**	**30**	**6**	5	**11**
+15 mins.	3	0	3	0	12	12	1	5	6
+30 mins.	2	1	3	1	28	29	4	1	5
+45 mins.	5	1	6	**6**	22	28	3	**7**	10
Total Volume	15	3	18	7	92	99	14	18	32
% App. Total	83.3	16.7		7.1	92.9		43.8	56.2	
PHF	.750	.750	.750	.292	.767	.825	.583	.643	.727

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City of Carson
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	East 223rd Street Westbound			Alameda Street Connector Northbound			East 223rd Street Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	16	69	85	31	121	152	289	38	327	564
04:15 PM	15	41	56	20	114	134	345	28	373	563
04:30 PM	16	52	68	15	127	142	339	42	381	591
04:45 PM	17	52	69	22	118	140	370	42	412	621
Total	64	214	278	88	480	568	1343	150	1493	2339
05:00 PM	14	49	63	22	103	125	330	30	360	548
05:15 PM	11	58	69	18	108	126	296	33	329	524
05:30 PM	12	61	73	16	110	126	314	36	350	549
05:45 PM	15	44	59	18	117	135	308	31	339	533
Total	52	212	264	74	438	512	1248	130	1378	2154
Grand Total	116	426	542	162	918	1080	2591	280	2871	4493
Apprch %	21.4	78.6		15	85		90.2	9.8		
Total %	2.6	9.5	12.1	3.6	20.4	24	57.7	6.2	63.9	
Passenger Vehicles	77	404	481	141	735	876	2515	212	2727	4084
% Passenger Vehicles	66.4	94.8	88.7	87	80.1	81.1	97.1	75.7	95	90.9
Large 2 Axle Vehicles	2	5	7	7	11	18	37	6	43	68
% Large 2 Axle Vehicles	1.7	1.2	1.3	4.3	1.2	1.7	1.4	2.1	1.5	1.5
3 Axle Vehicles	8	5	13	7	26	33	12	29	41	87
% 3 Axle Vehicles	6.9	1.2	2.4	4.3	2.8	3.1	0.5	10.4	1.4	1.9
4+ Axle Trucks	29	12	41	7	146	153	27	33	60	254
% 4+ Axle Trucks	25	2.8	7.6	4.3	15.9	14.2	1	11.8	2.1	5.7

	East 223rd Street Westbound			Alameda Street Connector Northbound			East 223rd Street Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	16	**69**	**85**	**31**	121	**152**	289	38	327	564
04:15 PM	15	41	56	20	114	134	345	28	373	563
04:30 PM	16	52	68	15	**127**	142	339	**42**	381	591
04:45 PM	**17**	52	69	22	118	140	**370**	42	**412**	**621**
Total Volume	64	214	278	88	480	568	1343	150	1493	2339
% App. Total	23	77		15.5	84.5		90	10		
PHF	.941	.775	.818	.710	.945	.934	.907	.893	.906	.942

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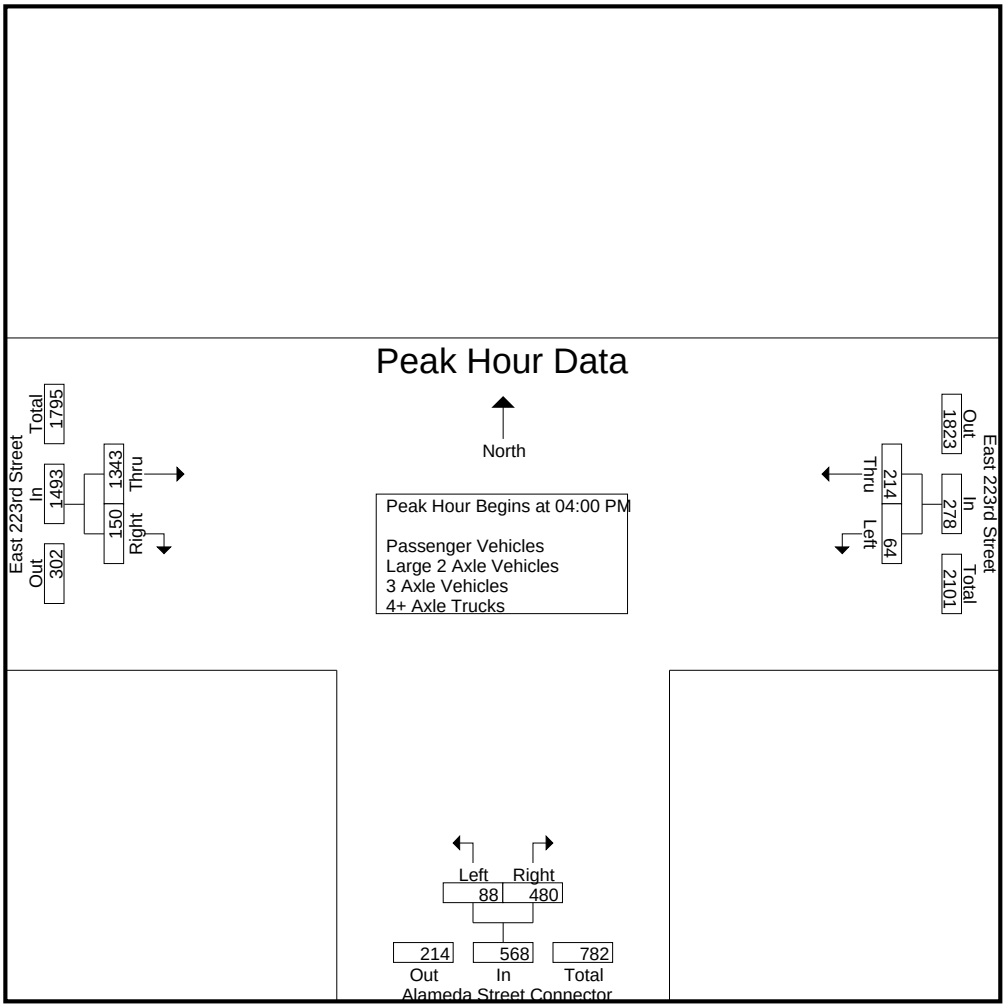

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:15 PM		
+0 mins.	16	**69**	**85**	**31**	121	**152**	345	28	373
+15 mins.	15	41	56	20	114	134	339	**42**	381
+30 mins.	16	52	68	15	**127**	142	**370**	42	**412**
+45 mins.	**17**	52	69	22	118	140	330	30	360
Total Volume	64	214	278	88	480	568	1384	142	1526
% App. Total	23	77		15.5	84.5		90.7	9.3	
PHF	.941	.775	.818	.710	.945	.934	.935	.845	.926

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Groups Printed- Passenger Vehicles

	East 223rd Street Westbound			Alameda Street Connector Northbound			East 223rd Street Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	7	63	70	25	89	114	276	28	304	488
04:15 PM	8	39	47	18	92	110	334	21	355	512
04:30 PM	10	51	61	12	100	112	328	40	368	541
04:45 PM	14	45	59	19	97	116	362	35	397	572
Total	39	198	237	74	378	452	1300	124	1424	2113
05:00 PM	12	46	58	20	78	98	314	26	340	496
05:15 PM	8	57	65	16	90	106	290	26	316	487
05:30 PM	8	61	69	13	99	112	306	18	324	505
05:45 PM	10	42	52	18	90	108	305	18	323	483
Total	38	206	244	67	357	424	1215	88	1303	1971
Grand Total	77	404	481	141	735	876	2515	212	2727	4084
Apprch %	16	84		16.1	83.9		92.2	7.8		
Total %	1.9	9.9	11.8	3.5	18	21.4	61.6	5.2	66.8	

	East 223rd Street Westbound			Alameda Street Connector Northbound			East 223rd Street Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	7	**63**	**70**	**25**	89	114	276	28	304	488
04:15 PM	8	39	47	18	92	110	334	21	355	512
04:30 PM	10	51	61	12	**100**	112	328	**40**	368	541
04:45 PM	**14**	45	59	19	97	**116**	**362**	35	**397**	**572**
Total Volume	39	198	237	74	378	452	1300	124	1424	2113
% App. Total	16.5	83.5		16.4	83.6		91.3	8.7		
PHF	.696	.786	.846	.740	.945	.974	.898	.775	.897	.924

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File Name : 06_CRS_Al Con_E 223rd PM
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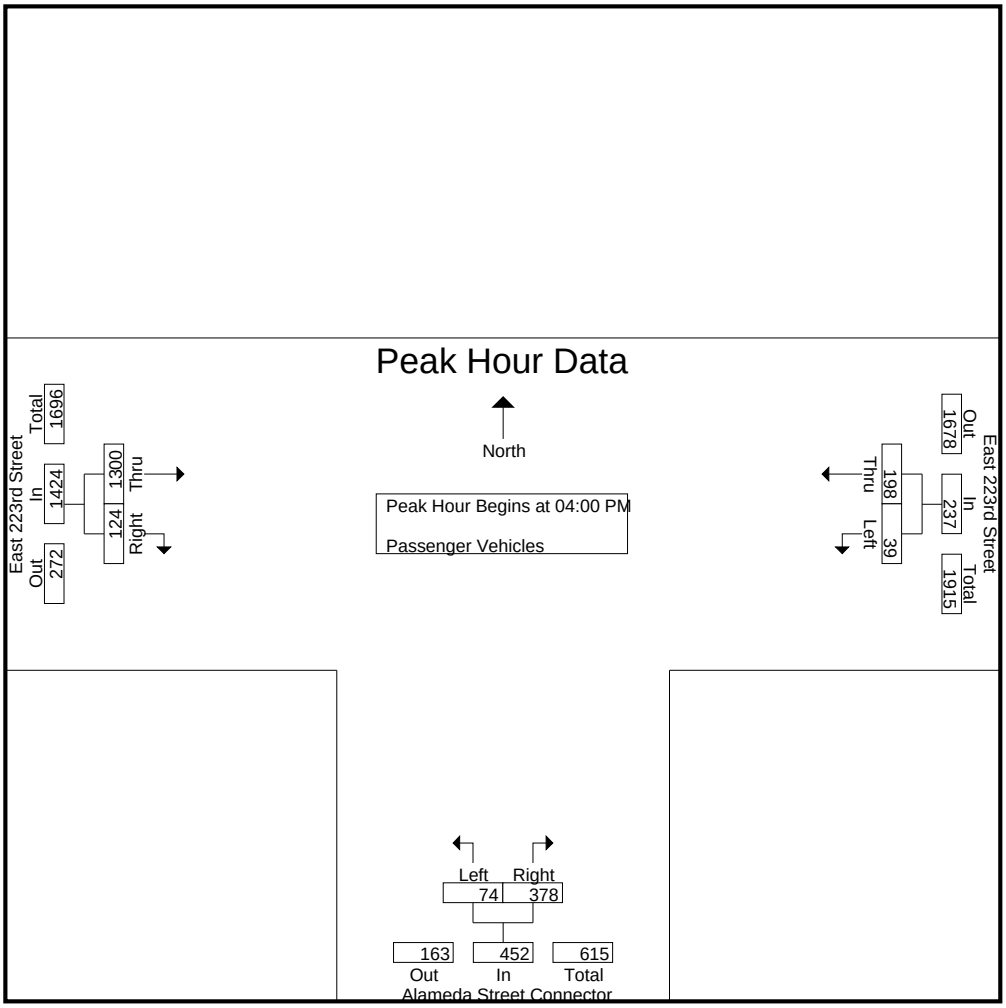

Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:00 PM		
+0 mins.	7	**63**	**70**	**25**	89	114	276	28	304
+15 mins.	8	39	47	18	92	110	334	21	355
+30 mins.	10	51	61	12	**100**	112	328	**40**	368
+45 mins.	**14**	45	59	19	97	**116**	**362**	35	**397**
Total Volume	39	198	237	74	378	452	1300	124	1424
% App. Total	16.5	83.5		16.4	83.6		91.3	8.7	
PHF	.696	.786	.846	.740	.945	.974	.898	.775	.897

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Groups Printed- Large 2 Axle Vehicles

	East 223rd Street Westbound			Alameda Street Connector Northbound			East 223rd Street Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	0	1	1	2	2	4	9	0	9	14
04:15 PM	0	1	1	1	1	2	4	2	6	9
04:30 PM	1	0	1	3	3	6	5	0	5	12
04:45 PM	0	2	2	1	2	3	2	1	3	8
Total	1	4	5	7	8	15	20	3	23	43
05:00 PM	0	0	0	0	0	0	9	1	10	10
05:15 PM	1	1	2	0	0	0	3	0	3	5
05:30 PM	0	0	0	0	1	1	3	1	4	5
05:45 PM	0	0	0	0	2	2	2	1	3	5
Total	1	1	2	0	3	3	17	3	20	25
Grand Total	2	5	7	7	11	18	37	6	43	68
Apprch %	28.6	71.4		38.9	61.1		86	14		
Total %	2.9	7.4	10.3	10.3	16.2	26.5	54.4	8.8	63.2	

	East 223rd Street Westbound			Alameda Street Connector Northbound			East 223rd Street Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	1	1	2	2	4	**9**	0	**9**	**14**
04:15 PM	0	1	1	1	1	2	4	**2**	6	9
04:30 PM	**1**	0	1	**3**	**3**	**6**	5	0	5	12
04:45 PM	0	**2**	**2**	1	2	3	2	1	3	8
Total Volume	1	4	5	7	8	15	20	3	23	43
% App. Total	20	80		46.7	53.3		87	13		
PHF	.250	.500	.625	.583	.667	.625	.556	.375	.639	.768

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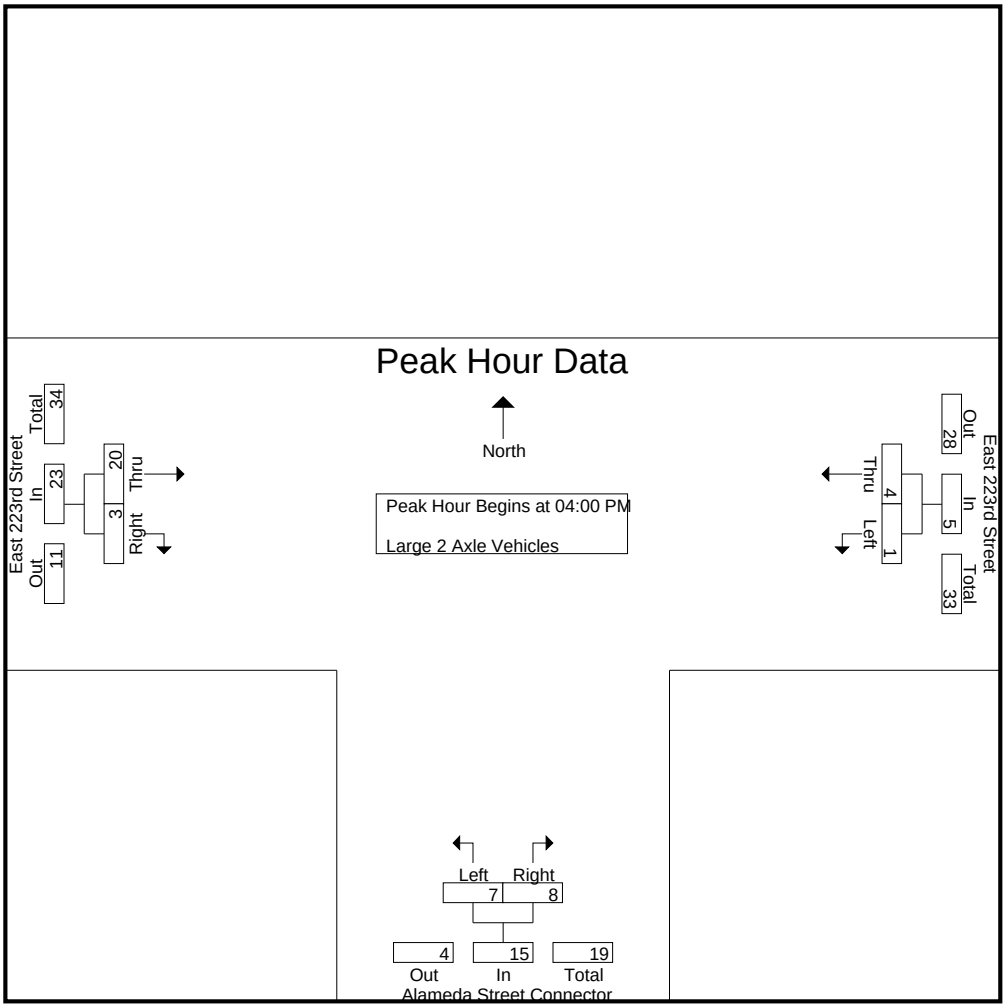

Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:00 PM		
+0 mins.	0	1	1	2	2	4	**9**	0	**9**
+15 mins.	0	1	1	1	1	2	4	**2**	6
+30 mins.	**1**	0	1	**3**	**3**	**6**	5	0	5
+45 mins.	0	**2**	**2**	1	2	3	2	1	3
Total Volume	1	4	5	7	8	15	20	3	23
% App. Total	20	80		46.7	53.3		87	13	
PHF	.250	.500	.625	.583	.667	.625	.556	.375	.639

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Groups Printed- 3 Axle Vehicles

	East 223rd Street Westbound			Alameda Street Connector Northbound			East 223rd Street Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	3	2	5	2	7	9	2	3	5	19
04:15 PM	0	0	0	0	5	5	2	2	4	9
04:30 PM	0	0	0	0	2	2	0	0	0	2
04:45 PM	1	2	3	1	1	2	4	2	6	11
Total	4	4	8	3	15	18	8	7	15	41
05:00 PM	1	1	2	0	4	4	1	2	3	9
05:15 PM	0	0	0	2	2	4	1	4	5	9
05:30 PM	2	0	2	2	1	3	2	11	13	18
05:45 PM	1	0	1	0	4	4	0	5	5	10
Total	4	1	5	4	11	15	4	22	26	46
Grand Total	8	5	13	7	26	33	12	29	41	87
Apprch %	61.5	38.5		21.2	78.8		29.3	70.7		
Total %	9.2	5.7	14.9	8	29.9	37.9	13.8	33.3	47.1	

	East 223rd Street Westbound			Alameda Street Connector Northbound			East 223rd Street Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	**3**	**2**	**5**	**2**	**7**	**9**	2	**3**	5	**19**
04:15 PM	0	0	0	0	5	5	2	2	4	9
04:30 PM	0	0	0	0	2	2	0	0	0	2
04:45 PM	1	2	3	1	1	2	**4**	2	**6**	11
Total Volume	4	4	8	3	15	18	8	7	15	41
% App. Total	50	50		16.7	83.3		53.3	46.7		
PHF	.333	.500	.400	.375	.536	.500	.500	.583	.625	.539

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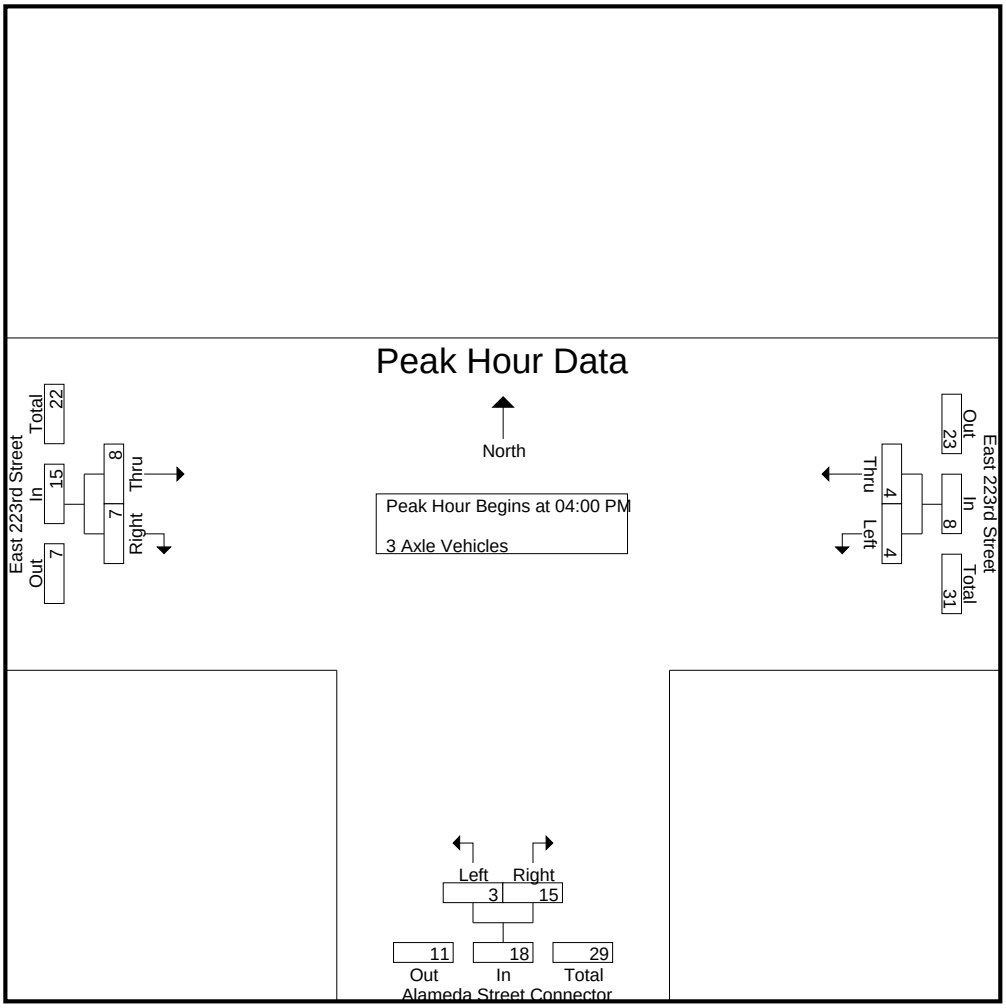

Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:00 PM		
+0 mins.	**3**	**2**	**5**	**2**	**7**	**9**	2	**3**	5
+15 mins.	0	0	0	0	5	5	2	2	4
+30 mins.	0	0	0	0	2	2	0	0	0
+45 mins.	1	2	3	1	1	2	**4**	2	**6**
Total Volume	4	4	8	3	15	18	8	7	15
% App. Total	50	50		16.7	83.3		53.3	46.7	
PHF	.333	.500	.400	.375	.536	.500	.500	.583	.625

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Groups Printed- 4+ Axle Trucks

	East 223rd Street Westbound			Alameda Street Connector Northbound			East 223rd Street Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	6	3	9	2	23	25	2	7	9	43
04:15 PM	7	1	8	1	16	17	5	3	8	33
04:30 PM	5	1	6	0	22	22	6	2	8	36
04:45 PM	2	3	5	1	18	19	2	4	6	30
Total	20	8	28	4	79	83	15	16	31	142
05:00 PM	1	2	3	2	21	23	6	1	7	33
05:15 PM	2	0	2	0	16	16	2	3	5	23
05:30 PM	2	0	2	1	9	10	3	6	9	21
05:45 PM	4	2	6	0	21	21	1	7	8	35
Total	9	4	13	3	67	70	12	17	29	112
Grand Total	29	12	41	7	146	153	27	33	60	254
Apprch %	70.7	29.3		4.6	95.4		45	55		
Total %	11.4	4.7	16.1	2.8	57.5	60.2	10.6	13	23.6	

	East 223rd Street Westbound			Alameda Street Connector Northbound			East 223rd Street Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	6	**3**	**9**	**2**	**23**	**25**	2	**7**	**9**	**43**
04:15 PM	**7**	1	8	1	16	17	5	3	8	33
04:30 PM	5	1	6	0	22	22	**6**	2	8	36
04:45 PM	2	3	5	1	18	19	2	4	6	30
Total Volume	20	8	28	4	79	83	15	16	31	142
% App. Total	71.4	28.6		4.8	95.2		48.4	51.6		
PHF	.714	.667	.778	.500	.859	.830	.625	.571	.861	.826

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N/S: Alameda Street Connector
E/W: East 223rd Street
Weather: Clear

File Name : 06_CRS_Al Con_E 223rd PM
Site Code : 22520115
Start Date : 2/25/2020
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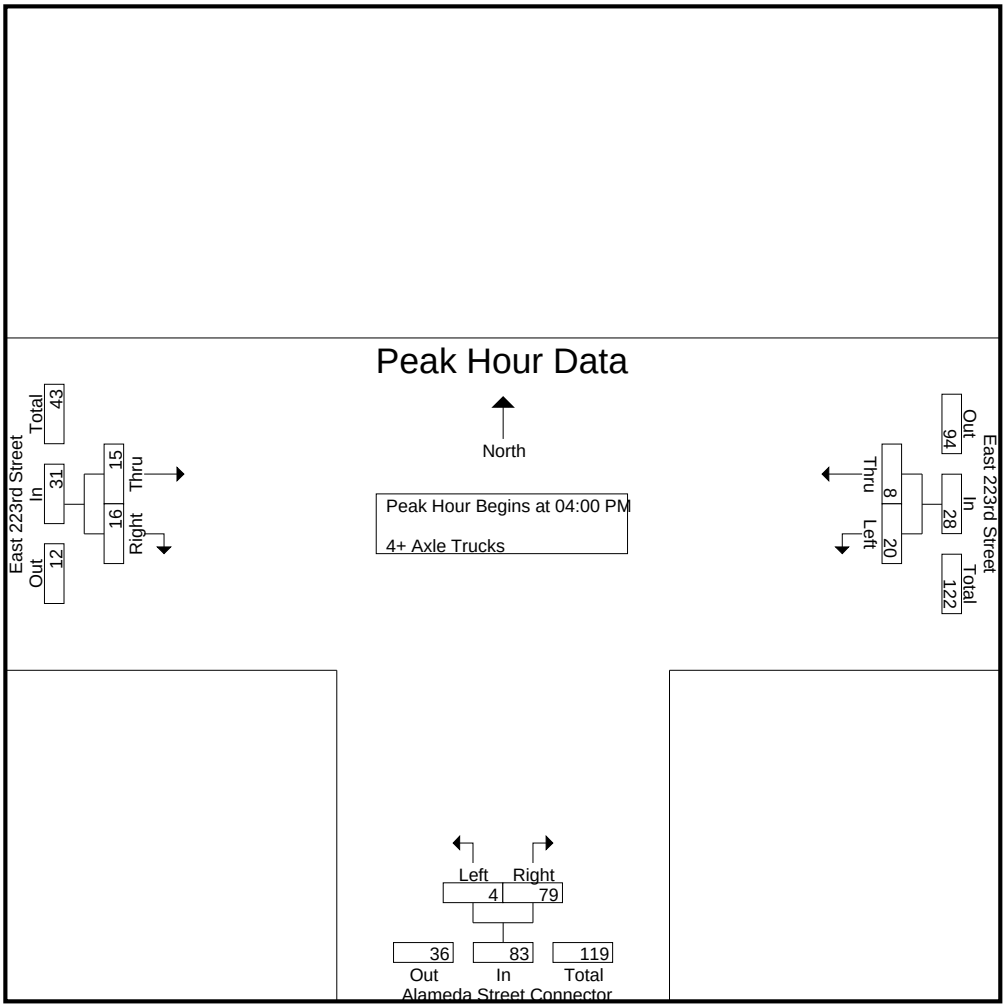

Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:00 PM		
+0 mins.	6	**3**	**9**	**2**	**23**	**25**	2	**7**	**9**
+15 mins.	**7**	1	8	1	16	17	5	3	8
+30 mins.	5	1	6	0	22	22	**6**	2	8
+45 mins.	2	3	5	1	18	19	2	4	6
Total Volume	20	8	28	4	79	83	15	16	31
% App. Total	71.4	28.6		4.8	95.2		48.4	51.6	
PHF	.714	.667	.778	.500	.859	.830	.625	.571	.861

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City of Carson
N/S: Alameda Street
E/W: Alameda Street Connector
Weather: Clear

File Name : 07_CRS_Alameda_Al Con AM
Site Code : 22520115
Start Date : 2/25/2020
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Alameda Street Southbound			Alameda Street Connector Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	16	177	193	40	32	72	69	58	127	392
07:15 AM	25	239	264	35	20	55	98	67	165	484
07:30 AM	29	260	289	50	25	75	116	73	189	553
07:45 AM	42	255	297	45	34	79	174	77	251	627
Total	112	931	1043	170	111	281	457	275	732	2056
08:00 AM	22	201	223	32	29	61	147	83	230	514
08:15 AM	23	171	194	37	23	60	137	96	233	487
08:30 AM	41	171	212	36	22	58	112	73	185	455
08:45 AM	36	178	214	30	17	47	87	63	150	411
Total	122	721	843	135	91	226	483	315	798	1867
Grand Total	234	1652	1886	305	202	507	940	590	1530	3923
Apprch %	12.4	87.6		60.2	39.8		61.4	38.6		
Total %	6	42.1	48.1	7.8	5.1	12.9	24	15	39	
Passenger Vehicles	198	1129	1327	213	162	375	678	363	1041	2743
% Passenger Vehicles	84.6	68.3	70.4	69.8	80.2	74	72.1	61.5	68	69.9
Large 2 Axle Vehicles	6	56	62	17	2	19	31	26	57	138
% Large 2 Axle Vehicles	2.6	3.4	3.3	5.6	1	3.7	3.3	4.4	3.7	3.5
3 Axle Vehicles	8	56	64	26	18	44	58	20	78	186
% 3 Axle Vehicles	3.4	3.4	3.4	8.5	8.9	8.7	6.2	3.4	5.1	4.7
4+ Axle Trucks	22	411	433	49	20	69	173	181	354	856
% 4+ Axle Trucks	9.4	24.9	23	16.1	9.9	13.6	18.4	30.7	23.1	21.8

	Alameda Street Southbound			Alameda Street Connector Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	29	**260**	289	**50**	25	75	116	73	189	553
07:45 AM	**42**	255	**297**	45	**34**	**79**	**174**	77	**251**	**627**
08:00 AM	22	201	223	32	29	61	147	83	230	514
08:15 AM	23	171	194	37	23	60	137	**96**	233	487
Total Volume	116	887	1003	164	111	275	574	329	903	2181
% App. Total	11.6	88.4		59.6	40.4		63.6	36.4		
PHF	.690	.853	.844	.820	.816	.870	.825	.857	.899	.870

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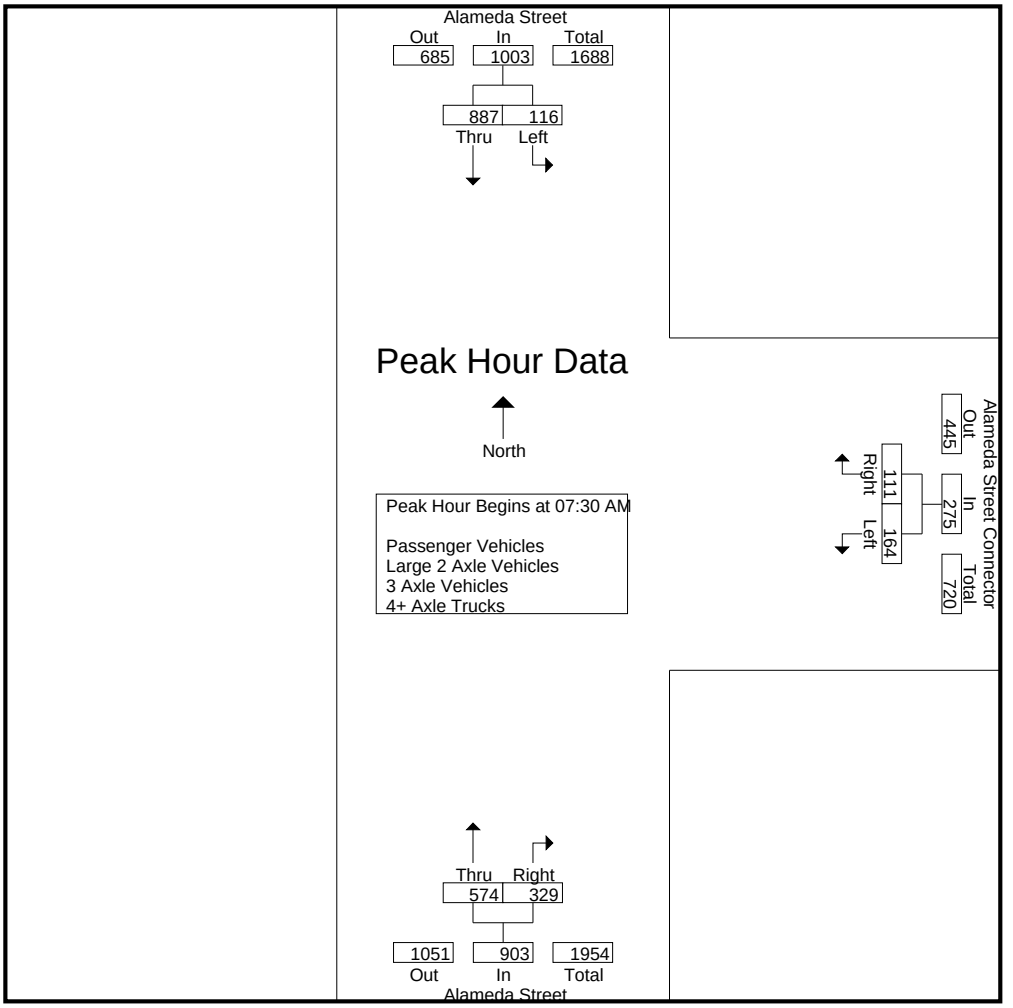

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:00 AM			07:30 AM		
+0 mins.	25	239	264	40	32	72	116	73	189
+15 mins.	29	**260**	289	35	20	55	**174**	77	**251**
+30 mins.	**42**	255	**297**	**50**	25	75	147	83	230
+45 mins.	22	201	223	45	**34**	**79**	137	**96**	233
Total Volume	118	955	1073	170	111	281	574	329	903
% App. Total	11	89		60.5	39.5		63.6	36.4	
PHF	.702	.918	.903	.850	.816	.889	.825	.857	.899

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Weather: Clear

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Groups Printed- Passenger Vehicles

	Alameda Street Southbound			Alameda Street Connector Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	15	123	138	27	23	50	51	28	79	267
07:15 AM	22	162	184	26	13	39	81	46	127	350
07:30 AM	27	192	219	35	22	57	93	42	135	411
07:45 AM	40	182	222	32	33	65	142	57	199	486
Total	104	659	763	120	91	211	367	173	540	1514
08:00 AM	20	140	160	25	21	46	120	54	174	380
08:15 AM	20	117	137	23	19	42	92	64	156	335
08:30 AM	28	106	134	27	19	46	60	42	102	282
08:45 AM	26	107	133	18	12	30	39	30	69	232
Total	94	470	564	93	71	164	311	190	501	1229
Grand Total	198	1129	1327	213	162	375	678	363	1041	2743
Apprch %	14.9	85.1		56.8	43.2		65.1	34.9		
Total %	7.2	41.2	48.4	7.8	5.9	13.7	24.7	13.2	38	

	Alameda Street Southbound			Alameda Street Connector Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	27	**192**	219	**35**	22	57	93	42	135	411
07:45 AM	**40**	182	**222**	32	**33**	**65**	**142**	57	**199**	**486**
08:00 AM	20	140	160	25	21	46	120	54	174	380
08:15 AM	20	117	137	23	19	42	92	**64**	156	335
Total Volume	107	631	738	115	95	210	447	217	664	1612
% App. Total	14.5	85.5		54.8	45.2		67.3	32.7		
PHF	.669	.822	.831	.821	.720	.808	.787	.848	.834	.829

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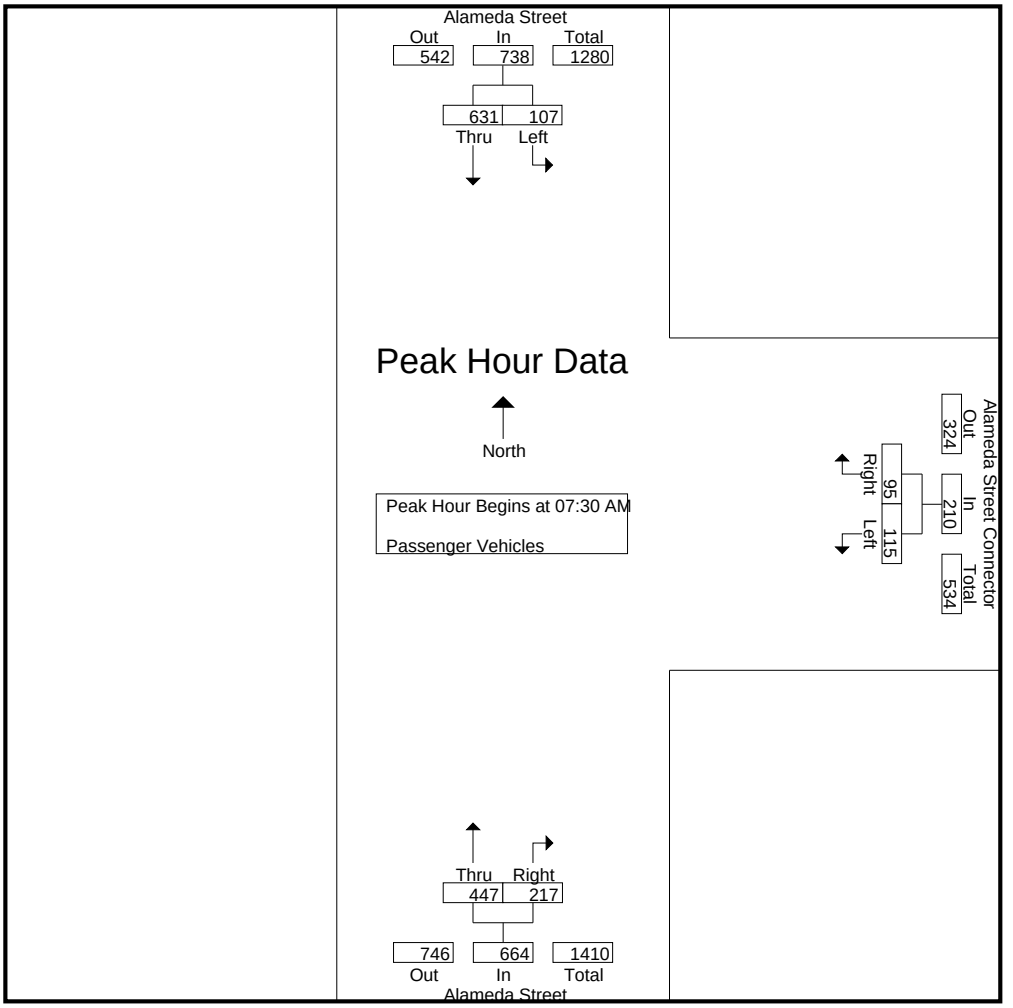

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM			07:30 AM			07:30 AM		
+0 mins.	27	**192**	219	**35**	22	57	93	42	135
+15 mins.	**40**	182	**222**	32	**33**	**65**	**142**	57	**199**
+30 mins.	20	140	160	25	21	46	120	54	174
+45 mins.	20	117	137	23	19	42	92	**64**	156
Total Volume	107	631	738	115	95	210	447	217	664
% App. Total	14.5	85.5		54.8	45.2		67.3	32.7	
PHF	.669	.822	.831	.821	.720	.808	.787	.848	.834

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Weather: Clear

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Groups Printed- Large 2 Axle Vehicles

	Alameda Street Southbound			Alameda Street Connector Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	0	4	4	2	0	2	2	3	5	11
07:15 AM	0	6	6	1	0	1	2	4	6	13
07:30 AM	0	5	5	2	0	2	2	1	3	10
07:45 AM	1	11	12	4	0	4	4	4	8	24
Total	1	26	27	9	0	9	10	12	22	58
08:00 AM	0	9	9	3	1	4	4	0	4	17
08:15 AM	1	4	5	2	1	3	6	5	11	19
08:30 AM	2	7	9	1	0	1	8	5	13	23
08:45 AM	2	10	12	2	0	2	3	4	7	21
Total	5	30	35	8	2	10	21	14	35	80
Grand Total	6	56	62	17	2	19	31	26	57	138
Apprch %	9.7	90.3		89.5	10.5		54.4	45.6		
Total %	4.3	40.6	44.9	12.3	1.4	13.8	22.5	18.8	41.3	

	Alameda Street Southbound			Alameda Street Connector Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	0	5	5	2	0	2	2	1	3	10
07:45 AM	**1**	**11**	**12**	**4**	0	**4**	4	4	8	**24**
08:00 AM	0	9	9	3	**1**	4	4	0	4	17
08:15 AM	1	4	5	2	1	3	**6**	**5**	**11**	19
Total Volume	2	29	31	11	2	13	16	10	26	70
% App. Total	6.5	93.5		84.6	15.4		61.5	38.5		
PHF	.500	.659	.646	.688	.500	.813	.667	.500	.591	.729

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E/W: Alameda Street Connector
Weather: Clear

File Name : 07_CRS_Alameda_Al Con AM
Site Code : 22520115
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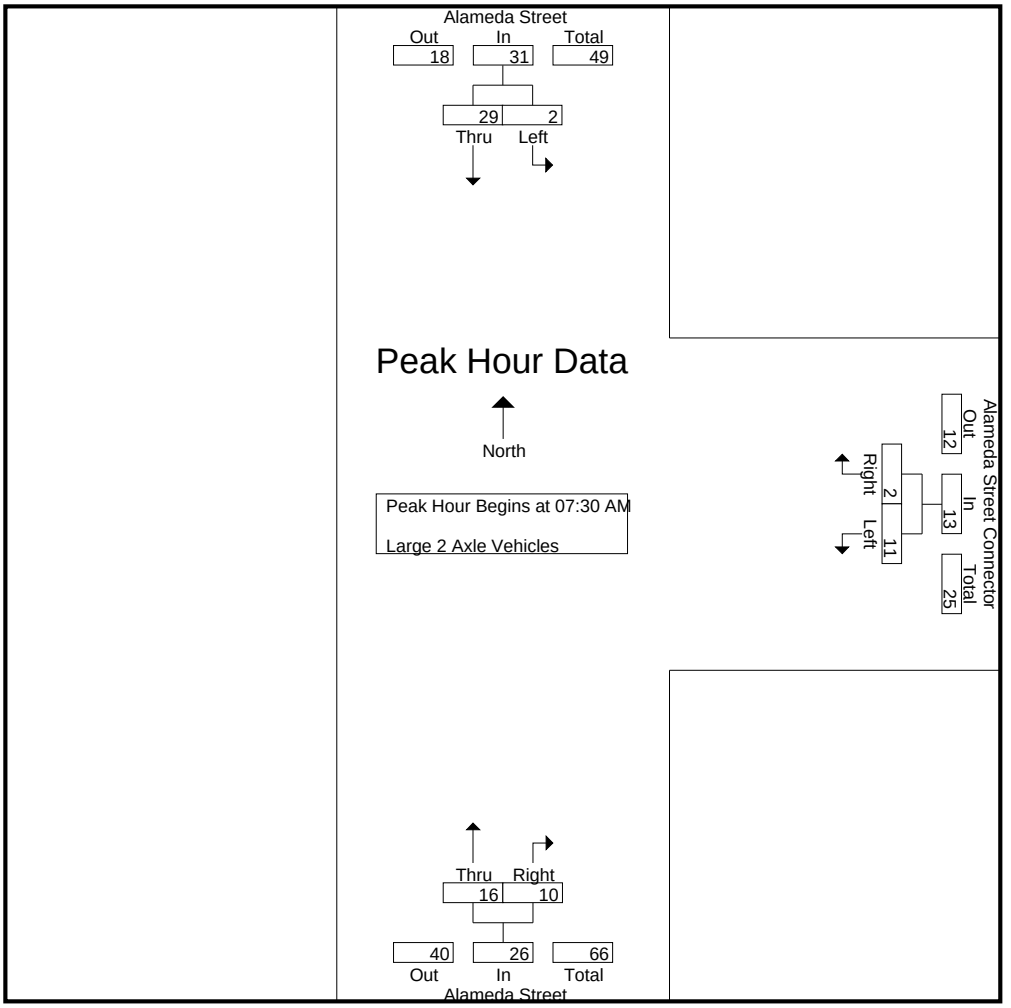

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM			07:30 AM			07:30 AM		
+0 mins.	0	5	5	2	0	2	2	1	3
+15 mins.	**1**	**11**	**12**	**4**	0	**4**	4	4	8
+30 mins.	0	9	9	3	**1**	4	4	0	4
+45 mins.	1	4	5	2	1	3	**6**	**5**	**11**
Total Volume	2	29	31	11	2	13	16	10	26
% App. Total	6.5	93.5		84.6	15.4		61.5	38.5	
PHF	.500	.659	.646	.688	.500	.813	.667	.500	.591

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City of Carson
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E/W: Alameda Street Connector
Weather: Clear

File Name : 07_CRS_Alameda_Al Con AM
Site Code : 22520115
Start Date : 2/25/2020
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Groups Printed- 3 Axle Vehicles

	Alameda Street Southbound			Alameda Street Connector Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	1	4	5	5	4	9	3	5	8	22
07:15 AM	0	6	6	5	3	8	8	3	11	25
07:30 AM	2	5	7	6	1	7	6	0	6	20
07:45 AM	0	11	11	2	0	2	7	2	9	22
Total	3	26	29	18	8	26	24	10	34	89
08:00 AM	2	9	11	0	7	7	7	2	9	27
08:15 AM	0	4	4	3	1	4	6	1	7	15
08:30 AM	2	7	9	4	1	5	5	3	8	22
08:45 AM	1	10	11	1	1	2	16	4	20	33
Total	5	30	35	8	10	18	34	10	44	97
Grand Total	8	56	64	26	18	44	58	20	78	186
Apprch %	12.5	87.5		59.1	40.9		74.4	25.6		
Total %	4.3	30.1	34.4	14	9.7	23.7	31.2	10.8	41.9	

	Alameda Street Southbound			Alameda Street Connector Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	**2**	5	7	**6**	1	**7**	6	0	6	20
07:45 AM	0	**11**	**11**	2	0	2	**7**	**2**	**9**	22
08:00 AM	2	9	11	0	**7**	7	7	2	9	**27**
08:15 AM	0	4	4	3	1	4	6	1	7	15
Total Volume	4	29	33	11	9	20	26	5	31	84
% App. Total	12.1	87.9		55	45		83.9	16.1		
PHF	.500	.659	.750	.458	.321	.714	.929	.625	.861	.778

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City of Carson
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Weather: Clear

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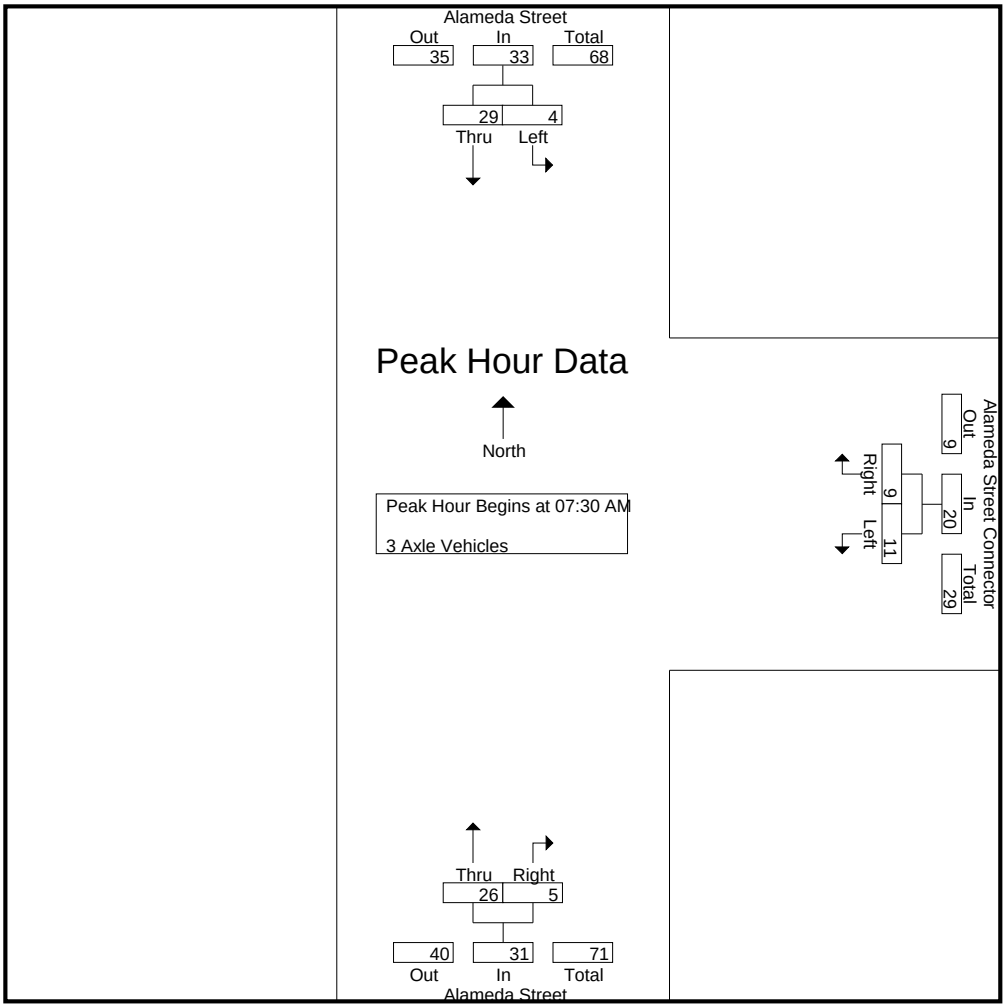

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM			07:30 AM			07:30 AM		
+0 mins.	**2**	5	7	**6**	1	**7**	6	0	6
+15 mins.	0	**11**	**11**	2	0	2	**7**	**2**	**9**
+30 mins.	2	9	11	0	**7**	7	7	2	9
+45 mins.	0	4	4	3	1	4	6	1	7
Total Volume	4	29	33	11	9	20	26	5	31
% App. Total	12.1	87.9		55	45		83.9	16.1	
PHF	.500	.659	.750	.458	.321	.714	.929	.625	.861

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Groups Printed- 4+ Axle Trucks

	Alameda Street Southbound			Alameda Street Connector Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	0	46	46	6	5	11	13	22	35	92
07:15 AM	3	65	68	3	4	7	7	14	21	96
07:30 AM	0	58	58	7	2	9	15	30	45	112
07:45 AM	1	51	52	7	1	8	21	14	35	95
Total	4	220	224	23	12	35	56	80	136	395
08:00 AM	0	43	43	4	0	4	16	27	43	90
08:15 AM	2	46	48	9	2	11	33	26	59	118
08:30 AM	9	51	60	4	2	6	39	23	62	128
08:45 AM	7	51	58	9	4	13	29	25	54	125
Total	18	191	209	26	8	34	117	101	218	461
Grand Total	22	411	433	49	20	69	173	181	354	856
Apprch %	5.1	94.9		71	29		48.9	51.1		
Total %	2.6	48	50.6	5.7	2.3	8.1	20.2	21.1	41.4	

	Alameda Street Southbound			Alameda Street Connector Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	0	**58**	**58**	7	**2**	9	15	**30**	45	112
07:45 AM	1	51	52	7	1	8	21	14	35	95
08:00 AM	0	43	43	4	0	4	16	27	43	90
08:15 AM	**2**	46	48	**9**	2	**11**	**33**	26	**59**	**118**
Total Volume	3	198	201	27	5	32	85	97	182	415
% App. Total	1.5	98.5		84.4	15.6		46.7	53.3		
PHF	.375	.853	.866	.750	.625	.727	.644	.808	.771	.879

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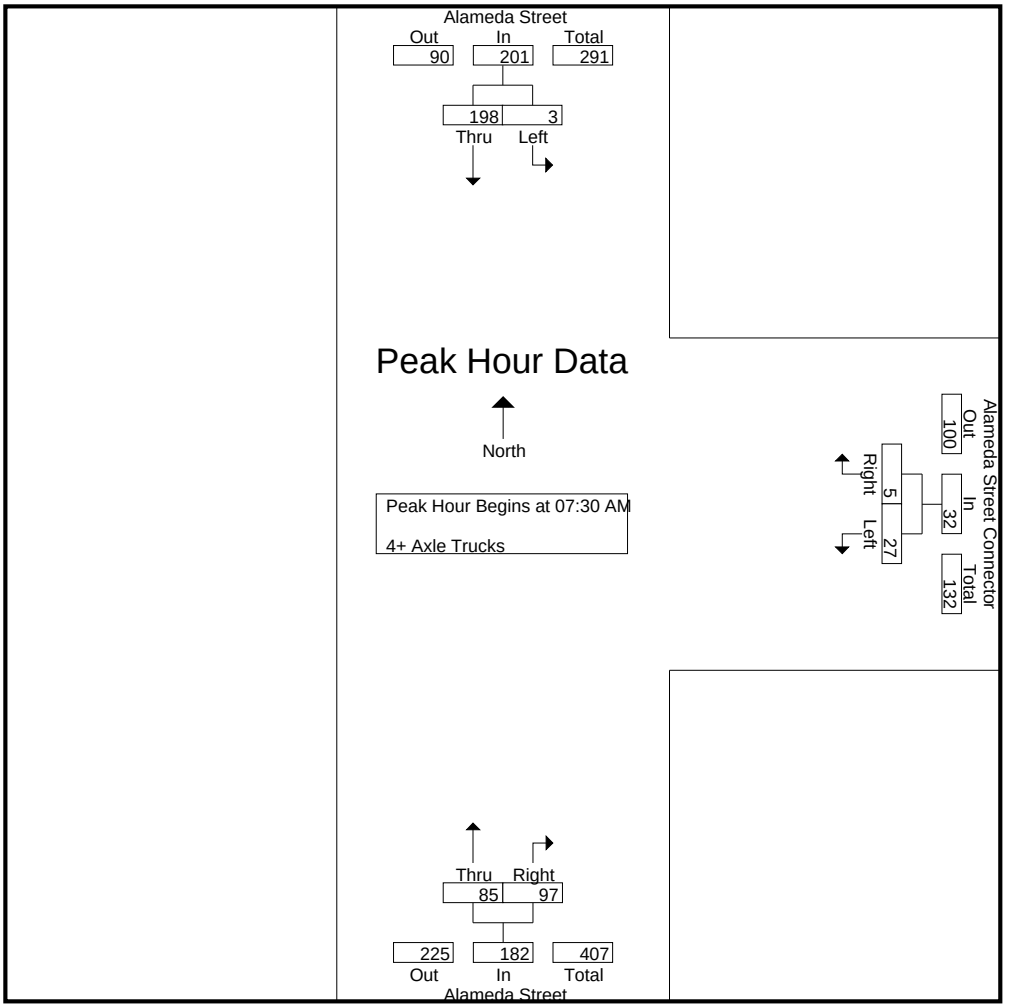

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM			07:30 AM			07:30 AM		
+0 mins.	0	**58**	**58**	7	**2**	9	15	**30**	45
+15 mins.	1	51	52	7	1	8	21	14	35
+30 mins.	0	43	43	4	0	4	16	27	43
+45 mins.	**2**	46	48	**9**	2	**11**	**33**	26	**59**
Total Volume	3	198	201	27	5	32	85	97	182
% App. Total	1.5	98.5		84.4	15.6		46.7	53.3	
PHF	.375	.853	.866	.750	.625	.727	.644	.808	.771

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City of Carson
N/S: Alameda Street
E/W: Alameda Street Connector
Weather: Clear

File Name : 07_CRS_Alameda_Al Con PM
Site Code : 22520115
Start Date : 2/25/2020
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Alameda Street Southbound			Alameda Street Connector Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	21	203	224	24	30	54	183	132	315	593
04:15 PM	24	227	251	22	21	43	180	113	293	587
04:30 PM	24	214	238	26	26	52	228	117	345	635
04:45 PM	33	234	267	30	38	68	221	109	330	665
Total	102	878	980	102	115	217	812	471	1283	2480
05:00 PM	22	231	253	16	28	44	215	106	321	618
05:15 PM	18	245	263	13	29	42	232	93	325	630
05:30 PM	20	196	216	24	23	47	200	119	319	582
05:45 PM	20	198	218	24	24	48	191	111	302	568
Total	80	870	950	77	104	181	838	429	1267	2398
Grand Total	182	1748	1930	179	219	398	1650	900	2550	4878
Apprch %	9.4	90.6		45	55		64.7	35.3		
Total %	3.7	35.8	39.6	3.7	4.5	8.2	33.8	18.5	52.3	
Passenger Vehicles	151	1284	1435	105	183	288	1248	730	1978	3701
% Passenger Vehicles	83	73.5	74.4	58.7	83.6	72.4	75.6	81.1	77.6	75.9
Large 2 Axle Vehicles	5	35	40	6	5	11	20	15	35	86
% Large 2 Axle Vehicles	2.7	2	2.1	3.4	2.3	2.8	1.2	1.7	1.4	1.8
3 Axle Vehicles	3	35	38	25	12	37	130	30	160	235
% 3 Axle Vehicles	1.6	2	2	14	5.5	9.3	7.9	3.3	6.3	4.8
4+ Axle Trucks	23	394	417	43	19	62	252	125	377	856
% 4+ Axle Trucks	12.6	22.5	21.6	24	8.7	15.6	15.3	13.9	14.8	17.5

	Alameda Street Southbound			Alameda Street Connector Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	24	214	238	26	26	52	228	**117**	**345**	635
04:45 PM	**33**	234	**267**	**30**	**38**	**68**	221	109	330	**665**
05:00 PM	22	231	253	16	28	44	215	106	321	618
05:15 PM	18	**245**	263	13	29	42	**232**	93	325	630
Total Volume	97	924	1021	85	121	206	896	425	1321	2548
% App. Total	9.5	90.5		41.3	58.7		67.8	32.2		
PHF	.735	.943	.956	.708	.796	.757	.966	.908	.957	.958

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City of Carson
N/S: Alameda Street
E/W: Alameda Street Connector
Weather: Clear

File Name : 07_CRS_Alameda_Al Con PM
Site Code : 22520115
Start Date : 2/25/2020
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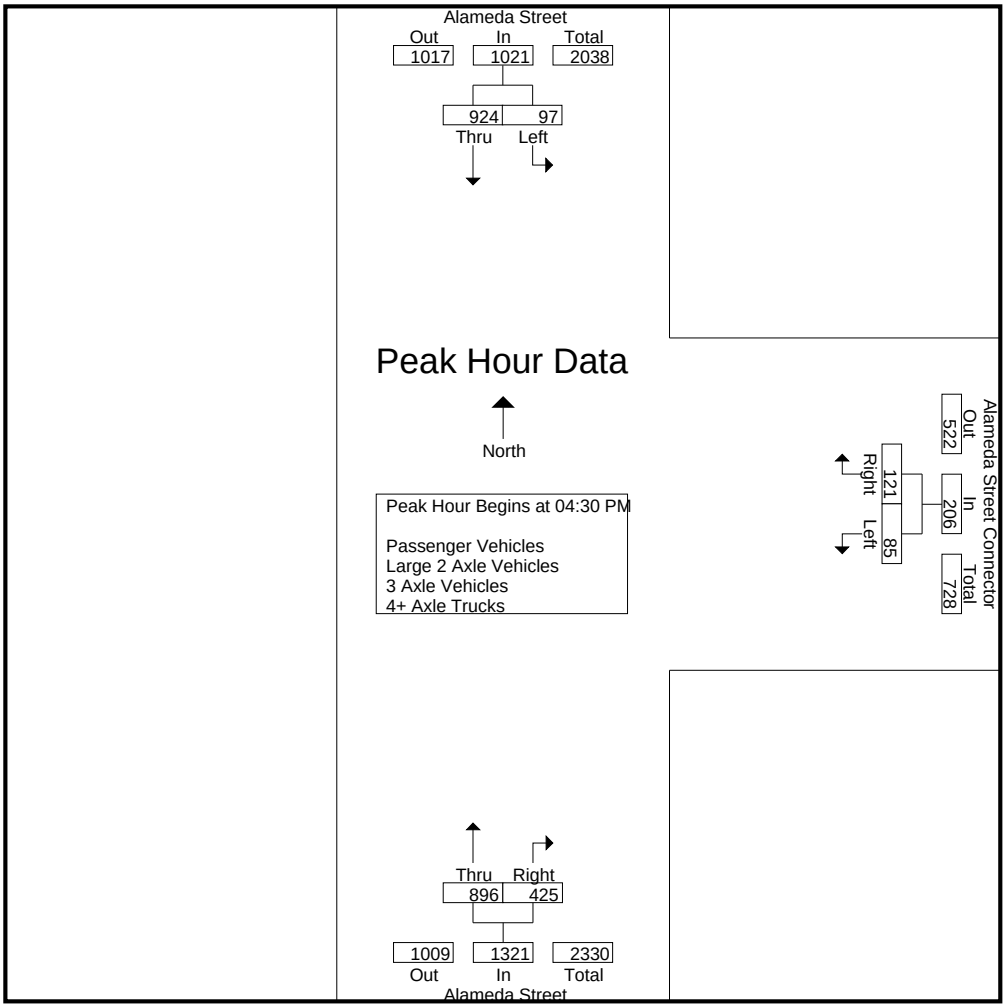

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM			04:00 PM			04:30 PM		
+0 mins.	24	214	238	24	30	54	228	**117**	**345**
+15 mins.	**33**	234	**267**	22	21	43	221	109	330
+30 mins.	22	231	253	26	26	52	215	106	321
+45 mins.	18	**245**	263	**30**	**38**	**68**	**232**	93	325
Total Volume	97	924	1021	102	115	217	896	425	1321
% App. Total	9.5	90.5		47	53		67.8	32.2	
PHF	.735	.943	.956	.850	.757	.798	.966	.908	.957

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City of Carson
N/S: Alameda Street
E/W: Alameda Street Connector
Weather: Clear

File Name : 07_CRS_Alameda_Al Con PM
Site Code : 22520115
Start Date : 2/25/2020
Page No : 1

Groups Printed- Passenger Vehicles

	Alameda Street Southbound			Alameda Street Connector Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	17	144	161	14	21	35	112	101	213	409
04:15 PM	18	181	199	14	15	29	114	92	206	434
04:30 PM	16	153	169	19	25	44	168	93	261	474
04:45 PM	30	173	203	24	34	58	171	91	262	523
Total	81	651	732	71	95	166	565	377	942	1840
05:00 PM	22	172	194	14	24	38	172	75	247	479
05:15 PM	16	183	199	6	27	33	192	78	270	502
05:30 PM	17	141	158	5	19	24	161	107	268	450
05:45 PM	15	137	152	9	18	27	158	93	251	430
Total	70	633	703	34	88	122	683	353	1036	1861
Grand Total	151	1284	1435	105	183	288	1248	730	1978	3701
Apprch %	10.5	89.5		36.5	63.5		63.1	36.9		
Total %	4.1	34.7	38.8	2.8	4.9	7.8	33.7	19.7	53.4	

	Alameda Street Southbound			Alameda Street Connector Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	16	153	169	19	25	44	168	**93**	261	474
04:45 PM	**30**	173	**203**	**24**	**34**	**58**	171	91	262	**523**
05:00 PM	22	172	194	14	24	38	172	75	247	479
05:15 PM	16	**183**	199	6	27	33	**192**	78	**270**	502
Total Volume	84	681	765	63	110	173	703	337	1040	1978
% App. Total	11	89		36.4	63.6		67.6	32.4		
PHF	.700	.930	.942	.656	.809	.746	.915	.906	.963	.946

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City of Carson
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E/W: Alameda Street Connector
Weather: Clear

File Name : 07_CRS_Alameda_Al Con PM
Site Code : 22520115
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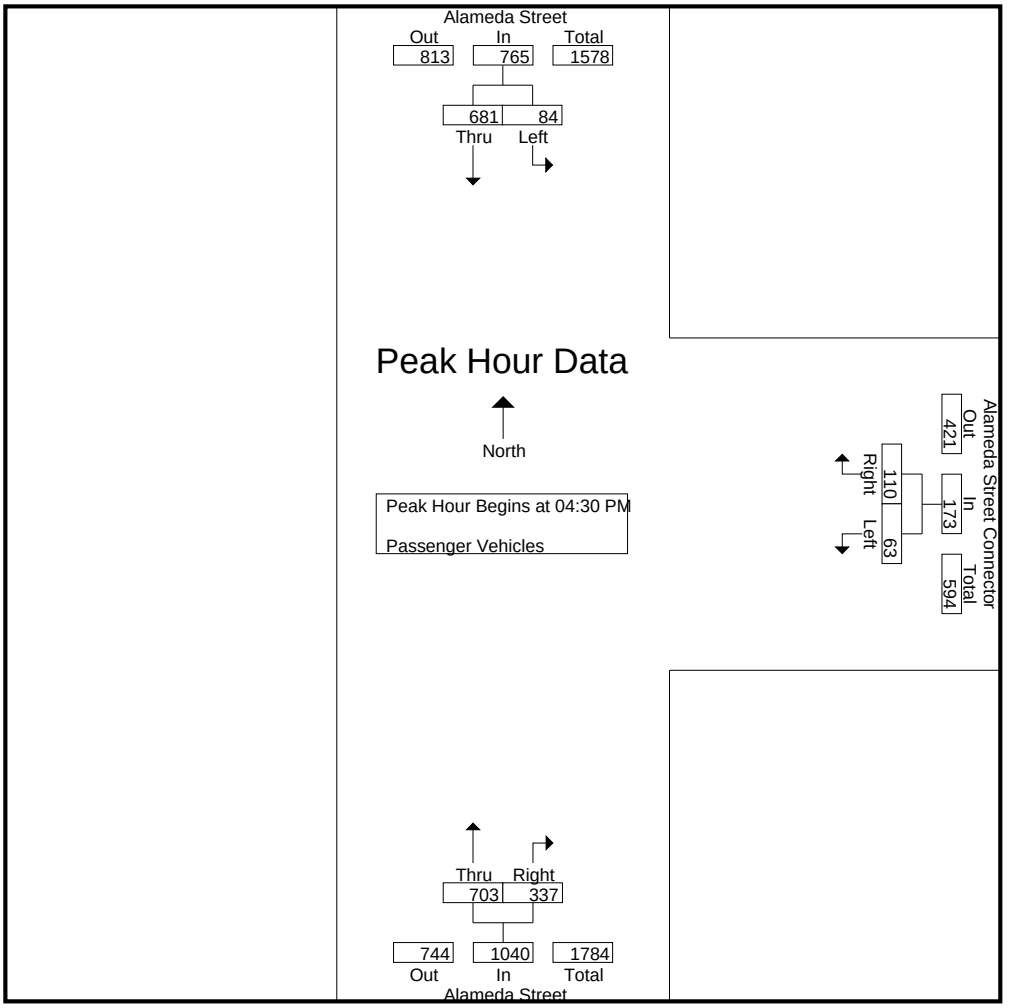

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM			04:30 PM			04:30 PM		
+0 mins.	16	153	169	19	25	44	168	**93**	261
+15 mins.	**30**	173	**203**	**24**	**34**	**58**	171	91	262
+30 mins.	22	172	194	14	24	38	172	75	247
+45 mins.	16	**183**	199	6	27	33	**192**	78	**270**
Total Volume	84	681	765	63	110	173	703	337	1040
% App. Total	11	89		36.4	63.6		67.6	32.4	
PHF	.700	.930	.942	.656	.809	.746	.915	.906	.963

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City of Carson
N/S: Alameda Street
E/W: Alameda Street Connector
Weather: Clear

File Name : 07_CRS_Alameda_Al Con PM
Site Code : 22520115
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Groups Printed- Large 2 Axle Vehicles

	Alameda Street Southbound			Alameda Street Connector Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	1	7	8	0	0	0	6	4	10	18
04:15 PM	1	4	5	0	2	2	4	2	6	13
04:30 PM	1	11	12	1	0	1	3	6	9	22
04:45 PM	2	3	5	1	0	1	2	0	2	8
Total	5	25	30	2	2	4	15	12	27	61
05:00 PM	0	3	3	0	1	1	2	0	2	6
05:15 PM	0	2	2	1	0	1	0	0	0	3
05:30 PM	0	2	2	1	0	1	1	2	3	6
05:45 PM	0	3	3	2	2	4	2	1	3	10
Total	0	10	10	4	3	7	5	3	8	25
Grand Total	5	35	40	6	5	11	20	15	35	86
Apprch %	12.5	87.5		54.5	45.5		57.1	42.9		
Total %	5.8	40.7	46.5	7	5.8	12.8	23.3	17.4	40.7	

	Alameda Street Southbound			Alameda Street Connector Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	1	**11**	**12**	**1**	0	**1**	**3**	**6**	**9**	**22**
04:45 PM	**2**	3	5	1	0	1	2	0	2	8
05:00 PM	0	3	3	0	**1**	1	2	0	2	6
05:15 PM	0	2	2	1	0	1	0	0	0	3
Total Volume	3	19	22	3	1	4	7	6	13	39
% App. Total	13.6	86.4		75	25		53.8	46.2		
PHF	.375	.432	.458	.750	.250	1.00	.583	.250	.361	.443

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City of Carson
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E/W: Alameda Street Connector
Weather: Clear

File Name : 07_CRS_Alameda_Al Con PM
Site Code : 22520115
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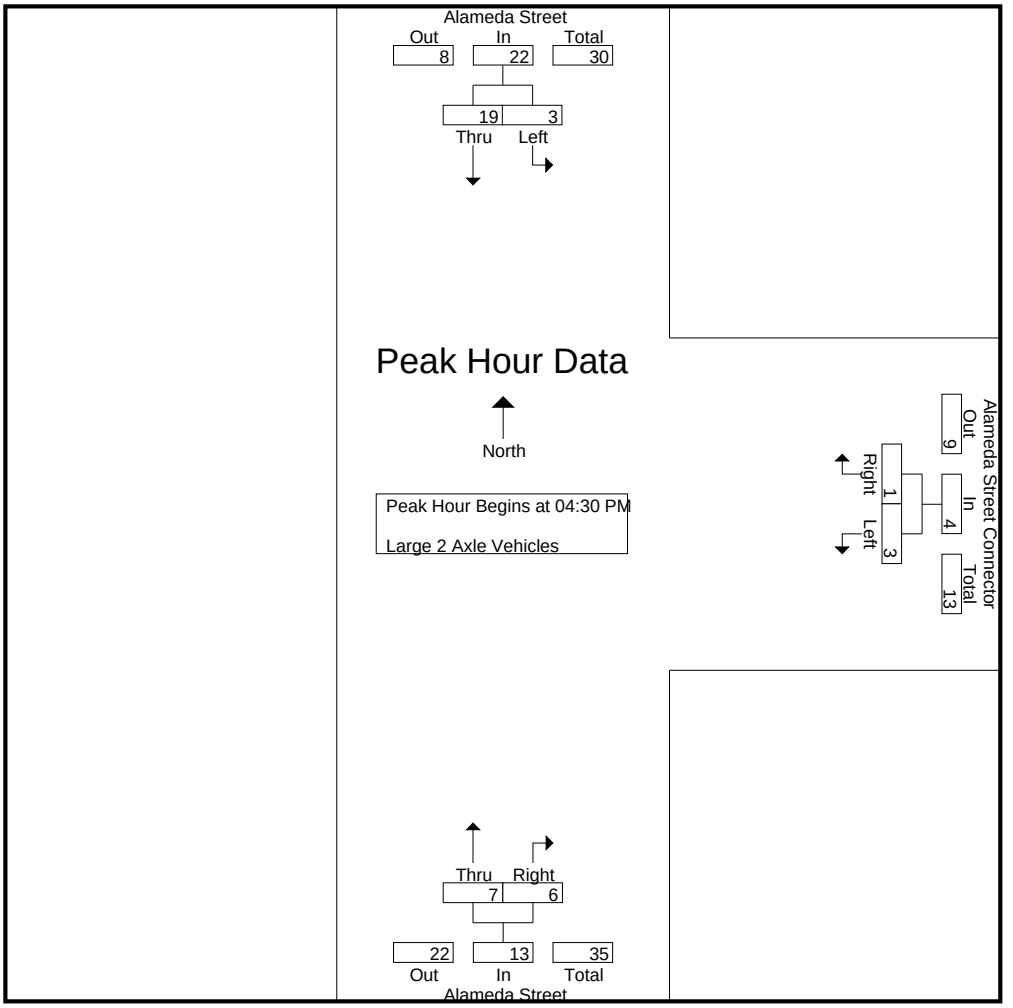

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM			04:30 PM			04:30 PM		
+0 mins.	1	**11**	**12**	**1**	0	**1**	**3**	**6**	**9**
+15 mins.	**2**	3	5	1	0	1	2	0	2
+30 mins.	0	3	3	0	**1**	1	2	0	2
+45 mins.	0	2	2	1	0	1	0	0	0
Total Volume	3	19	22	3	1	4	7	6	13
% App. Total	13.6	86.4		75	25		53.8	46.2	
PHF	.375	.432	.458	.750	.250	1.000	.583	.250	.361

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City of Carson
N/S: Alameda Street
E/W: Alameda Street Connector
Weather: Clear

File Name : 07_CRS_Alameda_Al Con PM
Site Code : 22520115
Start Date : 2/25/2020
Page No : 1

Groups Printed- 3 Axle Vehicles

	Alameda Street Southbound			Alameda Street Connector Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	0	7	7	4	2	6	20	9	29	42
04:15 PM	0	4	4	1	1	2	27	7	34	40
04:30 PM	0	11	11	0	0	0	18	1	19	30
04:45 PM	0	3	3	1	2	3	19	3	22	28
Total	0	25	25	6	5	11	84	20	104	140
05:00 PM	0	3	3	1	2	3	17	5	22	28
05:15 PM	1	2	3	2	2	4	13	3	16	23
05:30 PM	2	2	4	11	2	13	10	1	11	28
05:45 PM	0	3	3	5	1	6	6	1	7	16
Total	3	10	13	19	7	26	46	10	56	95
Grand Total	3	35	38	25	12	37	130	30	160	235
Apprch %	7.9	92.1		67.6	32.4		81.2	18.8		
Total %	1.3	14.9	16.2	10.6	5.1	15.7	55.3	12.8	68.1	

	Alameda Street Southbound			Alameda Street Connector Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	0	**11**	**11**	0	0	0	18	1	19	**30**
04:45 PM	0	3	3	1	**2**	3	**19**	3	**22**	28
05:00 PM	0	3	3	1	2	3	17	**5**	22	28
05:15 PM	**1**	2	3	**2**	2	**4**	13	3	16	23
Total Volume	1	19	20	4	6	10	67	12	79	109
% App. Total	5	95		40	60		84.8	15.2		
PHF	.250	.432	.455	.500	.750	.625	.882	.600	.898	.908

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City of Carson
N/S: Alameda Street
E/W: Alameda Street Connector
Weather: Clear

File Name : 07_CRS_Alameda_Al Con PM
Site Code : 22520115
Start Date : 2/25/2020
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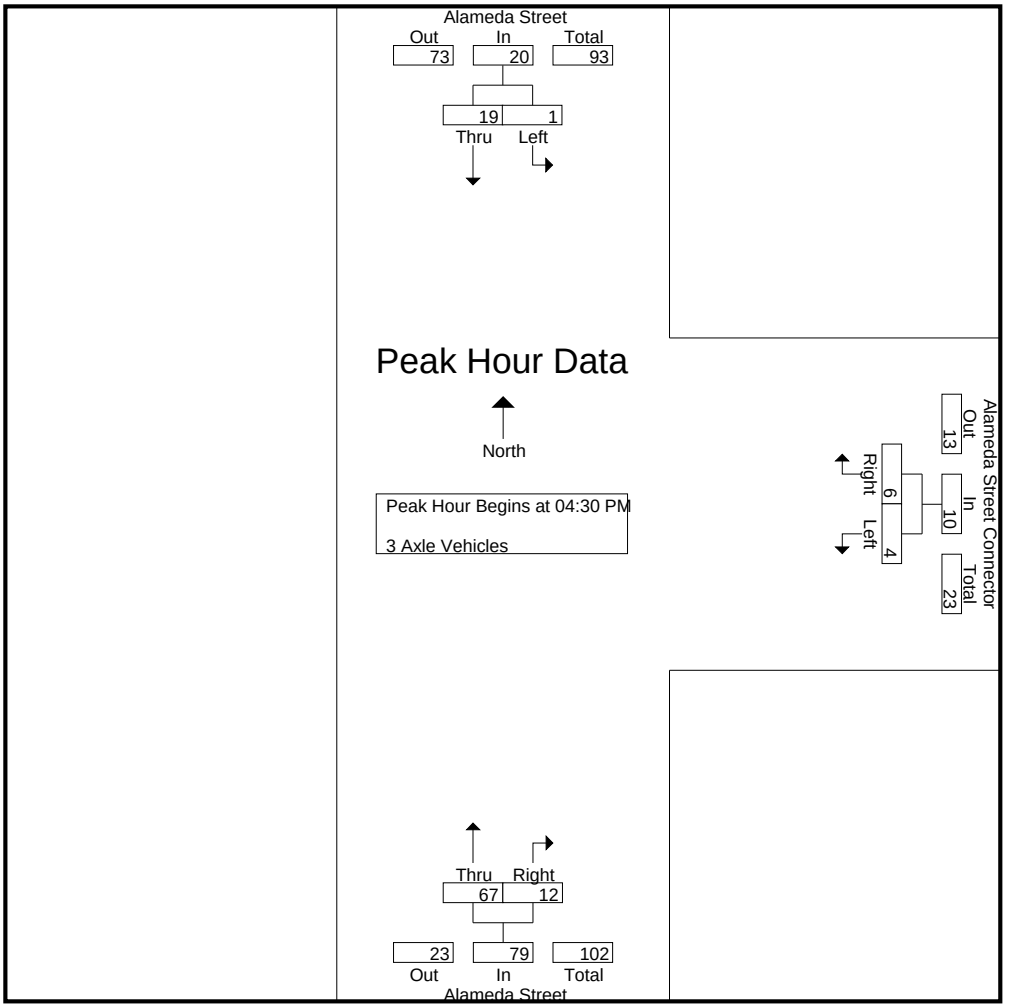

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM			04:30 PM			04:30 PM		
+0 mins.	0	**11**	**11**	0	0	0	18	1	19
+15 mins.	0	3	3	1	**2**	3	**19**	3	**22**
+30 mins.	0	3	3	1	2	3	17	**5**	22
+45 mins.	**1**	2	3	**2**	2	**4**	13	3	16
Total Volume	1	19	20	4	6	10	67	12	79
% App. Total	5	95		40	60		84.8	15.2	
PHF	.250	.432	.455	.500	.750	.625	.882	.600	.898

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City of Carson
N/S: Alameda Street
E/W: Alameda Street Connector
Weather: Clear

File Name : 07_CRS_Alameda_Al Con PM
Site Code : 22520115
Start Date : 2/25/2020
Page No : 1

Groups Printed- 4+ Axle Trucks

	Alameda Street Southbound			Alameda Street Connector Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	3	45	48	6	7	13	45	18	63	124
04:15 PM	5	38	43	7	3	10	35	12	47	100
04:30 PM	7	39	46	6	1	7	39	17	56	109
04:45 PM	1	55	56	4	2	6	29	15	44	106
Total	16	177	193	23	13	36	148	62	210	439
05:00 PM	0	53	53	1	1	2	24	26	50	105
05:15 PM	1	58	59	4	0	4	27	12	39	102
05:30 PM	1	51	52	7	2	9	28	9	37	98
05:45 PM	5	55	60	8	3	11	25	16	41	112
Total	7	217	224	20	6	26	104	63	167	417
Grand Total	23	394	417	43	19	62	252	125	377	856
Apprch %	5.5	94.5		69.4	30.6		66.8	33.2		
Total %	2.7	46	48.7	5	2.2	7.2	29.4	14.6	44	

	Alameda Street Southbound			Alameda Street Connector Westbound			Alameda Street Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	**7**	39	46	**6**	1	**7**	**39**	17	**56**	**109**
04:45 PM	1	55	56	4	**2**	6	29	15	44	106
05:00 PM	0	53	53	1	1	2	24	**26**	50	105
05:15 PM	1	**58**	**59**	4	0	4	27	12	39	102
Total Volume	9	205	214	15	4	19	119	70	189	422
% App. Total	4.2	95.8		78.9	21.1		63	37		
PHF	.321	.884	.907	.625	.500	.679	.763	.673	.844	.968

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City of Carson
N/S: Alameda Street
E/W: Alameda Street Connector
Weather: Clear

File Name : 07_CRS_Alameda_Al Con PM
Site Code : 22520115
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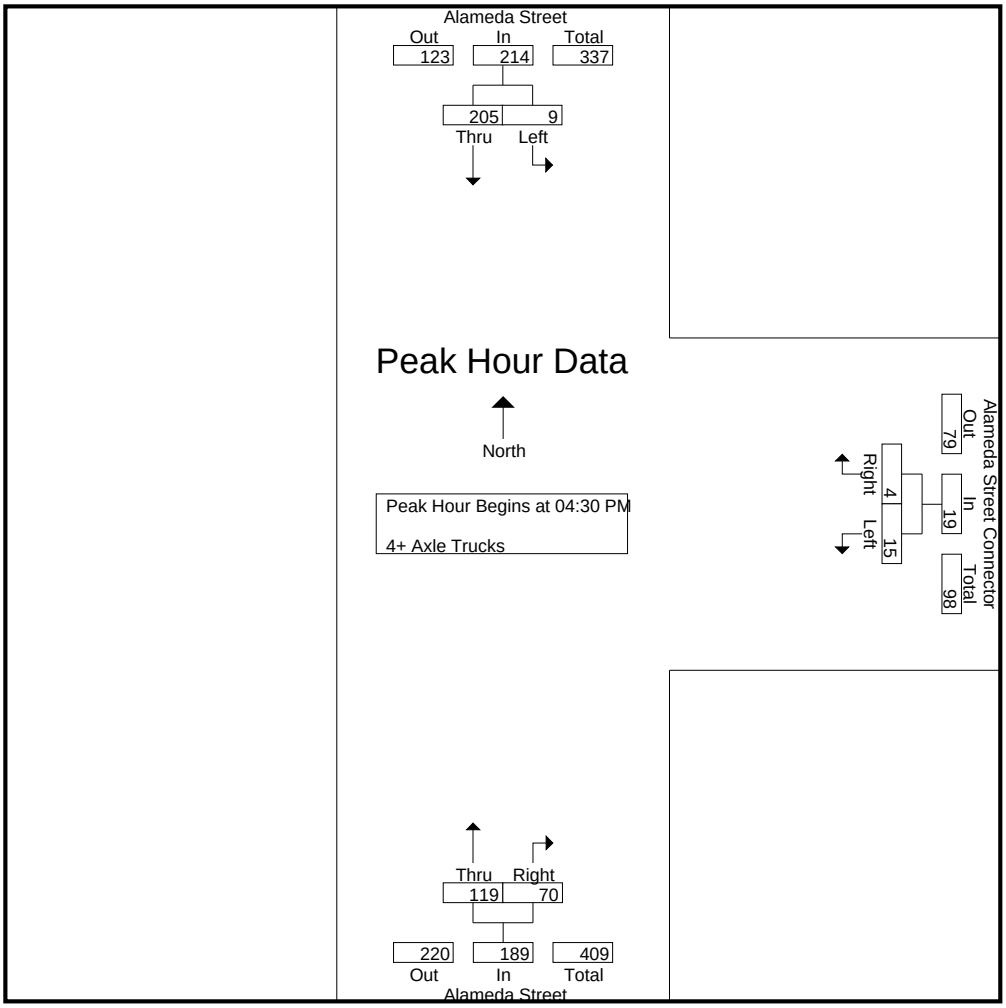

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM			04:30 PM			04:30 PM		
+0 mins.	**7**	39	46	**6**	1	**7**	**39**	17	**56**
+15 mins.	1	55	56	4	**2**	6	29	15	44
+30 mins.	0	53	53	1	1	2	24	**26**	50
+45 mins.	1	**58**	**59**	4	0	4	27	12	39
Total Volume	9	205	214	15	4	19	119	70	189
% App. Total	4.2	95.8		78.9	21.1		63	37	
PHF	.321	.884	.907	.625	.500	.679	.763	.673	.844

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City of Carson
N/S: Driveway
E/W: East 223rd Street
Weather: Clear

File Name : 08_CRS_DW_E 223rd AM
Site Code : 22520115
Start Date : 2/25/2020
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Driveway Southbound				East 223rd Street Westbound				Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	1	1	0	166	0	166	0	0	0	0	0	138	0	138	305
07:15 AM	0	0	0	0	1	178	1	180	0	0	0	0	0	150	0	150	330
07:30 AM	0	0	1	1	0	208	0	208	0	0	0	0	1	231	0	232	441
07:45 AM	0	0	1	1	0	213	2	215	0	0	0	0	0	179	0	179	395
Total	0	0	3	3	1	765	3	769	0	0	0	0	1	698	0	699	1471
08:00 AM	0	0	1	1	0	169	0	169	0	0	0	0	1	151	0	152	322
08:15 AM	0	0	0	0	0	168	0	168	0	0	0	0	4	188	0	192	360
08:30 AM	0	0	2	2	0	173	1	174	0	0	1	1	3	166	1	170	347
08:45 AM	2	0	0	2	0	156	0	156	0	0	0	0	5	116	0	121	279
Total	2	0	3	5	0	666	1	667	0	0	1	1	13	621	1	635	1308
Grand Total	2	0	6	8	1	1431	4	1436	0	0	1	1	14	1319	1	1334	2779
Apprch %	25	0	75		0.1	99.7	0.3		0	0	100		1	98.9	0.1		
Total %	0.1	0	0.2	0.3	0	51.5	0.1	51.7	0	0	0	0	0.5	47.5	0	48	
Passenger Vehicles	2	0	5	7	1	1361	4	1366	0	0	1	1	14	1201	1	1216	2590
% Passenger Vehicles	100	0	83.3	87.5	100	95.1	100	95.1	0	0	100	100	100	91.1	100	91.2	93.2
Large 2 Axle Vehicles	0	0	1	1	0	26	0	26	0	0	0	0	0	26	0	26	53
% Large 2 Axle Vehicles	0	0	16.7	12.5	0	1.8	0	1.8	0	0	0	0	0	2	0	1.9	1.9
3 Axle Vehicles	0	0	0	0	0	19	0	19	0	0	0	0	0	31	0	31	50
% 3 Axle Vehicles	0	0	0	0	0	1.3	0	1.3	0	0	0	0	0	2.4	0	2.3	1.8
4+ Axle Trucks	0	0	0	0	0	25	0	25	0	0	0	0	0	61	0	61	86
% 4+ Axle Trucks	0	0	0	0	0	1.7	0	1.7	0	0	0	0	0	4.6	0	4.6	3.1

	Driveway Southbound				East 223rd Street Westbound				Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	**1**	**1**	0	208	0	208	0	0	0	0	1	**231**	0	**232**	**441**
07:45 AM	0	0	1	1	0	**213**	**2**	**215**	0	0	0	0	0	179	0	179	395
08:00 AM	0	0	1	1	0	169	0	169	0	0	0	0	1	151	0	152	322
08:15 AM	0	0	0	0	0	168	0	168	0	0	0	0	**4**	188	0	192	360
Total Volume	0	0	3	3	0	758	2	760	0	0	0	0	6	749	0	755	1518
% App. Total	0	0	100		0	99.7	0.3		0	0	0		0.8	99.2	0		
PHF	.000	.000	.750	.750	.000	.890	.250	.884	.000	.000	.000	.000	.375	.811	.000	.814	.861

Counts Unlimited
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City of Carson
N/S: Driveway
E/W: East 223rd Street
Weather: Clear

File Name : 08_CRS_DW_E 223rd AM
Site Code : 22520115
Start Date : 2/25/2020
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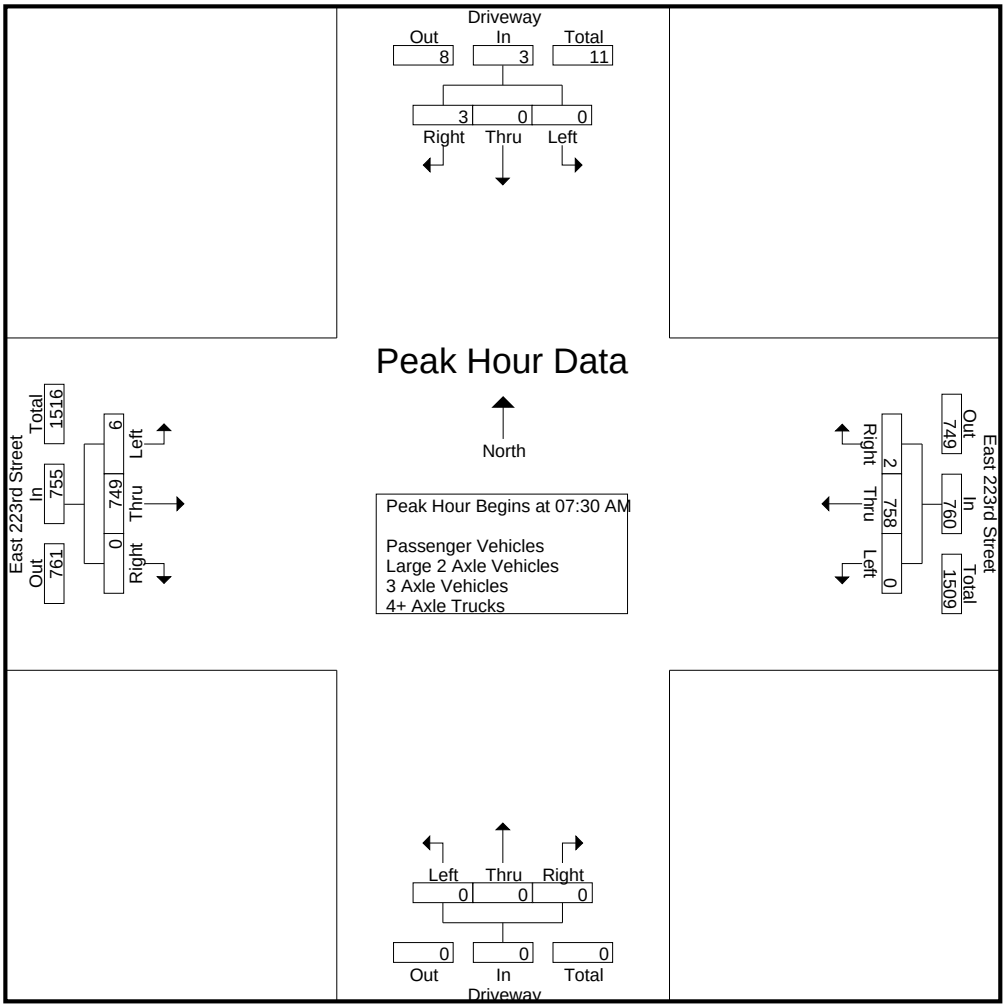

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:15 AM				07:45 AM				07:30 AM			
+0 mins.	0	0	1	1	**1**	178	1	180	0	0	0	0	1	**231**	0	**232**
+15 mins.	0	0	0	0	0	208	0	208	0	0	0	0	0	179	0	179
+30 mins.	0	0	**2**	**2**	0	**213**	**2**	**215**	0	0	0	0	1	151	0	152
+45 mins.	**2**	0	0	2	0	169	0	169	0	0	**1**	**1**	**4**	188	0	192
Total Volume	2	0	3	5	1	768	3	772	0	0	1	1	6	749	0	755
% App. Total	40	0	60		0.1	99.5	0.4		0	0	100		0.8	99.2	0	
PHF	.250	.000	.375	.625	.250	.901	.375	.898	.000	.000	.250	.250	.375	.811	.000	.814

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City of Carson
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E/W: East 223rd Street
Weather: Clear

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Groups Printed- Passenger Vehicles

	Driveway Southbound				East 223rd Street Westbound				Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	1	1	0	157	0	157	0	0	0	0	0	124	0	124	282
07:15 AM	0	0	0	0	1	171	1	173	0	0	0	0	0	137	0	137	310
07:30 AM	0	0	0	0	0	205	0	205	0	0	0	0	1	214	0	215	420
07:45 AM	0	0	1	1	0	207	2	209	0	0	0	0	0	167	0	167	377
Total	0	0	2	2	1	740	3	744	0	0	0	0	1	642	0	643	1389
08:00 AM	0	0	1	1	0	160	0	160	0	0	0	0	1	136	0	137	298
08:15 AM	0	0	0	0	0	155	0	155	0	0	0	0	4	171	0	175	330
08:30 AM	0	0	2	2	0	157	1	158	0	0	1	1	3	145	1	149	310
08:45 AM	2	0	0	2	0	149	0	149	0	0	0	0	5	107	0	112	263
Total	2	0	3	5	0	621	1	622	0	0	1	1	13	559	1	573	1201
Grand Total	2	0	5	7	1	1361	4	1366	0	0	1	1	14	1201	1	1216	2590
Apprch %	28.6	0	71.4		0.1	99.6	0.3		0	0	100		1.2	98.8	0.1		
Total %	0.1	0	0.2	0.3	0	52.5	0.2	52.7	0	0	0	0	0.5	46.4	0	46.9	

	Driveway Southbound				East 223rd Street Westbound				Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	205	0	205	0	0	0	0	1	**214**	0	**215**	**420**
07:45 AM	0	0	**1**	**1**	0	**207**	**2**	**209**	0	0	0	0	0	167	0	167	377
08:00 AM	0	0	1	1	0	160	0	160	0	0	0	0	1	136	0	137	298
08:15 AM	0	0	0	0	0	155	0	155	0	0	0	0	**4**	171	0	175	330
Total Volume	0	0	2	2	0	727	2	729	0	0	0	0	6	688	0	694	1425
% App. Total	0	0	100		0	99.7	0.3		0	0	0		0.9	99.1	0		
PHF	.000	.000	.500	.500	.000	.878	.250	.872	.000	.000	.000	.000	.375	.804	.000	.807	.848

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City of Carson
N/S: Driveway
E/W: East 223rd Street
Weather: Clear

File Name : 08_CRS_DW_E 223rd AM
Site Code : 22520115
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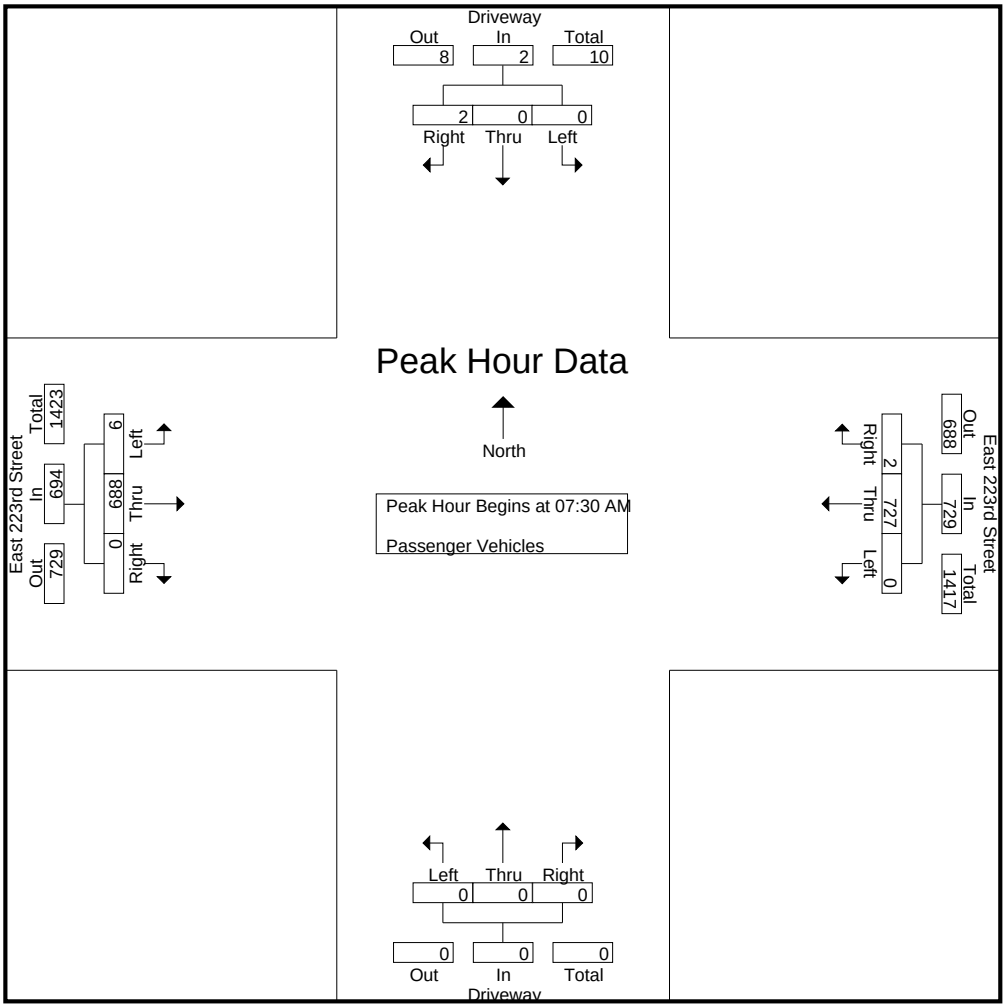

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	205	0	205	0	0	0	0	1	**214**	0	**215**
+15 mins.	0	0	**1**	**1**	0	**207**	**2**	**209**	0	0	0	0	0	167	0	167
+30 mins.	0	0	1	1	0	160	0	160	0	0	0	0	1	136	0	137
+45 mins.	0	0	0	0	0	155	0	155	0	0	0	0	**4**	171	0	175
Total Volume	0	0	2	2	0	727	2	729	0	0	0	0	6	688	0	694
% App. Total	0	0	100		0	99.7	0.3		0	0	0		0.9	99.1	0	
PHF	.000	.000	.500	.500	.000	.878	.250	.872	.000	.000	.000	.000	.375	.804	.000	.807

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City of Carson
N/S: Driveway
E/W: East 223rd Street
Weather: Clear

File Name : 08_CRS_DW_E 223rd AM
Site Code : 22520115
Start Date : 2/25/2020
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Groups Printed- Large 2 Axle Vehicles

	Driveway Southbound				East 223rd Street Westbound				Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	4	0	4	0	0	0	0	0	1	0	1	5
07:15 AM	0	0	0	0	0	3	0	3	0	0	0	0	0	1	0	1	4
07:30 AM	0	0	1	1	0	0	0	0	0	0	0	0	0	6	0	6	7
07:45 AM	0	0	0	0	0	4	0	4	0	0	0	0	0	2	0	2	6
Total	0	0	1	1	0	11	0	11	0	0	0	0	0	10	0	10	22
08:00 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	3	0	3	5
08:15 AM	0	0	0	0	0	5	0	5	0	0	0	0	0	5	0	5	10
08:30 AM	0	0	0	0	0	5	0	5	0	0	0	0	0	5	0	5	10
08:45 AM	0	0	0	0	0	3	0	3	0	0	0	0	0	3	0	3	6
Total	0	0	0	0	0	15	0	15	0	0	0	0	0	16	0	16	31
Grand Total	0	0	1	1	0	26	0	26	0	0	0	0	0	26	0	26	53
Apprch %	0	0	100		0	100	0		0	0	0		0	100	0		
Total %	0	0	1.9	1.9	0	49.1	0	49.1	0	0	0	0	0	49.1	0	49.1	

	Driveway Southbound				East 223rd Street Westbound				Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	**1**	**1**	0	0	0	0	0	0	0	0	0	**6**	0	**6**	7
07:45 AM	0	0	0	0	0	4	0	4	0	0	0	0	0	2	0	2	6
08:00 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	3	0	3	5
08:15 AM	0	0	0	0	0	**5**	0	**5**	0	0	0	0	0	5	0	5	**10**
Total Volume	0	0	1	1	0	11	0	11	0	0	0	0	0	16	0	16	28
% App. Total	0	0	100		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.250	.250	.000	.550	.000	.550	.000	.000	.000	.000	.000	.667	.000	.667	.700

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City of Carson
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E/W: East 223rd Street
Weather: Clear

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Site Code : 22520115
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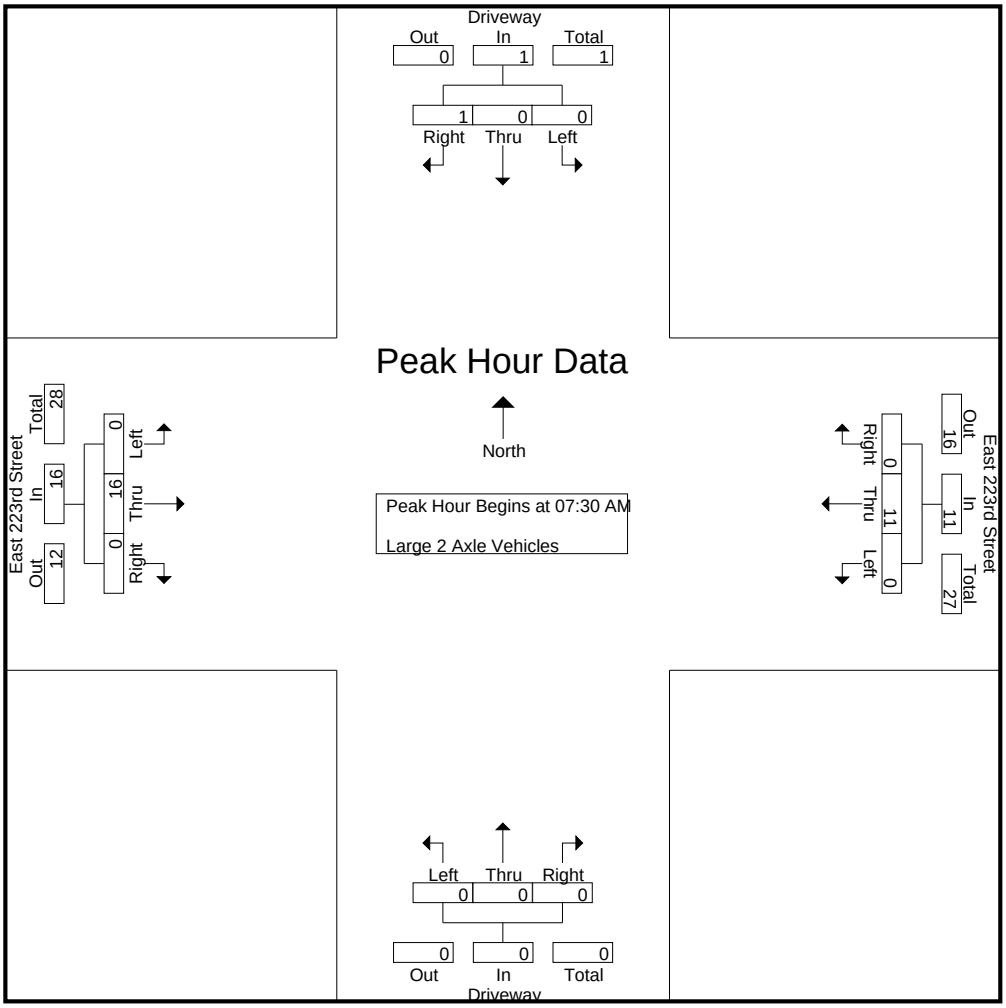

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	**1**	**1**	0	0	0	0	0	0	0	0	0	**6**	0	**6**
+15 mins.	0	0	0	0	0	4	0	4	0	0	0	0	0	2	0	2
+30 mins.	0	0	0	0	0	2	0	2	0	0	0	0	0	3	0	3
+45 mins.	0	0	0	0	0	**5**	0	**5**	0	0	0	0	0	5	0	5
Total Volume	0	0	1	1	0	11	0	11	0	0	0	0	0	16	0	16
% App. Total	0	0	100		0	100	0		0	0	0		0	100	0	
PHF	.000	.000	.250	.250	.000	.550	.000	.550	.000	.000	.000	.000	.000	.667	.000	.667

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City of Carson
N/S: Driveway
E/W: East 223rd Street
Weather: Clear

File Name : 08_CRS_DW_E 223rd AM
Site Code : 22520115
Start Date : 2/25/2020
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Groups Printed- 3 Axle Vehicles

	Driveway Southbound				East 223rd Street Westbound				Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	3	0	3	0	0	0	0	0	3	0	3	6
07:15 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	7	0	7	9
07:30 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	3	0	3	5
07:45 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	4	0	4	6
Total	0	0	0	0	0	9	0	9	0	0	0	0	0	17	0	17	26
08:00 AM	0	0	0	0	0	5	0	5	0	0	0	0	0	6	0	6	11
08:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	2	3
08:30 AM	0	0	0	0	0	4	0	4	0	0	0	0	0	4	0	4	8
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
Total	0	0	0	0	0	10	0	10	0	0	0	0	0	14	0	14	24
Grand Total	0	0	0	0	0	19	0	19	0	0	0	0	0	31	0	31	50
Apprch %	0	0	0		0	100	0		0	0	0		0	100	0		
Total %	0	0	0	0	0	38	0	38	0	0	0	0	0	62	0	62	

	Driveway Southbound				East 223rd Street Westbound				Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	3	0	3	5
07:45 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	4	0	4	6
08:00 AM	0	0	0	0	0	**5**	0	**5**	0	0	0	0	0	**6**	0	**6**	**11**
08:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	2	3
Total Volume	0	0	0	0	0	10	0	10	0	0	0	0	0	15	0	15	25
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.500	.000	.500	.000	.000	.000	.000	.000	.625	.000	.625	.568

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City of Carson
N/S: Driveway
E/W: East 223rd Street
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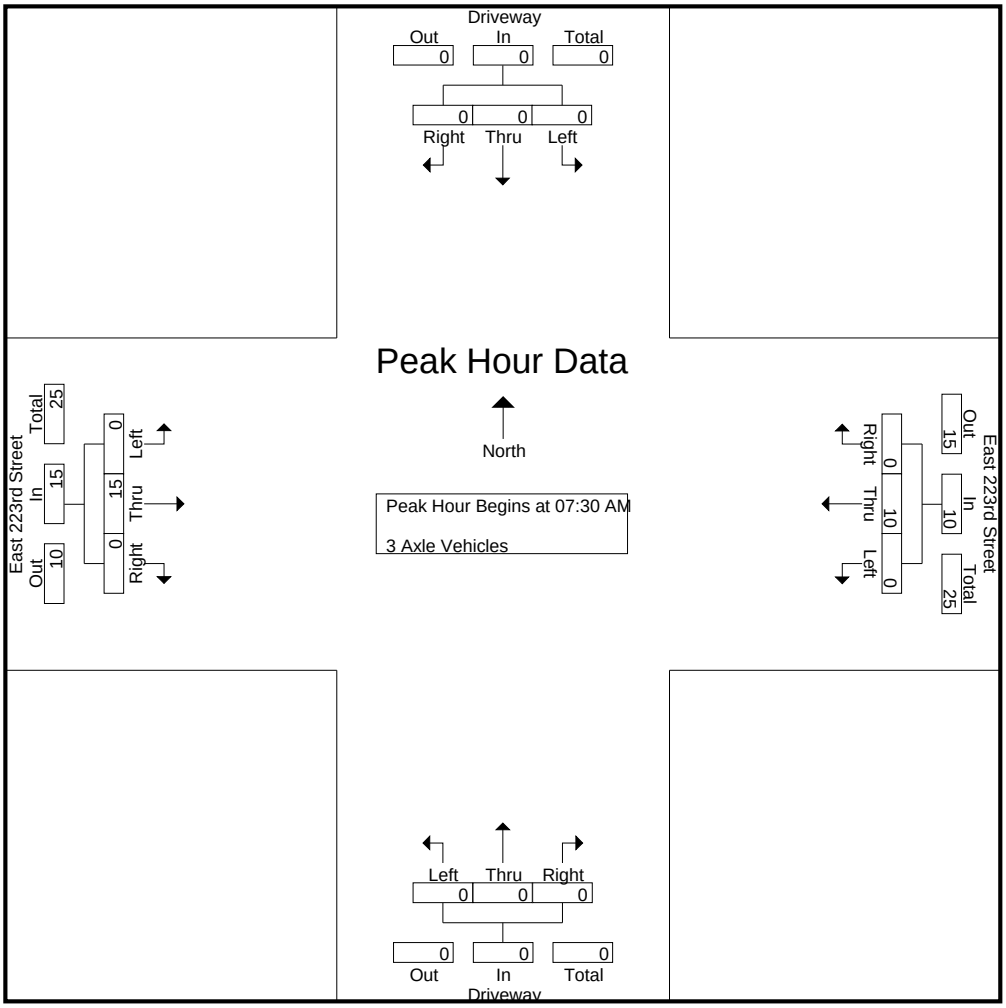

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	2	0	2	0	0	0	0	0	3	0	3
+15 mins.	0	0	0	0	0	2	0	2	0	0	0	0	0	4	0	4
+30 mins.	0	0	0	0	0	**5**	0	**5**	0	0	0	0	0	**6**	0	**6**
+45 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	2
Total Volume	0	0	0	0	0	10	0	10	0	0	0	0	0	15	0	15
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0	
PHF	.000	.000	.000	.000	.000	.500	.000	.500	.000	.000	.000	.000	.000	.625	.000	.625

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City of Carson
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Groups Printed- 4+ Axle Trucks

	Driveway Southbound				East 223rd Street Westbound				Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	10	0	10	12
07:15 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	5	0	5	7
07:30 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	8	0	8	9
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	6	6
Total	0	0	0	0	0	5	0	5	0	0	0	0	0	29	0	29	34
08:00 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	6	0	6	8
08:15 AM	0	0	0	0	0	7	0	7	0	0	0	0	0	10	0	10	17
08:30 AM	0	0	0	0	0	7	0	7	0	0	0	0	0	12	0	12	19
08:45 AM	0	0	0	0	0	4	0	4	0	0	0	0	0	4	0	4	8
Total	0	0	0	0	0	20	0	20	0	0	0	0	0	32	0	32	52
Grand Total	0	0	0	0	0	25	0	25	0	0	0	0	0	61	0	61	86
Apprch %	0	0	0		0	100	0		0	0	0		0	100	0		
Total %	0	0	0	0	0	29.1	0	29.1	0	0	0	0	0	70.9	0	70.9	

	Driveway Southbound				East 223rd Street Westbound				Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	8	0	8	9
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	6	6
08:00 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	6	0	6	8
08:15 AM	0	0	0	0	0	**7**	0	**7**	0	0	0	0	0	**10**	0	**10**	**17**
Total Volume	0	0	0	0	0	10	0	10	0	0	0	0	0	30	0	30	40
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.357	.000	.357	.000	.000	.000	.000	.000	.750	.000	.750	.588

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City of Carson
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E/W: East 223rd Street
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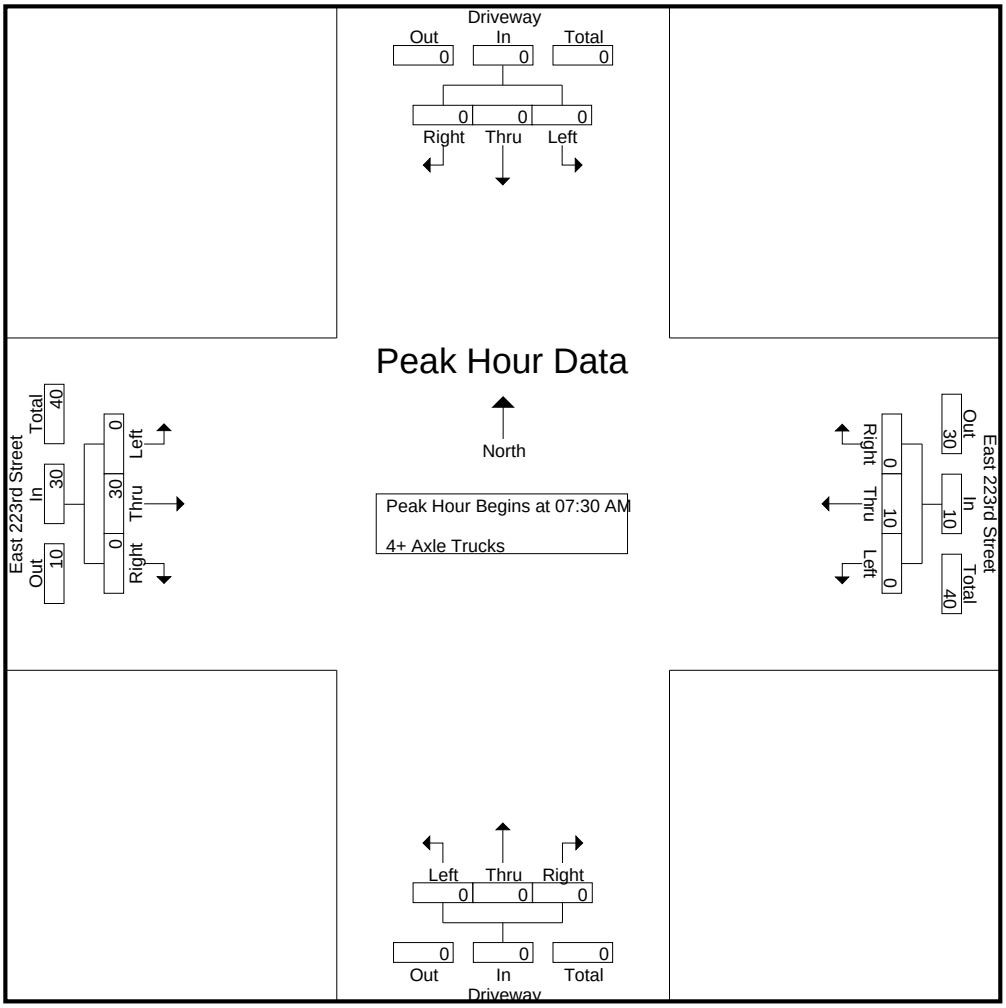

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	8	0	8
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	6
+30 mins.	0	0	0	0	0	2	0	2	0	0	0	0	0	6	0	6
+45 mins.	0	0	0	0	0	**7**	0	**7**	0	0	0	0	0	**10**	0	**10**
Total Volume	0	0	0	0	0	10	0	10	0	0	0	0	0	30	0	30
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0	
PHF	.000	.000	.000	.000	.000	.357	.000	.357	.000	.000	.000	.000	.000	.750	.000	.750

Counts Unlimited
PO Box 1178
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City of Carson
N/S: Driveway
E/W: East 223rd Street
Weather: Clear

File Name : 08_CRS_DW_E 223rd PM
Site Code : 22520115
Start Date : 2/25/2020
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Driveway Southbound				East 223rd Street Westbound				Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	1	0	1	2	0	107	0	107	0	0	0	0	0	309	0	309	418
04:15 PM	0	0	1	1	0	71	2	73	0	0	0	0	1	351	0	352	426
04:30 PM	1	0	1	2	0	118	0	118	0	0	0	0	0	312	0	312	432
04:45 PM	0	0	1	1	0	96	0	96	0	0	0	0	0	337	0	337	434
Total	2	0	4	6	0	392	2	394	0	0	0	0	1	1309	0	1310	1710
05:00 PM	0	0	1	1	0	78	0	78	0	0	0	0	0	336	0	336	415
05:15 PM	0	0	0	0	0	86	0	86	0	0	0	0	1	255	0	256	342
05:30 PM	1	0	0	1	0	83	0	83	0	0	0	0	0	350	0	350	434
05:45 PM	0	0	1	1	0	68	0	68	0	0	0	0	1	339	0	340	409
Total	1	0	2	3	0	315	0	315	0	0	0	0	2	1280	0	1282	1600
Grand Total	3	0	6	9	0	707	2	709	0	0	0	0	3	2589	0	2592	3310
Apprch %	33.3	0	66.7		0	99.7	0.3		0	0	0		0.1	99.9	0		
Total %	0.1	0	0.2	0.3	0	21.4	0.1	21.4	0	0	0	0	0.1	78.2	0	78.3	
Passenger Vehicles	3	0	6	9	0	664	2	666	0	0	0	0	2	2452	0	2454	3129
% Passenger Vehicles	100	0	100	100	0	93.9	100	93.9	0	0	0	0	66.7	94.7	0	94.7	94.5
Large 2 Axle Vehicles	0	0	0	0	0	15	0	15	0	0	0	0	1	37	0	38	53
% Large 2 Axle Vehicles	0	0	0	0	0	2.1	0	2.1	0	0	0	0	33.3	1.4	0	1.5	1.6
3 Axle Vehicles	0	0	0	0	0	10	0	10	0	0	0	0	0	42	0	42	52
% 3 Axle Vehicles	0	0	0	0	0	1.4	0	1.4	0	0	0	0	0	1.6	0	1.6	1.6
4+ Axle Trucks	0	0	0	0	0	18	0	18	0	0	0	0	0	58	0	58	76
% 4+ Axle Trucks	0	0	0	0	0	2.5	0	2.5	0	0	0	0	0	2.2	0	2.2	2.3

	Driveway Southbound				East 223rd Street Westbound				Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	**1**	0	**1**	**2**	0	107	0	107	0	0	0	0	0	309	0	309	418
04:15 PM	0	0	1	1	0	71	**2**	73	0	0	0	0	**1**	**351**	0	**352**	426
04:30 PM	1	0	1	2	0	**118**	0	**118**	0	0	0	0	0	312	0	312	432
04:45 PM	0	0	1	1	0	96	0	96	0	0	0	0	0	337	0	337	**434**
Total Volume	2	0	4	6	0	392	2	394	0	0	0	0	1	1309	0	1310	1710
% App. Total	33.3	0	66.7		0	99.5	0.5		0	0	0		0.1	99.9	0		
PHF	.500	.000	1.00	.750	.000	.831	.250	.835	.000	.000	.000	.000	.250	.932	.000	.930	.985

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City of Carson
N/S: Driveway
E/W: East 223rd Street
Weather: Clear

File Name : 08_CRS_DW_E 223rd PM
Site Code : 22520115
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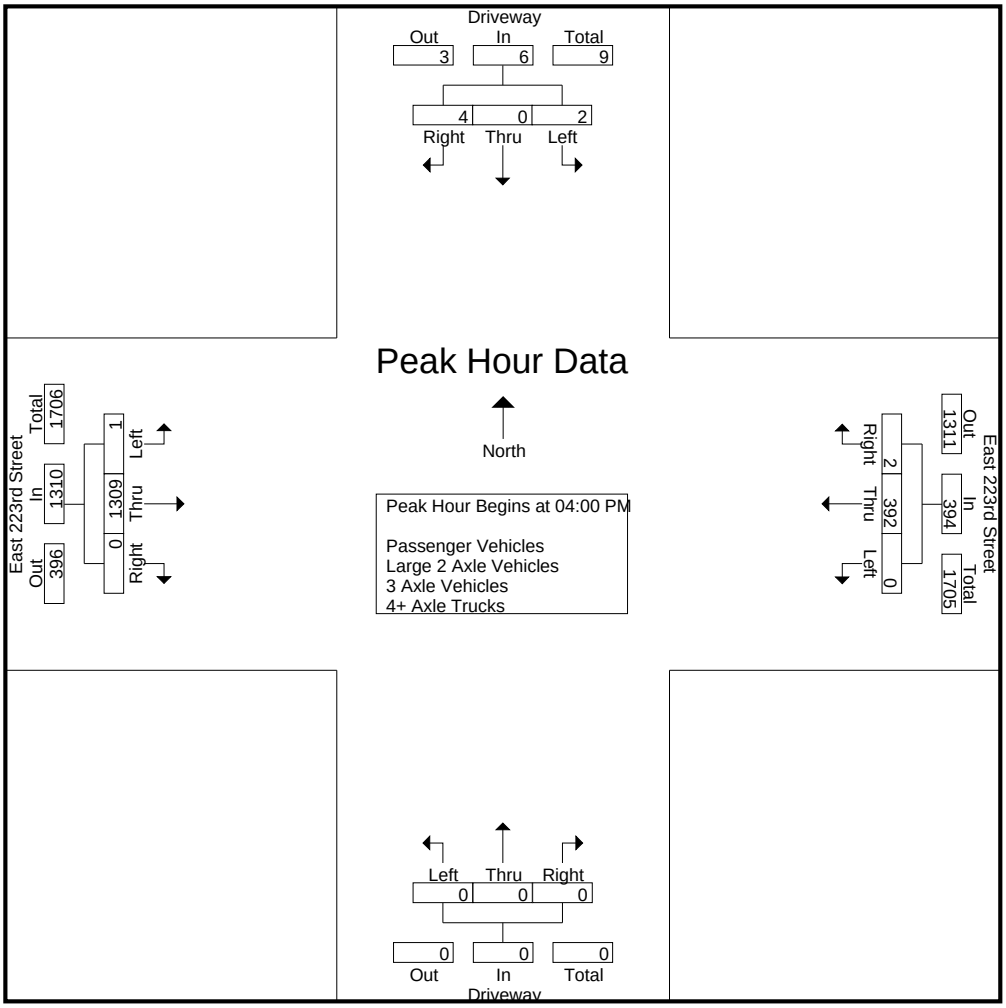

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:15 PM			
+0 mins.	**1**	0	**1**	**2**	0	107	0	107	0	0	0	0	**1**	**351**	0	**352**
+15 mins.	0	0	1	1	0	71	**2**	73	0	0	0	0	0	312	0	312
+30 mins.	1	0	1	2	0	**118**	0	**118**	0	0	0	0	0	337	0	337
+45 mins.	0	0	1	1	0	96	0	96	0	0	0	0	0	336	0	336
Total Volume	2	0	4	6	0	392	2	394	0	0	0	0	1	1336	0	1337
% App. Total	33.3	0	66.7		0	99.5	0.5		0	0	0		0.1	99.9	0	
PHF	.500	.000	1.000	.750	.000	.831	.250	.835	.000	.000	.000	.000	.250	.952	.000	.950

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City of Carson
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E/W: East 223rd Street
Weather: Clear

File Name : 08_CRS_DW_E 223rd PM
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Groups Printed- Passenger Vehicles

	Driveway Southbound				East 223rd Street Westbound				Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	1	0	1	2	0	97	0	97	0	0	0	0	0	287	0	287	386
04:15 PM	0	0	1	1	0	65	2	67	0	0	0	0	1	335	0	336	404
04:30 PM	1	0	1	2	0	115	0	115	0	0	0	0	0	302	0	302	419
04:45 PM	0	0	1	1	0	87	0	87	0	0	0	0	0	321	0	321	409
Total	2	0	4	6	0	364	2	366	0	0	0	0	1	1245	0	1246	1618
05:00 PM	0	0	1	1	0	72	0	72	0	0	0	0	0	321	0	321	394
05:15 PM	0	0	0	0	0	83	0	83	0	0	0	0	0	237	0	237	320
05:30 PM	1	0	0	1	0	79	0	79	0	0	0	0	0	323	0	323	403
05:45 PM	0	0	1	1	0	66	0	66	0	0	0	0	1	326	0	327	394
Total	1	0	2	3	0	300	0	300	0	0	0	0	1	1207	0	1208	1511
Grand Total	3	0	6	9	0	664	2	666	0	0	0	0	2	2452	0	2454	3129
Apprch %	33.3	0	66.7		0	99.7	0.3		0	0	0		0.1	99.9	0		
Total %	0.1	0	0.2	0.3	0	21.2	0.1	21.3	0	0	0	0	0.1	78.4	0	78.4	

	Driveway Southbound				East 223rd Street Westbound				Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	**1**	0	**1**	**2**	0	97	0	97	0	0	0	0	0	287	0	287	386
04:15 PM	0	0	1	1	0	65	**2**	67	0	0	0	0	**1**	**335**	0	**336**	404
04:30 PM	1	0	1	2	0	**115**	0	**115**	0	0	0	0	0	302	0	302	**419**
04:45 PM	0	0	1	1	0	87	0	87	0	0	0	0	0	321	0	321	409
Total Volume	2	0	4	6	0	364	2	366	0	0	0	0	1	1245	0	1246	1618
% App. Total	33.3	0	66.7		0	99.5	0.5		0	0	0		0.1	99.9	0		
PHF	.500	.000	1.00	.750	.000	.791	.250	.796	.000	.000	.000	.000	.250	.929	.000	.927	.965

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City of Carson
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E/W: East 223rd Street
Weather: Clear

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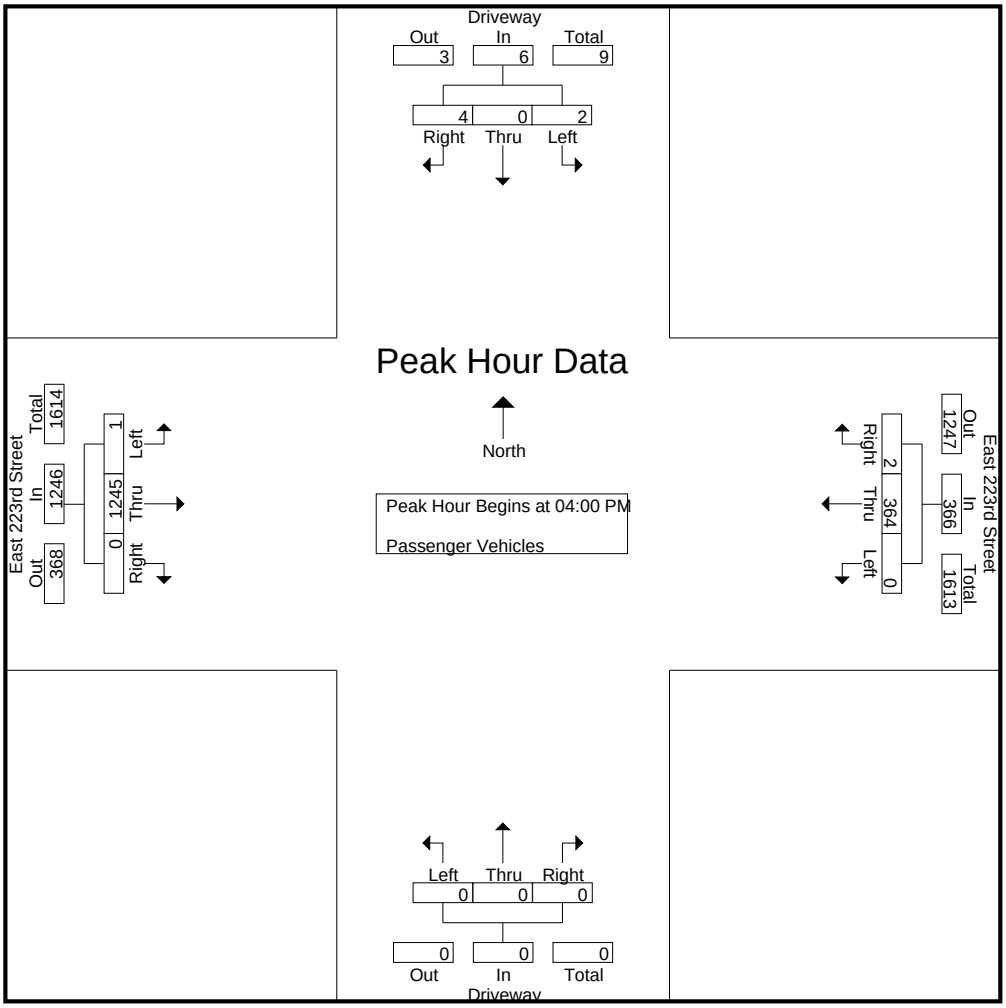

Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	**1**	0	**1**	**2**	0	97	0	97	0	0	0	0	0	287	0	287
+15 mins.	0	0	1	1	0	65	**2**	67	0	0	0	0	**1**	**335**	0	**336**
+30 mins.	1	0	1	2	0	**115**	0	**115**	0	0	0	0	0	302	0	302
+45 mins.	0	0	1	1	0	87	0	87	0	0	0	0	0	321	0	321
Total Volume	2	0	4	6	0	364	2	366	0	0	0	0	1	1245	0	1246
% App. Total	33.3	0	66.7		0	99.5	0.5		0	0	0		0.1	99.9	0	
PHF	.500	.000	1.000	.750	.000	.791	.250	.796	.000	.000	.000	.000	.250	.929	.000	.927

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City of Carson
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E/W: East 223rd Street
Weather: Clear

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Site Code : 22520115
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Groups Printed- Large 2 Axle Vehicles

	Driveway Southbound				East 223rd Street Westbound				Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	8	0	8	10
04:15 PM	0	0	0	0	0	4	0	4	0	0	0	0	0	5	0	5	9
04:30 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	4	0	4	6
04:45 PM	0	0	0	0	0	4	0	4	0	0	0	0	0	3	0	3	7
Total	0	0	0	0	0	12	0	12	0	0	0	0	0	20	0	20	32
05:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	6	0	6	7
05:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	1	5	0	6	7
05:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	4	0	4	5
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
Total	0	0	0	0	0	3	0	3	0	0	0	0	1	17	0	18	21
Grand Total	0	0	0	0	0	15	0	15	0	0	0	0	1	37	0	38	53
Apprch %	0	0	0		0	100	0		0	0	0		2.6	97.4	0		
Total %	0	0	0	0	0	28.3	0	28.3	0	0	0	0	1.9	69.8	0	71.7	

	Driveway Southbound				East 223rd Street Westbound				Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	**8**	0	**8**	**10**
04:15 PM	0	0	0	0	0	**4**	0	**4**	0	0	0	0	0	5	0	5	9
04:30 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	4	0	4	6
04:45 PM	0	0	0	0	0	4	0	4	0	0	0	0	0	3	0	3	7
Total Volume	0	0	0	0	0	12	0	12	0	0	0	0	0	20	0	20	32
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.750	.000	.750	.000	.000	.000	.000	.000	.625	.000	.625	.800

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City of Carson
N/S: Driveway
E/W: East 223rd Street
Weather: Clear

File Name : 08_CRS_DW_E 223rd PM
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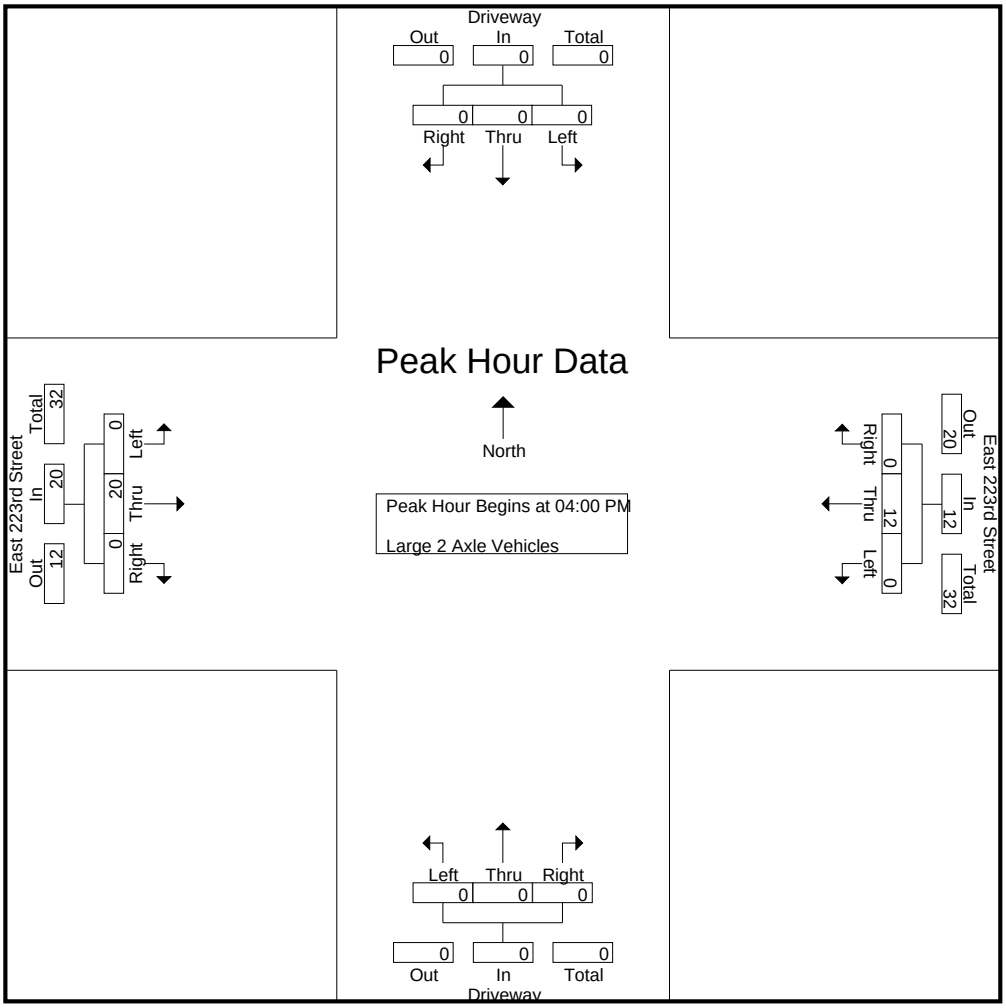

Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	2	0	2	0	0	0	0	0	**8**	0	**8**
+15 mins.	0	0	0	0	0	**4**	0	**4**	0	0	0	0	0	5	0	5
+30 mins.	0	0	0	0	0	2	0	2	0	0	0	0	0	4	0	4
+45 mins.	0	0	0	0	0	4	0	4	0	0	0	0	0	3	0	3
Total Volume	0	0	0	0	0	12	0	12	0	0	0	0	0	20	0	20
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0	
PHF	.000	.000	.000	.000	.000	.750	.000	.750	.000	.000	.000	.000	.000	.625	.000	.625

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City of Carson
N/S: Driveway
E/W: East 223rd Street
Weather: Clear

File Name : 08_CRS_DW_E 223rd PM
Site Code : 22520115
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Groups Printed- 3 Axle Vehicles

	Driveway Southbound				East 223rd Street Westbound				Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	4	0	4	0	0	0	0	0	3	0	3	7
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	4
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	7	0	7	9
Total	0	0	0	0	0	6	0	6	0	0	0	0	0	14	0	14	20
05:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	4	0	4	5
05:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	7	0	7	8
05:30 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	13	0	13	15
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	4
Total	0	0	0	0	0	4	0	4	0	0	0	0	0	28	0	28	32
Grand Total	0	0	0	0	0	10	0	10	0	0	0	0	0	42	0	42	52
Apprch %	0	0	0		0	100	0		0	0	0		0	100	0		
Total %	0	0	0	0	0	19.2	0	19.2	0	0	0	0	0	80.8	0	80.8	

	Driveway Southbound				East 223rd Street Westbound				Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	**4**	0	**4**	0	0	0	0	0	3	0	3	7
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	4
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	**7**	0	**7**	**9**
Total Volume	0	0	0	0	0	6	0	6	0	0	0	0	0	14	0	14	20
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.375	.000	.375	.000	.000	.000	.000	.000	.500	.000	.500	.556

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N/S: Driveway
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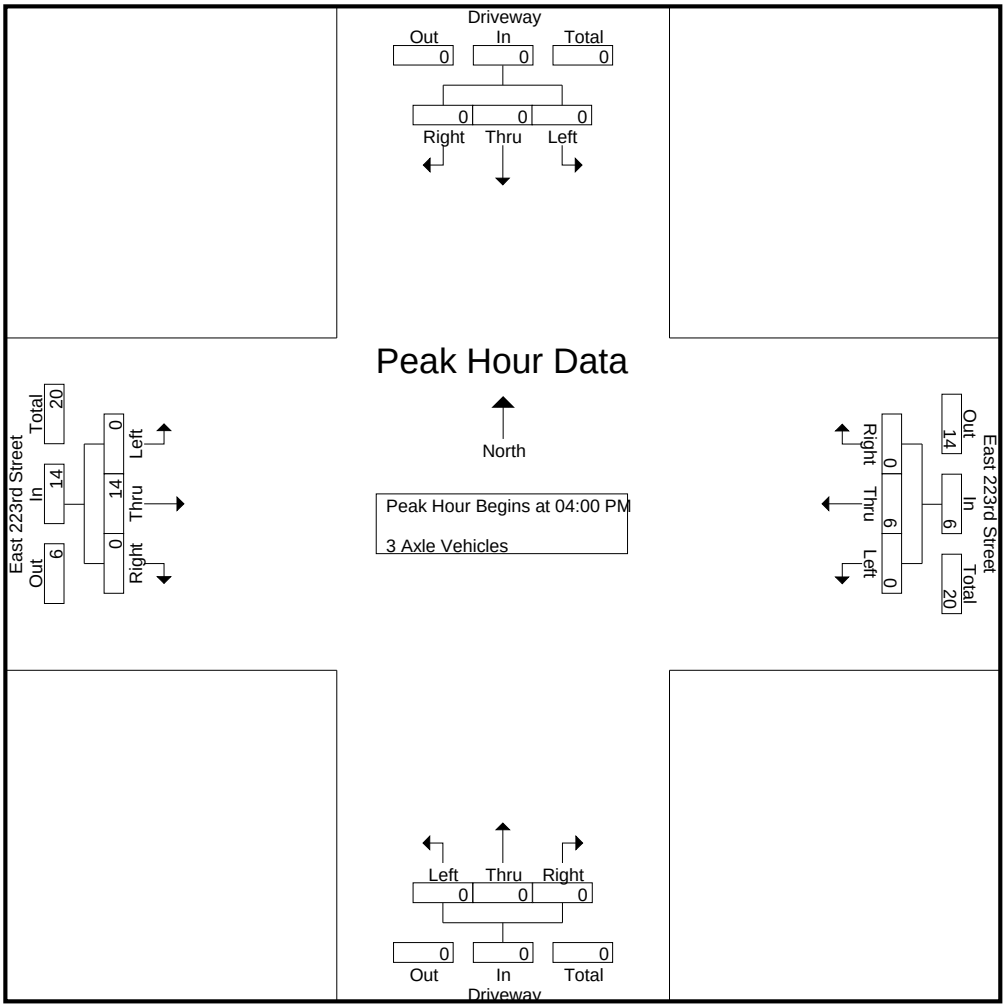

Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	**4**	0	**4**	0	0	0	0	0	3	0	3
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	2	0	2	0	0	0	0	0	**7**	0	**7**
Total Volume	0	0	0	0	0	6	0	6	0	0	0	0	0	14	0	14
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0	
PHF	.000	.000	.000	.000	.000	.375	.000	.375	.000	.000	.000	.000	.000	.500	.000	.500

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City of Carson
N/S: Driveway
E/W: East 223rd Street
Weather: Clear

File Name : 08_CRS_DW_E 223rd PM
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Groups Printed- 4+ Axle Trucks

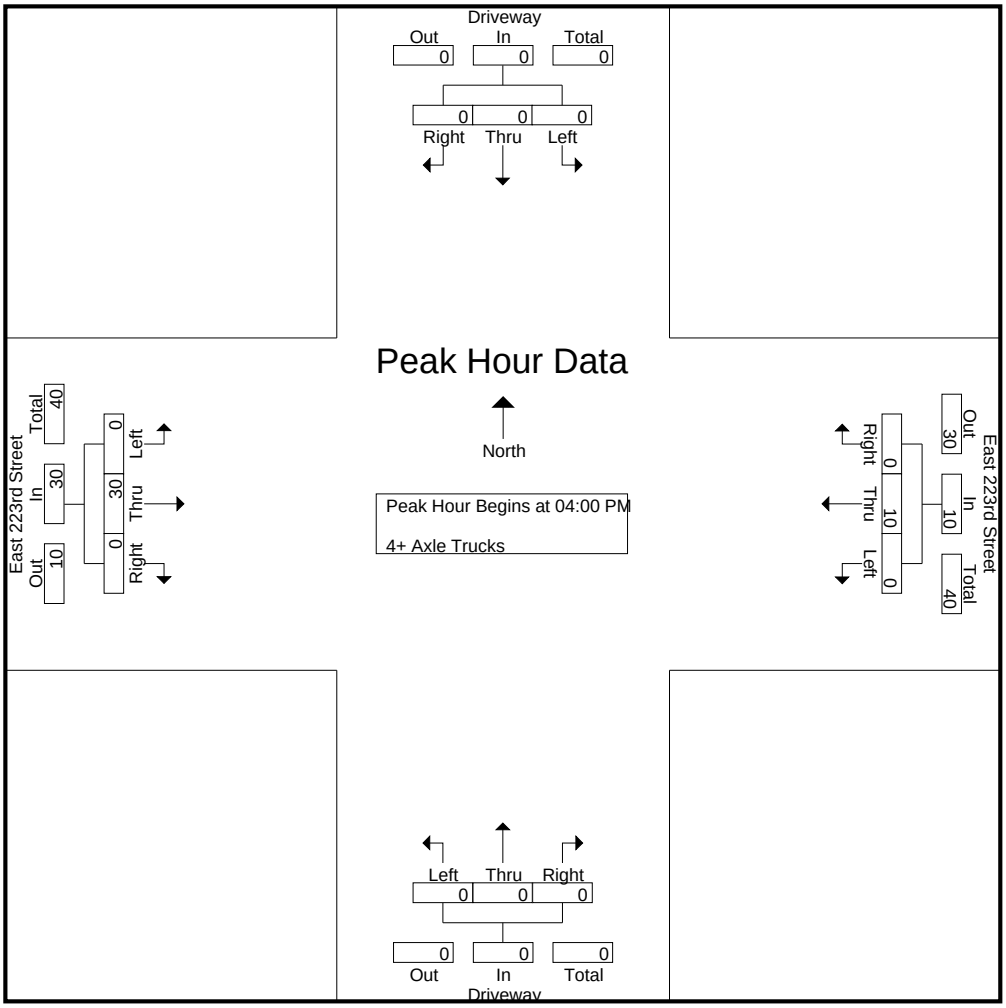
	Driveway Southbound				East 223rd Street Westbound				Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	4	0	4	0	0	0	0	0	11	0	11	15
04:15 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	7	0	7	9
04:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	6	0	6	7
04:45 PM	0	0	0	0	0	3	0	3	0	0	0	0	0	6	0	6	9
Total	0	0	0	0	0	10	0	10	0	0	0	0	0	30	0	30	40
05:00 PM	0	0	0	0	0	4	0	4	0	0	0	0	0	5	0	5	9
05:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	6	0	6	7
05:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	10	0	10	11
05:45 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	7	0	7	9
Total	0	0	0	0	0	8	0	8	0	0	0	0	0	28	0	28	36
Grand Total	0	0	0	0	0	18	0	18	0	0	0	0	0	58	0	58	76
Apprch %	0	0	0		0	100	0		0	0	0		0	100	0		
Total %	0	0	0	0	0	23.7	0	23.7	0	0	0	0	0	76.3	0	76.3	

	Driveway Southbound				East 223rd Street Westbound				Driveway Northbound				East 223rd Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	**4**	0	**4**	0	0	0	0	0	**11**	0	**11**	**15**
04:15 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	7	0	7	9
04:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	6	0	6	7
04:45 PM	0	0	0	0	0	3	0	3	0	0	0	0	0	6	0	6	9
Total Volume	0	0	0	0	0	10	0	10	0	0	0	0	0	30	0	30	40
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.625	.000	.625	.000	.000	.000	.000	.000	.682	.000	.682	.667

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Carson
N/S: Driveway
E/W: East 223rd Street
Weather: Clear

File Name : 08_CRS_DW_E 223rd PM
Site Code : 22520115
Start Date : 2/25/2020
Page No : 2



Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	**4**	0	**4**	0	0	0	0	0	**11**	0	**11**
+15 mins.	0	0	0	0	0	2	0	2	0	0	0	0	0	7	0	7
+30 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	6	0	6
+45 mins.	0	0	0	0	0	3	0	3	0	0	0	0	0	6	0	6
Total Volume	0	0	0	0	0	10	0	10	0	0	0	0	0	30	0	30
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0	
PHF	.000	.000	.000	.000	.000	.625	.000	.625	.000	.000	.000	.000	.000	.682	.000	.682

APPENDIX D

INTERSECTION LEVEL OF SERVICE WORKSHEETS

EXISTING

Panattoni Project

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

Scenario 1 Existing without Project
3/9/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Wilmington Ave (NS) at I-405 WB Ramps (EW)	Signalized	ICU 1	WB Left	0.639	-	B
2	Wilmington Ave (NS) at I-405 EB Ramps (EW)	Signalized	ICU 1	NB Right	0.870	-	D
3	Wilmington Ave (NS) at 223rd St (EW)	Signalized	ICU 1	SB Thru	0.710	-	C
4	Alameda St (NS) at I-405 WB Ramps (EW)	Signalized	ICU 1	SB Thru	0.568	-	A
5	I-405 EB Ramps (NS) at 223rd St (EW)	Signalized	ICU 1	EB Left	0.547	-	A
6	Alameda St (NS) at 223rd St (EW)	Signalized	ICU 1	NB Right	0.565	-	A

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: Wilmington Ave (NS) at I-405 WB Ramps (EW)

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	Wilmington Ave		Wilmington Ave		I-405 WB Ramps	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Wilmington Ave		Wilmington Ave		I-405 WB Ramps	
Base Volume Input [veh/h]	459	88	0	862	1035	447
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00
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]	459	88	0	862	1035	447
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	115	0	0	216	259	112
Total Analysis Volume [veh/h]	459	0	0	862	1035	447
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

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

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	2	0	0	6	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.14	0.00	0.00	0.18	0.32	0.28
Intersection LOS	B					
Intersection V/C	0.639					

Intersection Level Of Service Report
Intersection 2: Wilmington Ave (NS) at I-405 EB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.870

Intersection Setup

Name	Wilmington Ave			Wilmington Ave			I-405 EB Ramps			I-405 EB Ramps		
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	2	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	340.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

Volumes

Name	Wilmington Ave			Wilmington Ave			I-405 EB Ramps			I-405 EB Ramps		
Base Volume Input [veh/h]	0	435	892	383	1388	0	85	0	191	0	0	0
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	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	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]	0	435	892	383	1388	0	85	0	191	0	0	0
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]	0	109	223	96	347	0	21	0	48	0	0	0
Total Analysis Volume [veh/h]	0	435	892	383	1388	0	85	0	191	0	0	0
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]	10.00

Phasing & Timing

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.09	0.53	0.12	0.29	0.00	0.05	0.00	0.12	0.00	0.00	0.00
Intersection LOS	D											
Intersection V/C	0.870											

Intersection Level Of Service Report
Intersection 3: Wilmington Ave (NS) at 223rd St (EW)

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	Wilmington Ave			Wilmington Ave			223rd St			223rd St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	2	0	0	2	0	0	2	0	0
Pocket Length [ft]	130.00	100.00	214.00	218.00	100.00	100.00	285.00	100.00	100.00	246.00	100.00	100.00
Speed [mph]	40.00			40.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

Volumes

Name	Wilmington Ave			Wilmington Ave			223rd St			223rd St		
Base Volume Input [veh/h]	17	823	209	89	982	473	416	524	12	190	531	69
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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]	17	823	209	89	982	473	416	524	12	190	531	69
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]	4	206	52	22	246	118	104	131	3	48	133	17
Total Analysis Volume [veh/h]	17	823	209	89	982	473	416	524	12	190	531	69
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]	10.00

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	0.01	0.17	0.13	0.03	0.30	0.30	0.13	0.17	0.17	0.06	0.17	0.04
Intersection LOS	C											
Intersection V/C	0.710											

Intersection Level Of Service Report
Intersection 4: Alameda St (NS) at I-405 WB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.568

Intersection Setup

Name	Alameda St		Alameda St		I-405 WB Ramps	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	308.00	100.00	100.00	100.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Alameda St		Alameda St		I-405 WB Ramps	
Base Volume Input [veh/h]	684	110	77	1171	329	160
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
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]	684	110	77	1171	329	160
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]	171	28	19	293	82	40
Total Analysis Volume [veh/h]	684	110	77	1171	329	160
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

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

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal group	2	2	1	6	7	0
Auxiliary Signal Groups		2,7				
Lead / Lag	-	-	Lead	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.21	0.00	0.05	0.24	0.21	0.10
Intersection LOS	A					
Intersection V/C	0.568					

Intersection Level Of Service Report
Intersection 5: I-405 EB Ramps (NS) at 223rd St (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.547

Intersection Setup

Name	ICTF Dwy			I-405 EB Ramps			223rd St			223rd St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	156.00	100.00	166.00	118.00	100.00	100.00
Speed [mph]	25.00			30.00			45.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	ICTF Dwy			I-405 EB Ramps			223rd St			223rd St		
Base Volume Input [veh/h]	2	2	2	80	2	116	635	388	0	4	773	49
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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]	2	2	2	80	2	116	635	388	0	4	773	49
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	1	20	1	29	159	97	0	1	193	12
Total Analysis Volume [veh/h]	2	2	2	80	2	116	635	388	0	4	773	49
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]	10.00

Phasing & Timing

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.05	0.07	0.07	0.20	0.12	0.00	0.00	0.17	0.17
Intersection LOS	A											
Intersection V/C	0.547											

Intersection Level Of Service Report
Intersection 6: Alameda St (NS) at 223rd St (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.565

Intersection Setup

Name	Alameda St		223rd St		223rd St	
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	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	427.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		No	

Volumes

Name	Alameda St		223rd St		223rd St	
Base Volume Input [veh/h]	178	483	588	196	171	704
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
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]	178	483	588	196	171	704
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	121	147	49	43	176
Total Analysis Volume [veh/h]	178	483	588	196	171	704
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

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

Phasing & Timing

Control Type	Permissive	Overlap	Permissive	Permissive	Protected	Permissive
Signal group	5	2	8	0	7	4
Auxiliary Signal Groups		2,7				
Lead / Lag	Lead	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.25	0.16	0.16	0.05	0.15
Intersection LOS	A					
Intersection V/C	0.565					

Panattoni Project

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Scenario 1 Existing without Project
3/9/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Wilmington Ave (NS) at I-405 WB Ramps (EW)	Signalized	ICU 1	WB Left	0.714	-	C
2	Wilmington Ave (NS) at I-405 EB Ramps (EW)	Signalized	ICU 1	NB Right	0.761	-	C
3	Wilmington Ave (NS) at 223rd St (EW)	Signalized	ICU 1	SB Thru	0.722	-	C
4	Alameda St (NS) at I-405 WB Ramps (EW)	Signalized	ICU 1	NB Thru	0.829	-	D
5	I-405 EB Ramps (NS) at 223rd St (EW)	Signalized	ICU 1	EB Thru	0.558	-	A
6	Alameda St (NS) at 223rd St (EW)	Signalized	ICU 1	NB Right	0.840	-	D

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: Wilmington Ave (NS) at I-405 WB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.714

Intersection Setup

Name	Wilmington Ave		Wilmington Ave		I-405 WB Ramps	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Wilmington Ave		Wilmington Ave		I-405 WB Ramps	
Base Volume Input [veh/h]	446	104	0	1223	1150	372
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00
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]	446	104	0	1223	1150	372
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	112	0	0	306	288	93
Total Analysis Volume [veh/h]	446	0	0	1223	1150	372
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

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

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	2	0	0	6	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.14	0.00	0.00	0.25	0.36	0.23
Intersection LOS	C					
Intersection V/C	0.714					

Intersection Level Of Service Report
Intersection 2: Wilmington Ave (NS) at I-405 EB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.761

Intersection Setup

Name	Wilmington Ave			Wilmington Ave			I-405 EB Ramps			I-405 EB Ramps		
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	2	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	340.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

Volumes

Name	Wilmington Ave			Wilmington Ave			I-405 EB Ramps			I-405 EB Ramps		
Base Volume Input [veh/h]	0	571	683	654	1492	0	15	1	48	0	0	0
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	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	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]	0	571	683	654	1492	0	15	1	48	0	0	0
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]	0	143	171	164	373	0	4	0	12	0	0	0
Total Analysis Volume [veh/h]	0	571	683	654	1492	0	15	1	48	0	0	0
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]	10.00

Phasing & Timing

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.12	0.43	0.20	0.31	0.00	0.01	0.01	0.03	0.00	0.00	0.00
Intersection LOS	C											
Intersection V/C	0.761											

Intersection Level Of Service Report
Intersection 3: Wilmington Ave (NS) at 223rd St (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.722

Intersection Setup

Name	Wilmington Ave			Wilmington Ave			223rd St			223rd St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	2	0	0	2	0	0	2	0	0
Pocket Length [ft]	130.00	100.00	214.00	218.00	100.00	100.00	285.00	100.00	100.00	246.00	100.00	100.00
Speed [mph]	40.00			40.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

Volumes

Name	Wilmington Ave			Wilmington Ave			223rd St			223rd St		
Base Volume Input [veh/h]	12	745	322	132	968	549	284	814	9	131	211	99
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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]	12	745	322	132	968	549	284	814	9	131	211	99
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	186	81	33	242	137	71	204	2	33	53	25
Total Analysis Volume [veh/h]	12	745	322	132	968	549	284	814	9	131	211	99
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]	10.00

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	0.01	0.16	0.20	0.04	0.32	0.32	0.09	0.26	0.26	0.04	0.07	0.06
Intersection LOS	C											
Intersection V/C	0.722											

Intersection Level Of Service Report
Intersection 4: Alameda St (NS) at I-405 WB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.829

Intersection Setup

Name	Alameda St		Alameda St		I-405 WB Ramps	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	308.00	100.00	100.00	100.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Alameda St		Alameda St		I-405 WB Ramps	
Base Volume Input [veh/h]	1180	282	116	1005	460	230
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
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]	1180	282	116	1005	460	230
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]	295	71	29	251	115	58
Total Analysis Volume [veh/h]	1180	282	116	1005	460	230
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

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

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal group	2	2	1	6	7	0
Auxiliary Signal Groups		2,7				
Lead / Lag	-	-	Lead	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.37	0.00	0.07	0.21	0.29	0.14
Intersection LOS	D					
Intersection V/C	0.829					

Intersection Level Of Service Report
Intersection 5: I-405 EB Ramps (NS) at 223rd St (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.558

Intersection Setup

Name	ICTF Dwy			I-405 EB Ramps			223rd St			223rd St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	156.00	100.00	166.00	118.00	100.00	100.00
Speed [mph]	25.00			30.00			45.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	ICTF Dwy			I-405 EB Ramps			223rd St			223rd St		
Base Volume Input [veh/h]	3	5	4	112	0	40	968	1064	5	3	257	116
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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]	3	5	4	112	0	40	968	1064	5	3	257	116
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	1	28	0	10	242	266	1	1	64	29
Total Analysis Volume [veh/h]	3	5	4	112	0	40	968	1064	5	3	257	116
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]	10.00

Phasing & Timing

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.01	0.07	0.00	0.03	0.30	0.33	0.00	0.00	0.08	0.08
Intersection LOS	A											
Intersection V/C	0.558											

Intersection Level Of Service Report
Intersection 6: Alameda St (NS) at 223rd St (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.840

Intersection Setup

Name	Alameda St		223rd St		223rd St	
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	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	427.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		No	

Volumes

Name	Alameda St		223rd St		223rd St	
Base Volume Input [veh/h]	102	657	1391	190	108	236
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
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]	102	657	1391	190	108	236
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]	26	164	348	48	27	59
Total Analysis Volume [veh/h]	102	657	1391	190	108	236
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

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

Phasing & Timing

Control Type	Permissive	Overlap	Permissive	Permissive	Protected	Permissive
Signal group	5	2	8	0	7	4
Auxiliary Signal Groups		2,7				
Lead / Lag	Lead	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.38	0.33	0.33	0.03	0.05
Intersection LOS	D					
Intersection V/C	0.840					

EXISTING PLUS PROJECT

Panattoni Project

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

Scenario 2 Existing with Project
3/13/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Wilmington Ave (NS) at I-405 WB Ramps (EW)	Signalized	ICU 1	WB Left	0.642	-	B
2	Wilmington Ave (NS) at I-405 EB Ramps (EW)	Signalized	ICU 1	NB Right	0.888	-	D
3	Wilmington Ave (NS) at 223rd St (EW)	Signalized	ICU 1	SB Thru	0.710	-	C
4	Alameda St (NS) at I-405 WB Ramps (EW)	Signalized	ICU 1	SB Thru	0.587	-	A
5	I-405 EB Ramps (NS) at 223rd St (EW)	Signalized	ICU 1	EB Left	0.550	-	A
6	Alameda St (NS) at 223rd St (EW)	Signalized	ICU 1	NB Right	0.569	-	A
7	Project Dwy 3 (NS) at 223rd St (EW)	Two-way stop	HCM 6th Edition	SB Left	0.000	21.8	C
8	Project Dwy 2 (NS) at 223rd St (EW)	Two-way stop	HCM 6th Edition	NB Left	0.034	17.7	C
9	Project Dwy 1 (NS) at 223rd St (EW)	Two-way stop	HCM 6th Edition	NB Left	0.023	17.4	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: Wilmington Ave (NS) at I-405 WB Ramps (EW)

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	Wilmington Ave		Wilmington Ave		I-405 WB Ramps	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Wilmington Ave		Wilmington Ave		I-405 WB Ramps	
Base Volume Input [veh/h]	459	88	0	862	1035	447
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00
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]	4	9	0	16	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]	463	97	0	878	1035	447
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	116	0	0	220	259	112
Total Analysis Volume [veh/h]	463	0	0	878	1035	447
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

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

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	2	0	0	6	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.14	0.00	0.00	0.18	0.32	0.28
Intersection LOS	B					
Intersection V/C	0.642					

Intersection Level Of Service Report
Intersection 2: Wilmington Ave (NS) at I-405 EB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.888

Intersection Setup

Name	Wilmington Ave			Wilmington Ave			I-405 EB Ramps			I-405 EB Ramps		
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	2	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	340.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

Volumes

Name	Wilmington Ave			Wilmington Ave			I-405 EB Ramps			I-405 EB Ramps		
Base Volume Input [veh/h]	0	435	892	383	1388	0	85	0	191	0	0	0
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	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	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	13	0	0	16	0	0	0	29	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]	0	448	892	383	1404	0	85	0	220	0	0	0
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]	0	112	223	96	351	0	21	0	55	0	0	0
Total Analysis Volume [veh/h]	0	448	892	383	1404	0	85	0	220	0	0	0
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]	10.00

Phasing & Timing

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.09	0.53	0.12	0.29	0.00	0.05	0.00	0.14	0.00	0.00	0.00
Intersection LOS	D											
Intersection V/C	0.888											

Intersection Level Of Service Report
Intersection 3: Wilmington Ave (NS) at 223rd St (EW)

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	Wilmington Ave			Wilmington Ave			223rd St			223rd St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	2	0	0	2	0	0	2	0	0
Pocket Length [ft]	130.00	100.00	214.00	218.00	100.00	100.00	285.00	100.00	100.00	246.00	100.00	100.00
Speed [mph]	40.00			40.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

Volumes

Name	Wilmington Ave			Wilmington Ave			223rd St			223rd St		
Base Volume Input [veh/h]	17	823	209	89	982	473	416	524	12	190	531	69
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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	12	45	0	0	0	3	0	3	1	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]	17	823	221	134	982	473	416	527	12	193	532	82
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]	4	206	55	34	246	118	104	132	3	48	133	21
Total Analysis Volume [veh/h]	17	823	221	134	982	473	416	527	12	193	532	82
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]	10.00

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	0.01	0.17	0.14	0.04	0.30	0.30	0.13	0.17	0.17	0.06	0.17	0.05
Intersection LOS	C											
Intersection V/C	0.710											

Intersection Level Of Service Report
Intersection 4: Alameda St (NS) at I-405 WB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.587

Intersection Setup

Name	Alameda St		Alameda St		I-405 WB Ramps	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	308.00	100.00	100.00	100.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Alameda St		Alameda St		I-405 WB Ramps	
Base Volume Input [veh/h]	684	110	77	1171	329	160
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
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]	4	0	0	13	29	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]	688	110	77	1184	358	160
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]	172	28	19	296	90	40
Total Analysis Volume [veh/h]	688	110	77	1184	358	160
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

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

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal group	2	2	1	6	7	0
Auxiliary Signal Groups		2,7				
Lead / Lag	-	-	Lead	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.22	0.00	0.05	0.25	0.22	0.10
Intersection LOS	A					
Intersection V/C	0.587					

Intersection Level Of Service Report
Intersection 5: I-405 EB Ramps (NS) at 223rd St (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.550

Intersection Setup

Name	ICTF Dwy			I-405 EB Ramps			223rd St			223rd St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	156.00	100.00	166.00	118.00	100.00	100.00
Speed [mph]	25.00			30.00			45.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	ICTF Dwy			I-405 EB Ramps			223rd St			223rd St		
Base Volume Input [veh/h]	2	2	2	80	2	116	635	388	0	4	773	49
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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	7	1	0	0	3	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]	2	2	2	80	2	116	642	389	0	4	776	49
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	1	20	1	29	161	97	0	1	194	12
Total Analysis Volume [veh/h]	2	2	2	80	2	116	642	389	0	4	776	49
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]	10.00

Phasing & Timing

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.05	0.07	0.07	0.20	0.12	0.00	0.00	0.17	0.17
Intersection LOS	A											
Intersection V/C	0.550											

Intersection Level Of Service Report
Intersection 6: Alameda St (NS) at 223rd St (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.569

Intersection Setup

Name	Alameda St		223rd St		223rd St	
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	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	427.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		No	

Volumes

Name	Alameda St		223rd St		223rd St	
Base Volume Input [veh/h]	178	483	588	196	171	704
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
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]	66	0	8	12	0	3
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]	244	483	596	208	171	707
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]	61	121	149	52	43	177
Total Analysis Volume [veh/h]	244	483	596	208	171	707
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

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

Phasing & Timing

Control Type	Permissive	Overlap	Permissive	Permissive	Protected	Permissive
Signal group	5	2	8	0	7	4
Auxiliary Signal Groups		2,7				
Lead / Lag	Lead	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.15	0.25	0.17	0.17	0.05	0.15
Intersection LOS	A					
Intersection V/C	0.569					

Intersection Level Of Service Report
Intersection 7: Project Dwy 3 (NS) at 223rd St (EW)

Control Type:	Two-way stop	Delay (sec / veh):	21.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Project Dwy 3						223rd St			223rd St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	Project Dwy 3						223rd St			223rd St		
Base Volume Input [veh/h]	0	0	0	0	0	3	6	832	0	0	793	2
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 [%]	0.00	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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]	2	0	7	0	0	0	0	13	7	23	46	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]	2	0	7	0	0	3	6	845	7	23	839	2
Peak Hour Factor	0.8605	1.0000	0.8605	0.8605	1.0000	0.8605	0.8605	0.8605	0.8605	0.8605	0.8605	0.8605
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	0	2	0	0	1	2	245	2	7	244	1
Total Analysis Volume [veh/h]	2	0	8	0	0	3	7	982	8	27	975	2
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	Yes	Yes		
Number of Storage Spaces in Median	2	2	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.02	0.00	0.00	0.01	0.01	0.01	0.00	0.04	0.01	0.00
d_M, Delay for Movement [s/veh]	21.16	0.00	12.06	21.78	0.00	11.82	10.09	0.00	0.00	10.30	0.00	0.00
Movement LOS	C		B	C		B	B	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	0.07	0.00	0.07	0.00	0.00	0.02	0.03	0.00	0.00	0.12	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.85	0.00	1.85	0.00	0.00	0.43	0.74	0.00	0.00	2.98	0.00	0.00
d_A, Approach Delay [s/veh]	13.88			11.82			0.07			0.28		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	0.26											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 8: Project Dwy 2 (NS) at 223rd St (EW)

Control Type:	Two-way stop	Delay (sec / veh):	17.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.034

Intersection Setup

Name	Project Dwy 2		223rd St		223rd St	
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]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Project Dwy 2		223rd St		223rd St	
Base Volume Input [veh/h]	0	0	838	0	0	796
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
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]	9	8	12	29	32	16
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]	9	8	850	29	32	812
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	2	231	8	9	221
Total Analysis Volume [veh/h]	10	9	924	32	35	883
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	Yes		
Number of Storage Spaces in Median	2	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.02	0.01	0.00	0.05	0.01
d_M, Delay for Movement [s/veh]	17.68	11.79	0.00	0.00	10.20	0.00
Movement LOS	C	B	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.11	0.05	0.00	0.00	0.15	0.00
95th-Percentile Queue Length [ft/ln]	2.63	1.27	0.00	0.00	3.78	0.00
d_A, Approach Delay [s/veh]	14.89		0.00		0.39	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.34					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 9: Project Dwy 1 (NS) at 223rd St (EW)

Control Type:	Two-way stop	Delay (sec / veh):	17.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.023

Intersection Setup

Name	Project Dwy 1		223rd St		223rd St	
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]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Project Dwy 1		223rd St		223rd St	
Base Volume Input [veh/h]	0	0	822	0	0	790
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
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]	6	5	36	24	14	11
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]	6	5	858	24	14	801
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	1	233	7	4	218
Total Analysis Volume [veh/h]	7	5	933	26	15	871
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	Yes		
Number of Storage Spaces in Median	2	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.01	0.01	0.00	0.02	0.01
d_M, Delay for Movement [s/veh]	17.36	12.03	0.00	0.00	10.07	0.00
Movement LOS	C	B	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.10	0.10	0.00	0.00	0.06	0.00
95th-Percentile Queue Length [ft/ln]	2.53	2.53	0.00	0.00	1.58	0.00
d_A, Approach Delay [s/veh]	15.14		0.00		0.17	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.18					
Intersection LOS	C					

Panattoni Project

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Scenario 2 Existing with Project
3/13/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Wilmington Ave (NS) at I-405 WB Ramps (EW)	Signalized	ICU 1	WB Left	0.715	-	C
2	Wilmington Ave (NS) at I-405 EB Ramps (EW)	Signalized	ICU 1	NB Right	0.768	-	C
3	Wilmington Ave (NS) at 223rd St (EW)	Signalized	ICU 1	SB Thru	0.726	-	C
4	Alameda St (NS) at I-405 WB Ramps (EW)	Signalized	ICU 1	NB Thru	0.838	-	D
5	I-405 EB Ramps (NS) at 223rd St (EW)	Signalized	ICU 1	EB Thru	0.566	-	A
6	Alameda St (NS) at 223rd St (EW)	Signalized	ICU 1	NB Right	0.853	-	D
7	Project Dwy 3 (NS) at 223rd St (EW)	Two-way stop	HCM 6th Edition	NB Left	0.046	34.2	D
8	Project Dwy 2 (NS) at 223rd St (EW)	Two-way stop	HCM 6th Edition	NB Left	0.172	32.6	D
9	Project Dwy 1 (NS) at 223rd St (EW)	Two-way stop	HCM 6th Edition	NB Left	0.135	27.6	D

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: Wilmington Ave (NS) at I-405 WB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.715

Intersection Setup

Name	Wilmington Ave		Wilmington Ave		I-405 WB Ramps	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Wilmington Ave		Wilmington Ave		I-405 WB Ramps	
Base Volume Input [veh/h]	446	104	0	1223	1150	372
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00
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]	14	25	0	6	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]	460	129	0	1229	1150	372
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	115	0	0	307	288	93
Total Analysis Volume [veh/h]	460	0	0	1229	1150	372
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

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

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	2	0	0	6	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.14	0.00	0.00	0.26	0.36	0.23
Intersection LOS	C					
Intersection V/C	0.715					

Intersection Level Of Service Report
Intersection 2: Wilmington Ave (NS) at I-405 EB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.768

Intersection Setup

Name	Wilmington Ave			Wilmington Ave			I-405 EB Ramps			I-405 EB Ramps		
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	2	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	340.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

Volumes

Name	Wilmington Ave			Wilmington Ave			I-405 EB Ramps			I-405 EB Ramps		
Base Volume Input [veh/h]	0	571	683	654	1492	0	15	1	48	0	0	0
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	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	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	39	0	0	6	0	0	0	10	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]	0	610	683	654	1498	0	15	1	58	0	0	0
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]	0	153	171	164	375	0	4	0	15	0	0	0
Total Analysis Volume [veh/h]	0	610	683	654	1498	0	15	1	58	0	0	0
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]	10.00

Phasing & Timing

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.13	0.43	0.20	0.31	0.00	0.01	0.01	0.04	0.00	0.00	0.00
Intersection LOS	C											
Intersection V/C	0.768											

Intersection Level Of Service Report
Intersection 3: Wilmington Ave (NS) at 223rd St (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.726

Intersection Setup

Name	Wilmington Ave			Wilmington Ave			223rd St			223rd St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	2	0	0	2	0	0	2	0	0
Pocket Length [ft]	130.00	100.00	214.00	218.00	100.00	100.00	285.00	100.00	100.00	246.00	100.00	100.00
Speed [mph]	40.00			40.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

Volumes

Name	Wilmington Ave			Wilmington Ave			223rd St			223rd St		
Base Volume Input [veh/h]	12	745	322	132	968	549	284	814	9	131	211	99
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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	5	16	0	0	0	1	0	12	3	39
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]	12	745	327	148	968	549	284	815	9	143	214	138
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	186	82	37	242	137	71	204	2	36	54	35
Total Analysis Volume [veh/h]	12	745	327	148	968	549	284	815	9	143	214	138
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]	10.00

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	0.01	0.16	0.20	0.05	0.32	0.32	0.09	0.26	0.26	0.04	0.07	0.09
Intersection LOS	C											
Intersection V/C	0.726											

Intersection Level Of Service Report
Intersection 4: Alameda St (NS) at I-405 WB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.838

Intersection Setup

Name	Alameda St		Alameda St		I-405 WB Ramps	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	308.00	100.00	100.00	100.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Alameda St		Alameda St		I-405 WB Ramps	
Base Volume Input [veh/h]	1180	282	116	1005	460	230
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
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]	11	0	0	5	10	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]	1191	282	116	1010	470	230
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]	298	71	29	253	118	58
Total Analysis Volume [veh/h]	1191	282	116	1010	470	230
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

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

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal group	2	2	1	6	7	0
Auxiliary Signal Groups		2,7				
Lead / Lag	-	-	Lead	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.37	0.00	0.07	0.21	0.29	0.14
Intersection LOS	D					
Intersection V/C	0.838					

Intersection Level Of Service Report
Intersection 5: I-405 EB Ramps (NS) at 223rd St (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.566

Intersection Setup

Name	ICTF Dwy			I-405 EB Ramps			223rd St			223rd St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	156.00	100.00	166.00	118.00	100.00	100.00
Speed [mph]	25.00			30.00			45.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	ICTF Dwy			I-405 EB Ramps			223rd St			223rd St		
Base Volume Input [veh/h]	3	5	4	112	0	40	968	1064	5	3	257	116
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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	27	3	0	0	1	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]	3	5	4	112	0	40	995	1067	5	3	258	116
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	1	28	0	10	249	267	1	1	65	29
Total Analysis Volume [veh/h]	3	5	4	112	0	40	995	1067	5	3	258	116
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]	10.00

Phasing & Timing

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.01	0.07	0.00	0.03	0.31	0.33	0.00	0.00	0.08	0.08
Intersection LOS	A											
Intersection V/C	0.566											

Intersection Level Of Service Report
Intersection 6: Alameda St (NS) at 223rd St (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.853

Intersection Setup

Name	Alameda St		223rd St		223rd St	
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	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	427.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		No	

Volumes

Name	Alameda St		223rd St		223rd St	
Base Volume Input [veh/h]	102	657	1391	190	108	236
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
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]	23	0	30	30	0	1
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]	125	657	1421	220	108	237
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	164	355	55	27	59
Total Analysis Volume [veh/h]	125	657	1421	220	108	237
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

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

Phasing & Timing

Control Type	Permissive	Overlap	Permissive	Permissive	Protected	Permissive
Signal group	5	2	8	0	7	4
Auxiliary Signal Groups		2,7				
Lead / Lag	Lead	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.38	0.34	0.34	0.03	0.05
Intersection LOS	D					
Intersection V/C	0.853					

Intersection Level Of Service Report
Intersection 7: Project Dwy 3 (NS) at 223rd St (EW)

Control Type:	Two-way stop	Delay (sec / veh):	34.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.046

Intersection Setup

Name	Project Dwy 3						223rd St			223rd St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	Project Dwy 3						223rd St			223rd St		
Base Volume Input [veh/h]	0	0	0	2	0	4	1	1393	0	0	424	2
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 [%]	0.00	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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]	6	0	19	0	0	0	0	41	2	9	16	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]	6	0	19	2	0	4	1	1434	2	9	440	2
Peak Hour Factor	0.9850	1.0000	0.9850	0.9850	1.0000	0.9850	0.9850	0.9850	0.9850	0.9850	0.9850	0.9850
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]	2	0	5	1	0	1	0	364	1	2	112	1
Total Analysis Volume [veh/h]	6	0	19	2	0	4	1	1456	2	9	447	2
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	Yes	Yes		
Number of Storage Spaces in Median	2	2	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.00	0.05	0.01	0.00	0.01	0.00	0.01	0.00	0.02	0.00	0.00
d_M, Delay for Movement [s/veh]	34.18	0.00	16.24	16.93	0.00	9.61	8.21	0.00	0.00	12.81	0.00	0.00
Movement LOS	D		C	C		A	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	0.32	0.00	0.32	0.02	0.00	0.02	0.00	0.00	0.00	0.06	0.00	0.00
95th-Percentile Queue Length [ft/ln]	8.01	0.00	8.01	0.50	0.00	0.38	0.07	0.00	0.00	1.46	0.00	0.00
d_A, Approach Delay [s/veh]	20.55			12.05			0.01			0.25		
Approach LOS	C			B			A			A		
d_I, Intersection Delay [s/veh]	0.36											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 8: Project Dwy 2 (NS) at 223rd St (EW)

Control Type:	Two-way stop	Delay (sec / veh):	32.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.172

Intersection Setup

Name	Project Dwy 2		223rd St		223rd St	
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]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Project Dwy 2		223rd St		223rd St	
Base Volume Input [veh/h]	0	0	1394	0	0	428
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
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]	25	30	13	10	12	10
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]	25	30	1407	10	12	438
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	8	382	3	3	119
Total Analysis Volume [veh/h]	27	33	1529	11	13	476
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	Yes		
Number of Storage Spaces in Median	2	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.17	0.09	0.02	0.00	0.03	0.00
d_M, Delay for Movement [s/veh]	32.64	16.44	0.00	0.00	13.49	0.00
Movement LOS	D	C	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.60	0.31	0.00	0.00	0.09	0.00
95th-Percentile Queue Length [ft/ln]	15.03	7.80	0.00	0.00	2.29	0.00
d_A, Approach Delay [s/veh]	23.73		0.00		0.36	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.77					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 9: Project Dwy 1 (NS) at 223rd St (EW)

Control Type:	Two-way stop	Delay (sec / veh):	27.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.135

Intersection Setup

Name	Project Dwy 1		223rd St		223rd St	
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]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Project Dwy 1		223rd St		223rd St	
Base Volume Input [veh/h]	0	0	1268	0	0	441
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
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]	23	11	12	10	4	31
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]	23	11	1280	10	4	472
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	3	348	3	1	128
Total Analysis Volume [veh/h]	25	12	1391	11	4	513
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	Yes		
Number of Storage Spaces in Median	2	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.13	0.03	0.01	0.00	0.01	0.01
d_M, Delay for Movement [s/veh]	27.55	17.51	0.00	0.00	12.35	0.00
Movement LOS	D	C	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.58	0.58	0.00	0.00	0.02	0.00
95th-Percentile Queue Length [ft/ln]	14.53	14.53	0.00	0.00	0.61	0.00
d_A, Approach Delay [s/veh]	24.29		0.00		0.10	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.48					
Intersection LOS	D					

OPENING YEAR (2021) WITHOUT PROJECT

Panattoni Project

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

Scenario 3 Opening Year without Project
3/9/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Wilmington Ave (NS) at I-405 WB Ramps (EW)	Signalized	ICU 1	WB Left	0.645	-	B
2	Wilmington Ave (NS) at I-405 EB Ramps (EW)	Signalized	ICU 1	NB Right	0.886	-	D
3	Wilmington Ave (NS) at 223rd St (EW)	Signalized	ICU 1	SB Right	0.718	-	C
4	Alameda St (NS) at I-405 WB Ramps (EW)	Signalized	ICU 1	SB Thru	0.592	-	A
5	I-405 EB Ramps (NS) at 223rd St (EW)	Signalized	ICU 1	EB Left	0.560	-	A
6	Alameda St (NS) at 223rd St (EW)	Signalized	ICU 1	NB Right	0.577	-	A

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: Wilmington Ave (NS) at I-405 WB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.645

Intersection Setup

Name	Wilmington Ave		Wilmington Ave		I-405 WB Ramps	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Wilmington Ave		Wilmington Ave		I-405 WB Ramps	
Base Volume Input [veh/h]	459	88	0	862	1035	447
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.00	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	11	0	0	17	-13	16
Diverted Trips [veh/h]	0	0	0	0	13	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]	472	88	0	883	1040	465
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	118	0	0	221	260	116
Total Analysis Volume [veh/h]	472	0	0	883	1040	465
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

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

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	2	0	0	6	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.15	0.00	0.00	0.18	0.33	0.29
Intersection LOS	B					
Intersection V/C	0.645					

Intersection Level Of Service Report
Intersection 2: Wilmington Ave (NS) at I-405 EB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.886

Intersection Setup

Name	Wilmington Ave			Wilmington Ave			I-405 EB Ramps			I-405 EB Ramps		
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	2	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	340.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

Volumes

Name	Wilmington Ave			Wilmington Ave			I-405 EB Ramps			I-405 EB Ramps		
Base Volume Input [veh/h]	0	435	892	383	1388	0	85	0	191	0	0	0
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	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Rate	1.00	1.01	1.01	1.01	1.01	1.00	1.01	1.01	1.01	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	-2	-19	13	-16	0	13	0	13	0	0	0
Diverted Trips [veh/h]	0	2	19	0	16	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]	0	437	896	398	1395	0	98	0	205	0	0	0
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]	0	109	224	100	349	0	25	0	51	0	0	0
Total Analysis Volume [veh/h]	0	437	896	398	1395	0	98	0	205	0	0	0
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]	10.00

Phasing & Timing

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.09	0.53	0.12	0.29	0.00	0.06	0.00	0.13	0.00	0.00	0.00
Intersection LOS	D											
Intersection V/C	0.886											

Intersection Level Of Service Report
Intersection 3: Wilmington Ave (NS) at 223rd St (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.718

Intersection Setup

Name	Wilmington Ave			Wilmington Ave			223rd St			223rd St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	2	0	0	2	0	0	2	0	0
Pocket Length [ft]	130.00	100.00	214.00	218.00	100.00	100.00	285.00	100.00	100.00	246.00	100.00	100.00
Speed [mph]	40.00			40.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

Volumes

Name	Wilmington Ave			Wilmington Ave			223rd St			223rd St		
Base Volume Input [veh/h]	17	823	209	89	982	473	416	524	12	190	531	69
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	6	-30	0	18	-21	0	0	10	10	0	6	9
Diverted Trips [veh/h]	0	30	0	0	21	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]	23	827	210	107	987	475	418	537	22	191	540	78
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]	6	207	53	27	247	119	105	134	6	48	135	20
Total Analysis Volume [veh/h]	23	827	210	107	987	475	418	537	22	191	540	78
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]	10.00

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	0.01	0.17	0.13	0.03	0.30	0.30	0.13	0.17	0.17	0.06	0.17	0.05
Intersection LOS	C											
Intersection V/C	0.718											

Intersection Level Of Service Report
Intersection 4: Alameda St (NS) at I-405 WB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.592

Intersection Setup

Name	Alameda St		Alameda St		I-405 WB Ramps	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	308.00	100.00	100.00	100.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Alameda St		Alameda St		I-405 WB Ramps	
Base Volume Input [veh/h]	684	110	77	1171	329	160
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	22	6	0	8	25	13
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]	709	117	77	1185	356	174
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]	177	29	19	296	89	44
Total Analysis Volume [veh/h]	709	117	77	1185	356	174
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

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

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal group	2	2	1	6	7	0
Auxiliary Signal Groups		2,7				
Lead / Lag	-	-	Lead	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.22	0.00	0.05	0.25	0.22	0.11
Intersection LOS	A					
Intersection V/C	0.592					

Intersection Level Of Service Report
Intersection 5: I-405 EB Ramps (NS) at 223rd St (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.560

Intersection Setup

Name	ICTF Dwy			I-405 EB Ramps			223rd St			223rd St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	156.00	100.00	166.00	118.00	100.00	100.00
Speed [mph]	25.00			30.00			45.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	ICTF Dwy			I-405 EB Ramps			223rd St			223rd St		
Base Volume Input [veh/h]	2	2	2	80	2	116	635	388	0	4	773	49
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	8	13	10	0	0	6	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]	2	2	2	80	2	125	651	400	0	4	783	49
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	1	20	1	31	163	100	0	1	196	12
Total Analysis Volume [veh/h]	2	2	2	80	2	125	651	400	0	4	783	49
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]	10.00

Phasing & Timing

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.05	0.08	0.08	0.20	0.13	0.00	0.00	0.17	0.17
Intersection LOS	A											
Intersection V/C	0.560											

Intersection Level Of Service Report
Intersection 6: Alameda St (NS) at 223rd St (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.577

Intersection Setup

Name	Alameda St		223rd St		223rd St	
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	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	427.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		No	

Volumes

Name	Alameda St		223rd St		223rd St	
Base Volume Input [veh/h]	178	483	588	196	171	704
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	23	9	14	5	4	10
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]	202	494	605	202	176	718
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]	51	124	151	51	44	180
Total Analysis Volume [veh/h]	202	494	605	202	176	718
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

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

Phasing & Timing

Control Type	Permissive	Overlap	Permissive	Permissive	Protected	Permissive
Signal group	5	2	8	0	7	4
Auxiliary Signal Groups		2,7				
Lead / Lag	Lead	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.13	0.25	0.17	0.17	0.06	0.15
Intersection LOS	A					
Intersection V/C	0.577					

Panattoni Project

Vistro File: G:\...\PM.vistro
Report File: G:\...\PMOY.pdf

Scenario 3 Opening Year without Project
3/9/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Wilmington Ave (NS) at I-405 WB Ramps (EW)	Signalized	ICU 1	WB Left	0.728	-	C
2	Wilmington Ave (NS) at I-405 EB Ramps (EW)	Signalized	ICU 1	NB Right	0.777	-	C
3	Wilmington Ave (NS) at 223rd St (EW)	Signalized	ICU 1	SB Thru	0.734	-	C
4	Alameda St (NS) at I-405 WB Ramps (EW)	Signalized	ICU 1	NB Thru	0.849	-	D
5	I-405 EB Ramps (NS) at 223rd St (EW)	Signalized	ICU 1	EB Thru	0.571	-	A
6	Alameda St (NS) at 223rd St (EW)	Signalized	ICU 1	NB Right	0.858	-	D

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: Wilmington Ave (NS) at I-405 WB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.728

Intersection Setup

Name	Wilmington Ave		Wilmington Ave		I-405 WB Ramps	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Wilmington Ave		Wilmington Ave		I-405 WB Ramps	
Base Volume Input [veh/h]	446	104	0	1223	1150	372
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.00	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	5	0	49	-39	8
Diverted Trips [veh/h]	0	0	0	0	39	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]	449	110	0	1278	1156	382
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	112	0	0	320	289	96
Total Analysis Volume [veh/h]	449	0	0	1278	1156	382
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

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

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	2	0	0	6	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.14	0.00	0.00	0.27	0.36	0.24
Intersection LOS	C					
Intersection V/C	0.728					

Intersection Level Of Service Report
Intersection 2: Wilmington Ave (NS) at I-405 EB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.777

Intersection Setup

Name	Wilmington Ave			Wilmington Ave			I-405 EB Ramps			I-405 EB Ramps		
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	2	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	340.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

Volumes

Name	Wilmington Ave			Wilmington Ave			I-405 EB Ramps			I-405 EB Ramps		
Base Volume Input [veh/h]	0	571	683	654	1492	0	15	1	48	0	0	0
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	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Rate	1.00	1.01	1.01	1.01	1.01	1.00	1.01	1.01	1.01	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	-4	-32	40	-46	0	10	0	-9	0	0	0
Diverted Trips [veh/h]	0	4	32	0	46	0	0	0	9	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]	0	574	686	697	1499	0	25	1	48	0	0	0
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]	0	144	172	174	375	0	6	0	12	0	0	0
Total Analysis Volume [veh/h]	0	574	686	697	1499	0	25	1	48	0	0	0
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]	10.00

Phasing & Timing

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.12	0.43	0.22	0.31	0.00	0.02	0.02	0.03	0.00	0.00	0.00
Intersection LOS	C											
Intersection V/C	0.777											

Intersection Level Of Service Report
Intersection 3: Wilmington Ave (NS) at 223rd St (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.734

Intersection Setup

Name	Wilmington Ave			Wilmington Ave			223rd St			223rd St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	2	0	0	2	0	0	2	0	0
Pocket Length [ft]	130.00	100.00	214.00	218.00	100.00	100.00	285.00	100.00	100.00	246.00	100.00	100.00
Speed [mph]	40.00			40.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

Volumes

Name	Wilmington Ave			Wilmington Ave			223rd St			223rd St		
Base Volume Input [veh/h]	12	745	322	132	968	549	284	814	9	131	211	99
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	9	-58	0	14	-70	0	0	6	6	0	9	22
Diverted Trips [veh/h]	0	58	0	0	70	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	749	324	147	973	552	285	824	15	132	221	121
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	187	81	37	243	138	71	206	4	33	55	30
Total Analysis Volume [veh/h]	21	749	324	147	973	552	285	824	15	132	221	121
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]	10.00

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	0.01	0.16	0.20	0.05	0.32	0.32	0.09	0.26	0.26	0.04	0.07	0.08
Intersection LOS	C											
Intersection V/C	0.734											

Intersection Level Of Service Report
Intersection 4: Alameda St (NS) at I-405 WB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.849

Intersection Setup

Name	Alameda St		Alameda St		I-405 WB Ramps	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	308.00	100.00	100.00	100.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Alameda St		Alameda St		I-405 WB Ramps	
Base Volume Input [veh/h]	1180	282	116	1005	460	230
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	12	10	0	18	21	15
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]	1198	293	117	1028	483	246
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]	300	73	29	257	121	62
Total Analysis Volume [veh/h]	1198	293	117	1028	483	246
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

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

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal group	2	2	1	6	7	0
Auxiliary Signal Groups		2,7				
Lead / Lag	-	-	Lead	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.37	0.00	0.07	0.21	0.30	0.15
Intersection LOS	D					
Intersection V/C	0.849					

Intersection Level Of Service Report
Intersection 5: I-405 EB Ramps (NS) at 223rd St (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.571

Intersection Setup

Name	ICTF Dwy			I-405 EB Ramps			223rd St			223rd St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	156.00	100.00	166.00	118.00	100.00	100.00
Speed [mph]	25.00			30.00			45.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	ICTF Dwy			I-405 EB Ramps			223rd St			223rd St		
Base Volume Input [veh/h]	3	5	4	112	0	40	968	1064	5	3	257	116
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	9	29	6	0	0	9	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]	3	5	4	113	0	49	1002	1075	5	3	267	117
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	1	28	0	12	251	269	1	1	67	29
Total Analysis Volume [veh/h]	3	5	4	113	0	49	1002	1075	5	3	267	117
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]	10.00

Phasing & Timing

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.01	0.07	0.00	0.03	0.31	0.34	0.00	0.00	0.08	0.08
Intersection LOS	A											
Intersection V/C	0.571											

Intersection Level Of Service Report
Intersection 6: Alameda St (NS) at 223rd St (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.858

Intersection Setup

Name	Alameda St		223rd St		223rd St	
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	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	427.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		No	

Volumes

Name	Alameda St		223rd St		223rd St	
Base Volume Input [veh/h]	102	657	1391	190	108	236
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	13	11	24	13	8	10
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]	116	671	1422	204	117	247
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]	29	168	356	51	29	62
Total Analysis Volume [veh/h]	116	671	1422	204	117	247
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

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

Phasing & Timing

Control Type	Permissive	Overlap	Permissive	Permissive	Protected	Permissive
Signal group	5	2	8	0	7	4
Auxiliary Signal Groups		2,7				
Lead / Lag	Lead	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.38	0.34	0.34	0.04	0.05
Intersection LOS	D					
Intersection V/C	0.858					

OPENING YEAR (2021) WITH PROJECT

Panattoni Project

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

Scenario 4 Opening Year with Project
3/13/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Wilmington Ave (NS) at I-405 WB Ramps (EW)	Signalized	ICU 1	WB Left	0.648	-	B
2	Wilmington Ave (NS) at I-405 EB Ramps (EW)	Signalized	ICU 1	NB Right	0.893	-	D
3	Wilmington Ave (NS) at 223rd St (EW)	Signalized	ICU 1	SB Right	0.719	-	C
4	Alameda St (NS) at I-405 WB Ramps (EW)	Signalized	ICU 1	SB Thru	0.612	-	B
5	I-405 EB Ramps (NS) at 223rd St (EW)	Signalized	ICU 1	EB Left	0.563	-	A
6	Alameda St (NS) at 223rd St (EW)	Signalized	ICU 1	NB Right	0.581	-	A
7	Project Dwy 3 (NS) at 223rd St (EW)	Two-way stop	HCM 6th Edition	SB Left	0.000	22.4	C
8	Project Dwy 2 (NS) at 223rd St (EW)	Two-way stop	HCM 6th Edition	NB Left	0.035	18.2	C
9	Project Dwy 1 (NS) at 223rd St (EW)	Two-way stop	HCM 6th Edition	NB Left	0.024	17.9	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: Wilmington Ave (NS) at I-405 WB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.648

Intersection Setup

Name	Wilmington Ave		Wilmington Ave		I-405 WB Ramps	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Wilmington Ave		Wilmington Ave		I-405 WB Ramps	
Base Volume Input [veh/h]	459	88	0	862	1035	447
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.00	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	15	9	0	33	-13	16
Diverted Trips [veh/h]	0	0	0	0	13	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]	476	97	0	899	1040	465
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	119	0	0	225	260	116
Total Analysis Volume [veh/h]	476	0	0	899	1040	465
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

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

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	2	0	0	6	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.15	0.00	0.00	0.19	0.33	0.29
Intersection LOS	B					
Intersection V/C	0.648					

Intersection Level Of Service Report
Intersection 2: Wilmington Ave (NS) at I-405 EB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.893

Intersection Setup

Name	Wilmington Ave			Wilmington Ave			I-405 EB Ramps			I-405 EB Ramps		
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	2	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	340.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

Volumes

Name	Wilmington Ave			Wilmington Ave			I-405 EB Ramps			I-405 EB Ramps		
Base Volume Input [veh/h]	0	435	892	383	1388	0	85	0	191	0	0	0
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	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Rate	1.00	1.01	1.01	1.01	1.01	1.00	1.01	1.01	1.01	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	-19	13	0	0	13	0	42	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]	0	448	877	398	1395	0	98	0	234	0	0	0
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]	0	112	219	100	349	0	25	0	59	0	0	0
Total Analysis Volume [veh/h]	0	448	877	398	1395	0	98	0	234	0	0	0
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]	10.00

Phasing & Timing

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.09	0.52	0.12	0.29	0.00	0.06	0.00	0.15	0.00	0.00	0.00
Intersection LOS	D											
Intersection V/C	0.893											

Intersection Level Of Service Report
Intersection 3: Wilmington Ave (NS) at 223rd St (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.719

Intersection Setup

Name	Wilmington Ave			Wilmington Ave			223rd St			223rd St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	2	0	0	2	0	0	2	0	0
Pocket Length [ft]	130.00	100.00	214.00	218.00	100.00	100.00	285.00	100.00	100.00	246.00	100.00	100.00
Speed [mph]	40.00			40.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

Volumes

Name	Wilmington Ave			Wilmington Ave			223rd St			223rd St		
Base Volume Input [veh/h]	17	823	209	89	982	473	416	524	12	190	531	69
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	6	-30	12	63	-21	0	0	13	10	3	7	22
Diverted Trips [veh/h]	0	30	0	0	21	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]	23	827	222	152	987	475	418	540	22	194	541	91
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]	6	207	56	38	247	119	105	135	6	49	135	23
Total Analysis Volume [veh/h]	23	827	222	152	987	475	418	540	22	194	541	91
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]	10.00

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	0.01	0.17	0.14	0.05	0.30	0.30	0.13	0.18	0.18	0.06	0.17	0.06
Intersection LOS	C											
Intersection V/C	0.719											

Intersection Level Of Service Report
Intersection 4: Alameda St (NS) at I-405 WB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.612

Intersection Setup

Name	Alameda St		Alameda St		I-405 WB Ramps	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	308.00	100.00	100.00	100.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Alameda St		Alameda St		I-405 WB Ramps	
Base Volume Input [veh/h]	684	110	77	1171	329	160
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	26	6	0	21	54	13
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]	713	117	77	1198	385	174
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]	178	29	19	300	96	44
Total Analysis Volume [veh/h]	713	117	77	1198	385	174
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

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

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal group	2	2	1	6	7	0
Auxiliary Signal Groups		2,7				
Lead / Lag	-	-	Lead	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.22	0.00	0.05	0.25	0.24	0.11
Intersection LOS	B					
Intersection V/C	0.612					

Intersection Level Of Service Report
Intersection 5: I-405 EB Ramps (NS) at 223rd St (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.563

Intersection Setup

Name	ICTF Dwy			I-405 EB Ramps			223rd St			223rd St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	156.00	100.00	166.00	118.00	100.00	100.00
Speed [mph]	25.00			30.00			45.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	ICTF Dwy			I-405 EB Ramps			223rd St			223rd St		
Base Volume Input [veh/h]	2	2	2	80	2	116	635	388	0	4	773	49
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	8	20	11	0	0	9	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]	2	2	2	80	2	125	658	401	0	4	786	49
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	1	20	1	31	165	100	0	1	197	12
Total Analysis Volume [veh/h]	2	2	2	80	2	125	658	401	0	4	786	49
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]	10.00

Phasing & Timing

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.05	0.08	0.08	0.21	0.13	0.00	0.00	0.17	0.17
Intersection LOS	A											
Intersection V/C	0.563											

Intersection Level Of Service Report
Intersection 6: Alameda St (NS) at 223rd St (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.581

Intersection Setup

Name	Alameda St		223rd St		223rd St	
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	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	427.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		No	

Volumes

Name	Alameda St		223rd St		223rd St	
Base Volume Input [veh/h]	178	483	588	196	171	704
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	89	9	22	17	4	13
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]	268	494	613	214	176	721
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]	67	124	153	54	44	180
Total Analysis Volume [veh/h]	268	494	613	214	176	721
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

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

Phasing & Timing

Control Type	Permissive	Overlap	Permissive	Permissive	Protected	Permissive
Signal group	5	2	8	0	7	4
Auxiliary Signal Groups		2,7				
Lead / Lag	Lead	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.17	0.25	0.17	0.17	0.06	0.15
Intersection LOS	A					
Intersection V/C	0.581					

Intersection Level Of Service Report
Intersection 7: Project Dwy 3 (NS) at 223rd St (EW)

Control Type:	Two-way stop	Delay (sec / veh):	22.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Project Dwy 3						223rd St			223rd St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	Project Dwy 3						223rd St			223rd St		
Base Volume Input [veh/h]	0	0	0	0	0	3	6	832	0	0	793	2
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 [%]	0.00	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.01	1.00	1.01	1.01	1.00	1.01	1.01	1.01	1.01	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	0	7	0	0	0	0	41	7	23	61	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]	2	0	7	0	0	3	6	877	7	23	858	2
Peak Hour Factor	0.8605	1.0000	0.8605	0.8605	1.0000	0.8605	0.8605	0.8605	0.8605	0.8605	0.8605	0.8605
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	0	2	0	0	1	2	255	2	7	249	1
Total Analysis Volume [veh/h]	2	0	8	0	0	3	7	1019	8	27	997	2
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	Yes	Yes		
Number of Storage Spaces in Median	2	2	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.02	0.00	0.00	0.01	0.01	0.01	0.00	0.04	0.01	0.00
d_M, Delay for Movement [s/veh]	21.96	0.00	12.27	22.36	0.00	11.94	10.19	0.00	0.00	10.48	0.00	0.00
Movement LOS	C		B	C		B	B	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	0.08	0.00	0.08	0.00	0.00	0.02	0.03	0.00	0.00	0.12	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.92	0.00	1.92	0.00	0.00	0.43	0.76	0.00	0.00	3.08	0.00	0.00
d_A, Approach Delay [s/veh]	14.21			11.94			0.07			0.28		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	0.26											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 8: Project Dwy 2 (NS) at 223rd St (EW)

Control Type:	Two-way stop	Delay (sec / veh):	18.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.035

Intersection Setup

Name	Project Dwy 2		223rd St		223rd St	
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]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Project Dwy 2		223rd St		223rd St	
Base Volume Input [veh/h]	0	0	838	0	0	796
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	9	8	40	29	32	32
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]	9	8	882	29	32	832
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	2	240	8	9	226
Total Analysis Volume [veh/h]	10	9	959	32	35	904
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	Yes		
Number of Storage Spaces in Median	2	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.02	0.01	0.00	0.05	0.01
d_M, Delay for Movement [s/veh]	18.20	11.98	0.00	0.00	10.37	0.00
Movement LOS	C	B	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.11	0.05	0.00	0.00	0.16	0.00
95th-Percentile Queue Length [ft/ln]	2.74	1.31	0.00	0.00	3.91	0.00
d_A, Approach Delay [s/veh]	15.25		0.00		0.39	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.33					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 9: Project Dwy 1 (NS) at 223rd St (EW)

Control Type:	Two-way stop	Delay (sec / veh):	17.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.024

Intersection Setup

Name	Project Dwy 1		223rd St		223rd St	
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]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Project Dwy 1		223rd St		223rd St	
Base Volume Input [veh/h]	0	0	822	0	0	790
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	6	5	64	24	14	26
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]	6	5	890	24	14	820
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	1	242	7	4	223
Total Analysis Volume [veh/h]	7	5	967	26	15	891
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	Yes		
Number of Storage Spaces in Median	2	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.01	0.01	0.00	0.02	0.01
d_M, Delay for Movement [s/veh]	17.86	12.22	0.00	0.00	10.22	0.00
Movement LOS	C	B	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.10	0.10	0.00	0.00	0.07	0.00
95th-Percentile Queue Length [ft/ln]	2.62	2.62	0.00	0.00	1.63	0.00
d_A, Approach Delay [s/veh]	15.51		0.00		0.17	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.18					
Intersection LOS	C					

Panattoni Project

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Scenario 4 Opening Year with Project
3/13/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Wilmington Ave (NS) at I-405 WB Ramps (EW)	Signalized	ICU 1	WB Left	0.729	-	C
2	Wilmington Ave (NS) at I-405 EB Ramps (EW)	Signalized	ICU 1	NB Right	0.777	-	C
3	Wilmington Ave (NS) at 223rd St (EW)	Signalized	ICU 1	SB Thru	0.738	-	C
4	Alameda St (NS) at I-405 WB Ramps (EW)	Signalized	ICU 1	NB Thru	0.859	-	D
5	I-405 EB Ramps (NS) at 223rd St (EW)	Signalized	ICU 1	EB Thru	0.580	-	A
6	Alameda St (NS) at 223rd St (EW)	Signalized	ICU 1	NB Right	0.871	-	D
7	Project Dwy 3 (NS) at 223rd St (EW)	Two-way stop	HCM 6th Edition	NB Left	0.048	35.4	E
8	Project Dwy 2 (NS) at 223rd St (EW)	Two-way stop	HCM 6th Edition	NB Left	0.179	33.9	D
9	Project Dwy 1 (NS) at 223rd St (EW)	Two-way stop	HCM 6th Edition	NB Left	0.140	28.5	D

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: Wilmington Ave (NS) at I-405 WB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.729

Intersection Setup

Name	Wilmington Ave		Wilmington Ave		I-405 WB Ramps	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Wilmington Ave		Wilmington Ave		I-405 WB Ramps	
Base Volume Input [veh/h]	446	104	0	1223	1150	372
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.00	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	15	30	0	55	-39	8
Diverted Trips [veh/h]	0	0	0	0	39	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]	463	135	0	1284	1156	382
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	116	0	0	321	289	96
Total Analysis Volume [veh/h]	463	0	0	1284	1156	382
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

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

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	2	0	0	6	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.14	0.00	0.00	0.27	0.36	0.24
Intersection LOS	C					
Intersection V/C	0.729					

Intersection Level Of Service Report
Intersection 2: Wilmington Ave (NS) at I-405 EB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.777

Intersection Setup

Name	Wilmington Ave			Wilmington Ave			I-405 EB Ramps			I-405 EB Ramps		
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	2	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	340.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

Volumes

Name	Wilmington Ave			Wilmington Ave			I-405 EB Ramps			I-405 EB Ramps		
Base Volume Input [veh/h]	0	571	683	654	1492	0	15	1	48	0	0	0
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	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Rate	1.00	1.01	1.01	1.01	1.01	1.00	1.01	1.01	1.01	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	35	-32	40	-40	0	10	0	1	0	0	0
Diverted Trips [veh/h]	0	0	32	0	40	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]	0	609	686	697	1499	0	25	1	49	0	0	0
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]	0	152	172	174	375	0	6	0	12	0	0	0
Total Analysis Volume [veh/h]	0	609	686	697	1499	0	25	1	49	0	0	0
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]	10.00

Phasing & Timing

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.13	0.43	0.22	0.31	0.00	0.02	0.02	0.03	0.00	0.00	0.00
Intersection LOS	C											
Intersection V/C	0.777											

Intersection Level Of Service Report
Intersection 3: Wilmington Ave (NS) at 223rd St (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.738

Intersection Setup

Name	Wilmington Ave			Wilmington Ave			223rd St			223rd St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	2	0	0	2	0	0	2	0	0
Pocket Length [ft]	130.00	100.00	214.00	218.00	100.00	100.00	285.00	100.00	100.00	246.00	100.00	100.00
Speed [mph]	40.00			40.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

Volumes

Name	Wilmington Ave			Wilmington Ave			223rd St			223rd St		
Base Volume Input [veh/h]	12	745	322	132	968	549	284	814	9	131	211	99
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	9	-58	5	30	-70	0	0	7	6	12	12	61
Diverted Trips [veh/h]	0	58	0	0	70	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	749	329	163	973	552	285	825	15	144	224	160
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	187	82	41	243	138	71	206	4	36	56	40
Total Analysis Volume [veh/h]	21	749	329	163	973	552	285	825	15	144	224	160
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]	10.00

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	0.01	0.16	0.21	0.05	0.32	0.32	0.09	0.26	0.26	0.05	0.07	0.10
Intersection LOS	C											
Intersection V/C	0.738											

Intersection Level Of Service Report
Intersection 4: Alameda St (NS) at I-405 WB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.859

Intersection Setup

Name	Alameda St		Alameda St		I-405 WB Ramps	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	308.00	100.00	100.00	100.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Alameda St		Alameda St		I-405 WB Ramps	
Base Volume Input [veh/h]	1180	282	116	1005	460	230
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	23	10	0	23	31	15
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]	1209	293	117	1033	493	246
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]	302	73	29	258	123	62
Total Analysis Volume [veh/h]	1209	293	117	1033	493	246
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

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

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal group	2	2	1	6	7	0
Auxiliary Signal Groups		2,7				
Lead / Lag	-	-	Lead	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.38	0.00	0.07	0.22	0.31	0.15
Intersection LOS	D					
Intersection V/C	0.859					

Intersection Level Of Service Report
Intersection 5: I-405 EB Ramps (NS) at 223rd St (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.580

Intersection Setup

Name	ICTF Dwy			I-405 EB Ramps			223rd St			223rd St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	156.00	100.00	166.00	118.00	100.00	100.00
Speed [mph]	25.00			30.00			45.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	ICTF Dwy			I-405 EB Ramps			223rd St			223rd St		
Base Volume Input [veh/h]	3	5	4	112	0	40	968	1064	5	3	257	116
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	9	56	9	0	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]	3	5	4	113	0	49	1029	1078	5	3	268	117
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	1	28	0	12	257	270	1	1	67	29
Total Analysis Volume [veh/h]	3	5	4	113	0	49	1029	1078	5	3	268	117
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]	10.00

Phasing & Timing

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.01	0.07	0.00	0.03	0.32	0.34	0.00	0.00	0.08	0.08
Intersection LOS	A											
Intersection V/C	0.580											

Intersection Level Of Service Report
Intersection 6: Alameda St (NS) at 223rd St (EW)

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.871

Intersection Setup

Name	Alameda St		223rd St		223rd St	
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	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	427.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		No	

Volumes

Name	Alameda St		223rd St		223rd St	
Base Volume Input [veh/h]	102	657	1391	190	108	236
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	36	11	54	43	8	11
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]	139	671	1452	234	117	248
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]	35	168	363	59	29	62
Total Analysis Volume [veh/h]	139	671	1452	234	117	248
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

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

Phasing & Timing

Control Type	Permissive	Overlap	Permissive	Permissive	Protected	Permissive
Signal group	5	2	8	0	7	4
Auxiliary Signal Groups		2,7				
Lead / Lag	Lead	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.38	0.35	0.35	0.04	0.05
Intersection LOS	D					
Intersection V/C	0.871					

Intersection Level Of Service Report
Intersection 7: Project Dwy 3 (NS) at 223rd St (EW)

Control Type:	Two-way stop	Delay (sec / veh):	35.4
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.048

Intersection Setup

Name	Project Dwy 3						223rd St			223rd St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	Project Dwy 3						223rd St			223rd St		
Base Volume Input [veh/h]	0	0	0	2	0	4	1	1393	0	0	424	2
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 [%]	0.00	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.01	1.00	1.01	1.01	1.00	1.01	1.01	1.01	1.01	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	6	0	19	0	0	0	0	61	2	9	47	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]	6	0	19	2	0	4	1	1461	2	9	473	2
Peak Hour Factor	0.9850	1.0000	0.9850	0.9850	1.0000	0.9850	0.9850	0.9850	0.9850	0.9850	0.9850	0.9850
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]	2	0	5	1	0	1	0	371	1	2	120	1
Total Analysis Volume [veh/h]	6	0	19	2	0	4	1	1483	2	9	480	2
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	Yes	Yes		
Number of Storage Spaces in Median	2	2	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.00	0.05	0.01	0.00	0.01	0.00	0.01	0.00	0.02	0.00	0.00
d_M, Delay for Movement [s/veh]	35.37	0.00	16.54	17.33	0.00	9.72	8.30	0.00	0.00	13.00	0.00	0.00
Movement LOS	E		C	C		A	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	0.33	0.00	0.33	0.02	0.00	0.02	0.00	0.00	0.00	0.06	0.00	0.00
95th-Percentile Queue Length [ft/ln]	8.27	0.00	8.27	0.51	0.00	0.39	0.07	0.00	0.00	1.50	0.00	0.00
d_A, Approach Delay [s/veh]	21.06			12.26			0.01			0.24		
Approach LOS	C			B			A			A		
d_I, Intersection Delay [s/veh]	0.36											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 8: Project Dwy 2 (NS) at 223rd St (EW)

Control Type:	Two-way stop	Delay (sec / veh):	33.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.179

Intersection Setup

Name	Project Dwy 2		223rd St		223rd St	
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]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Project Dwy 2		223rd St		223rd St	
Base Volume Input [veh/h]	0	0	1394	0	0	428
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	25	30	33	10	12	41
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]	25	30	1434	10	12	471
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	8	390	3	3	128
Total Analysis Volume [veh/h]	27	33	1559	11	13	512
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	Yes		
Number of Storage Spaces in Median	2	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.18	0.10	0.02	0.00	0.03	0.01
d_M, Delay for Movement [s/veh]	33.93	16.73	0.00	0.00	13.72	0.00
Movement LOS	D	C	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.63	0.32	0.00	0.00	0.09	0.00
95th-Percentile Queue Length [ft/ln]	15.68	8.00	0.00	0.00	2.36	0.00
d_A, Approach Delay [s/veh]	24.47		0.00		0.34	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.76					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 9: Project Dwy 1 (NS) at 223rd St (EW)

Control Type:	Two-way stop	Delay (sec / veh):	28.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.140

Intersection Setup

Name	Project Dwy 1		223rd St		223rd St	
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]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Project Dwy 1		223rd St		223rd St	
Base Volume Input [veh/h]	0	0	1268	0	0	441
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	23	11	32	10	4	62
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]	23	11	1306	10	4	505
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	3	355	3	1	137
Total Analysis Volume [veh/h]	25	12	1420	11	4	549
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	Yes		
Number of Storage Spaces in Median	2	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.14	0.03	0.01	0.00	0.01	0.01
d_M, Delay for Movement [s/veh]	28.51	17.95	0.00	0.00	12.55	0.00
Movement LOS	D	C	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.60	0.60	0.00	0.00	0.03	0.00
95th-Percentile Queue Length [ft/ln]	15.10	15.10	0.00	0.00	0.63	0.00
d_A, Approach Delay [s/veh]	25.09		0.00		0.09	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	0.48					
Intersection LOS	D					

APPENDIX E

TRAFFIC SIGNAL WARRANT WORKSHEETS

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Opening Year (2021) With Project - AM

Major Street Name = **223rd Street**

Total of Both Approaches (VPH) = **1765.82**

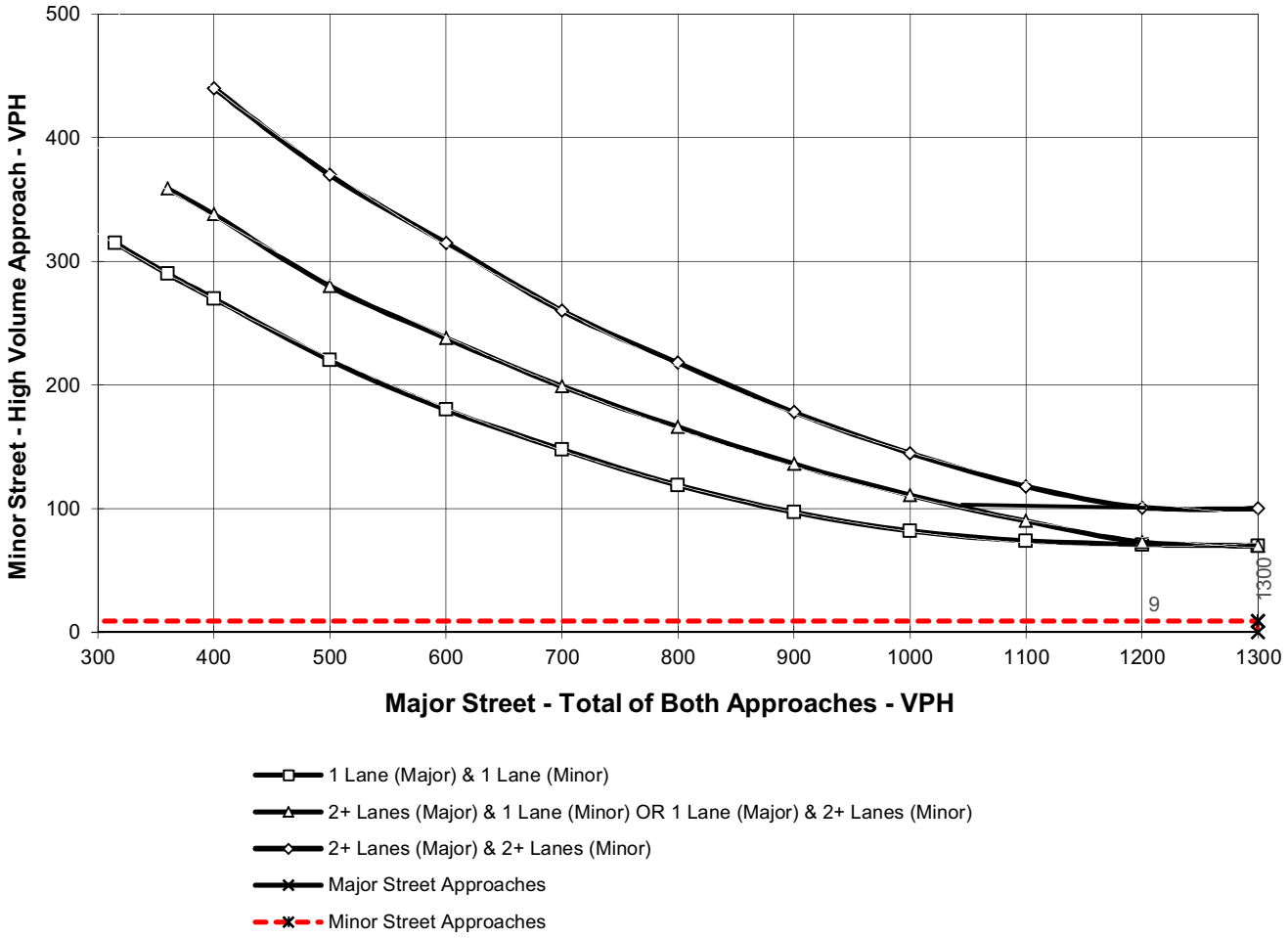
Number of Approach Lanes Major Street = **2**

Minor Street Name = **West Driveway #7**

High Volume Approach (VPH) = **9**

Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Opening Year (2021) With Project - PM

Major Street Name = **223rd Street**

Total of Both Approaches (VPH) = **1939.91**

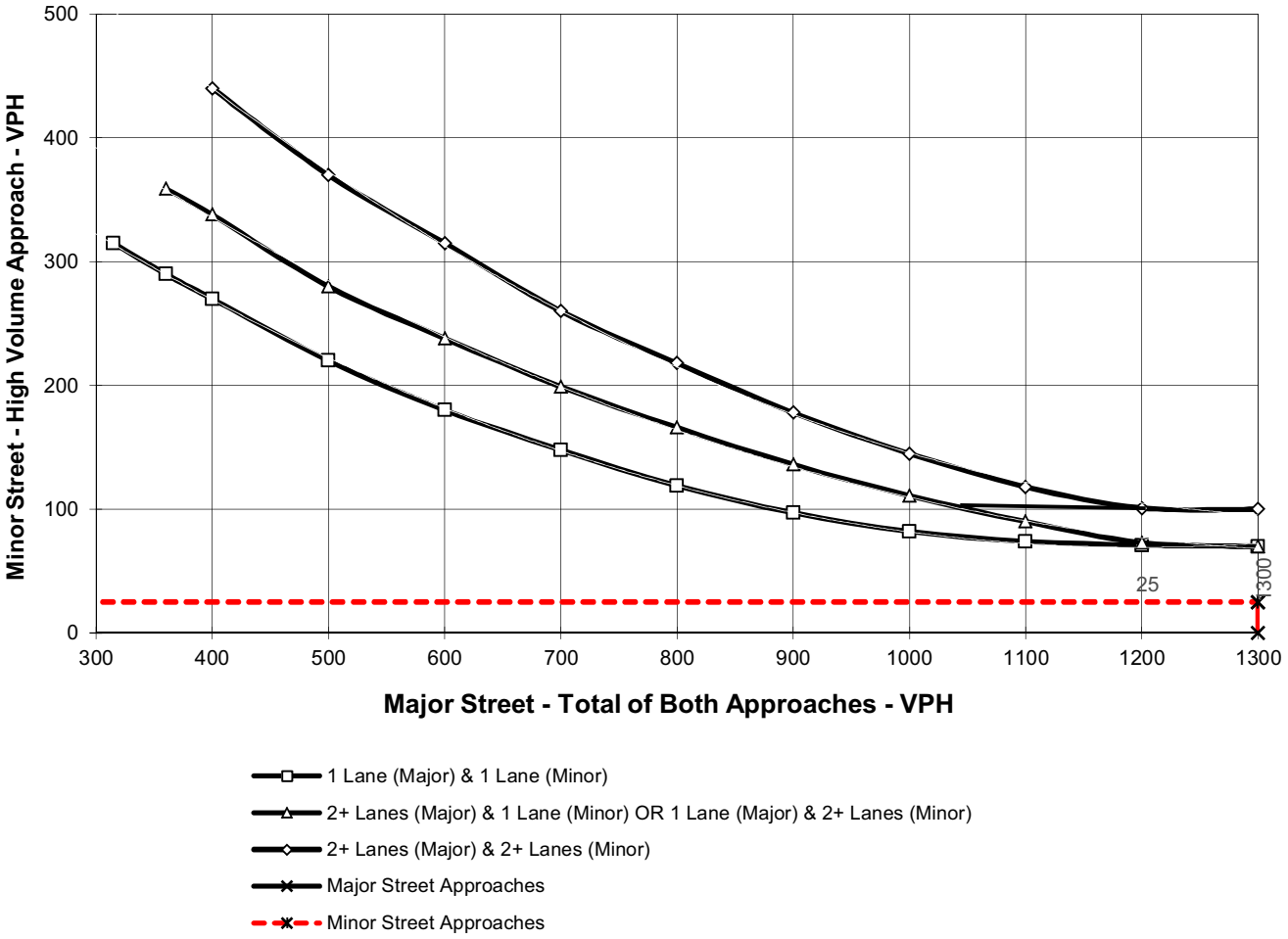
Number of Approach Lanes Major Street = **2**

Minor Street Name = **West Driveway #7**

High Volume Approach (VPH) = **25**

Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Opening Year (2021) With Project - AM

Major Street Name = **223rd Street**

Total of Both Approaches (VPH) = **1766.82**

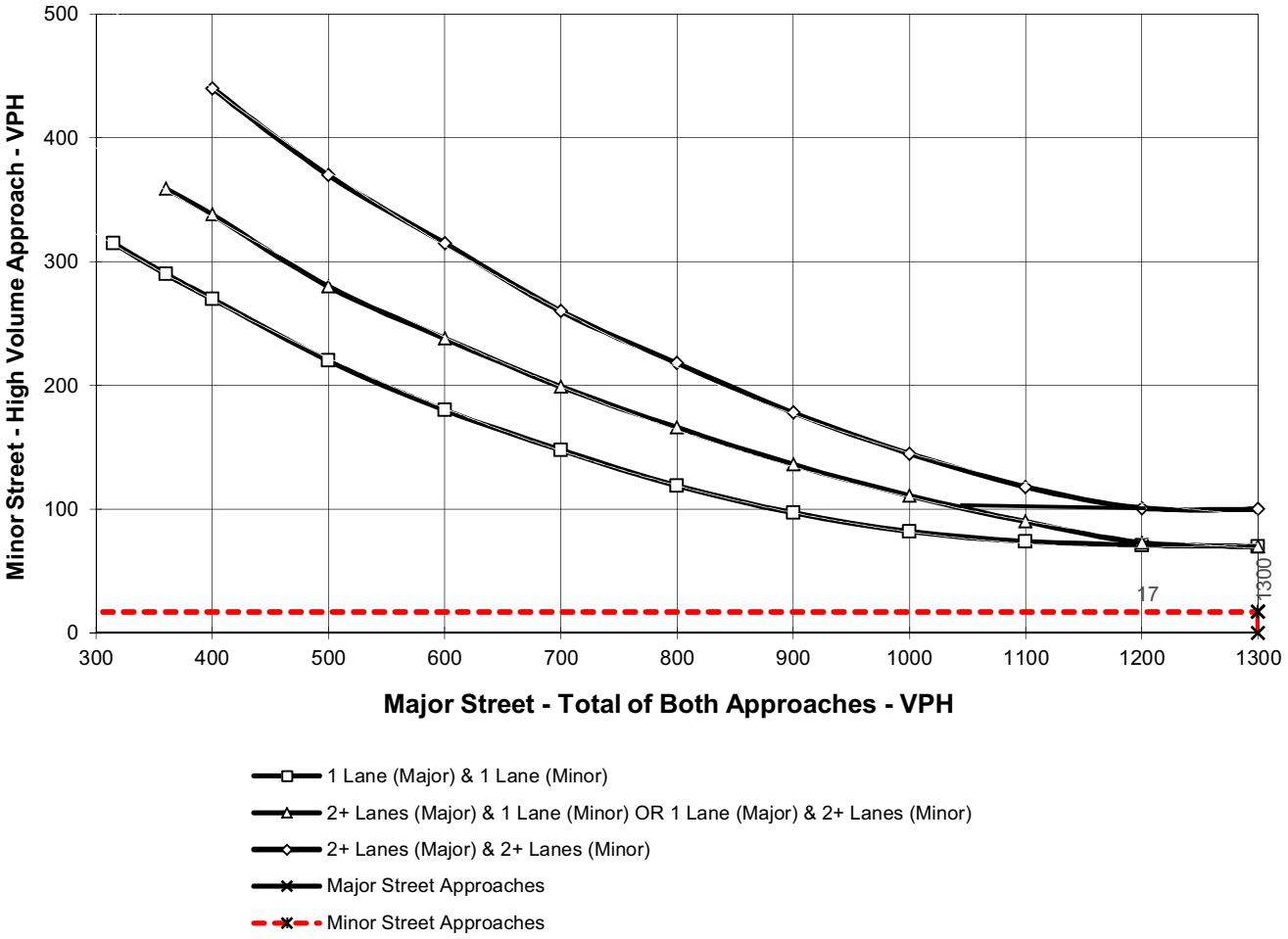
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Center Driveway #8**

High Volume Approach (VPH) = **17**

Number of Approach Lanes Minor Street = **2**

SIGNAL WARRANT NOT SATISFIED



** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Opening Year (2021) With Project - PM

Major Street Name = **223rd Street**

Total of Both Approaches (VPH) = **1918.91**

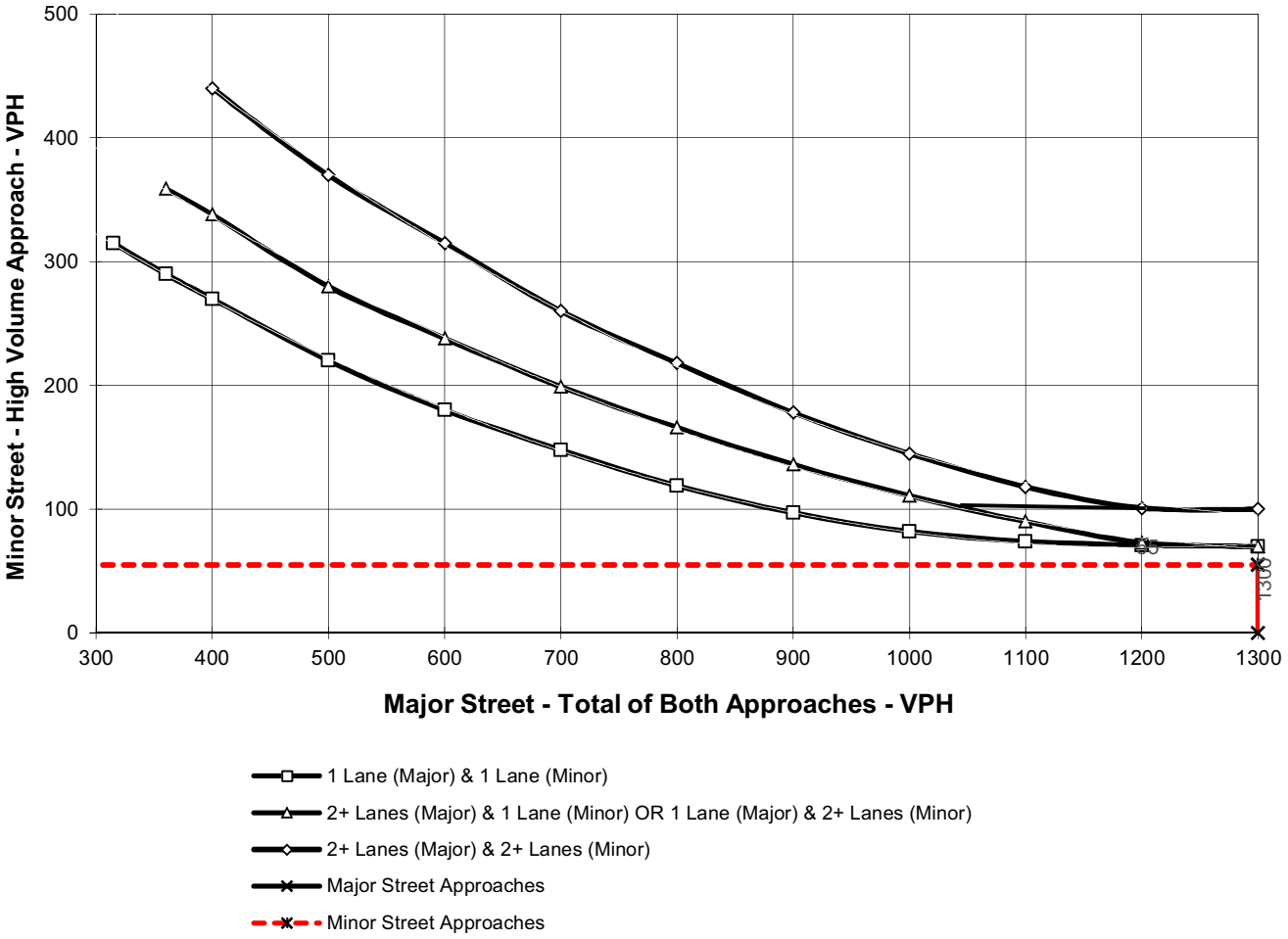
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Center Driveway #8**

High Volume Approach (VPH) = **55**

Number of Approach Lanes Minor Street = **2**

SIGNAL WARRANT NOT SATISFIED



** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Opening Year (2021) With Project - AM

Major Street Name = **223rd Street**

Total of Both Approaches (VPH) = **1740.81**

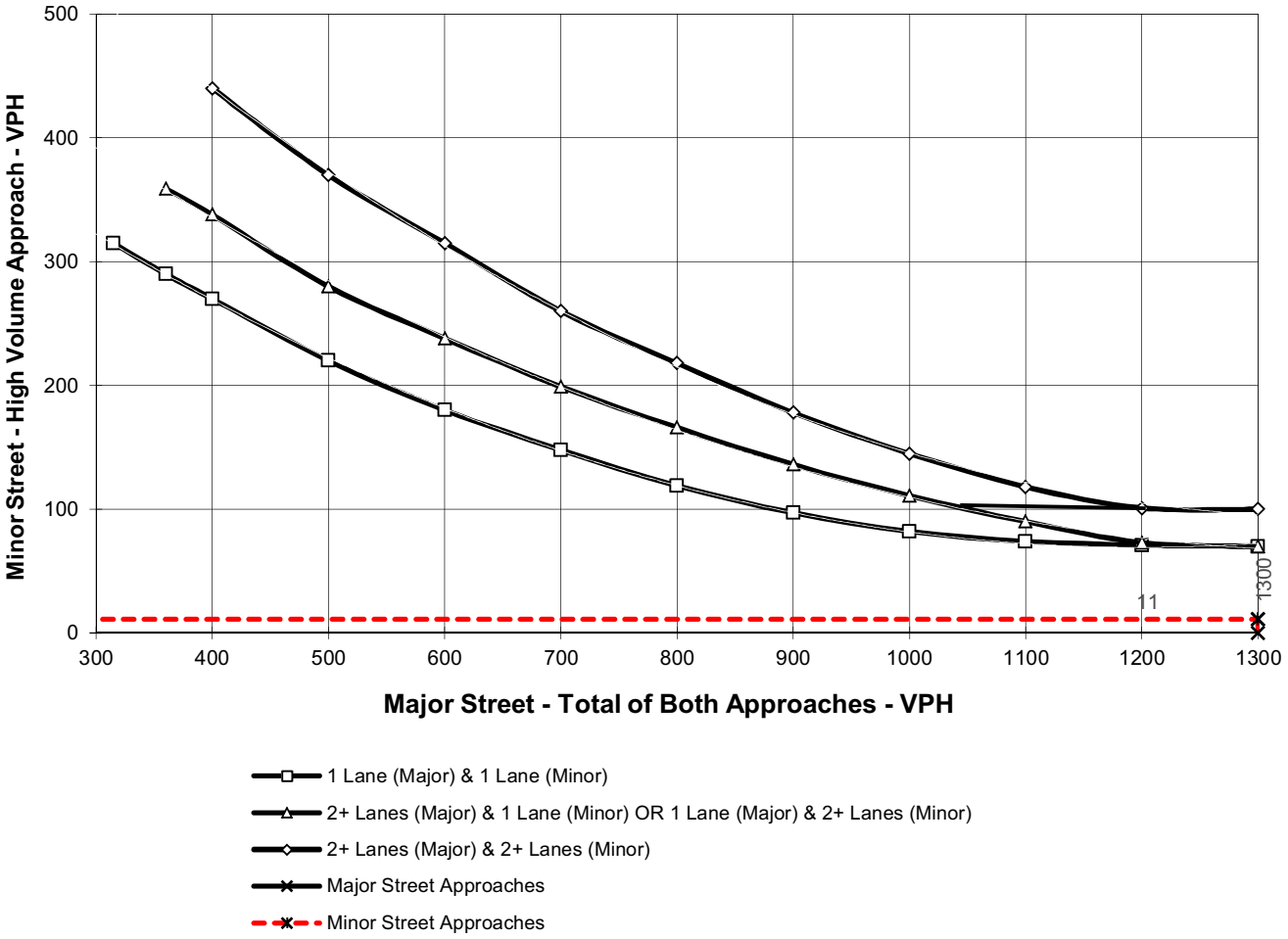
Number of Approach Lanes Major Street = **2**

Minor Street Name = **East Driveway #9**

High Volume Approach (VPH) = **11**

Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Opening Year (2021) With Project - PM

Major Street Name = **223rd Street**

Total of Both Approaches (VPH) = **1817.85**

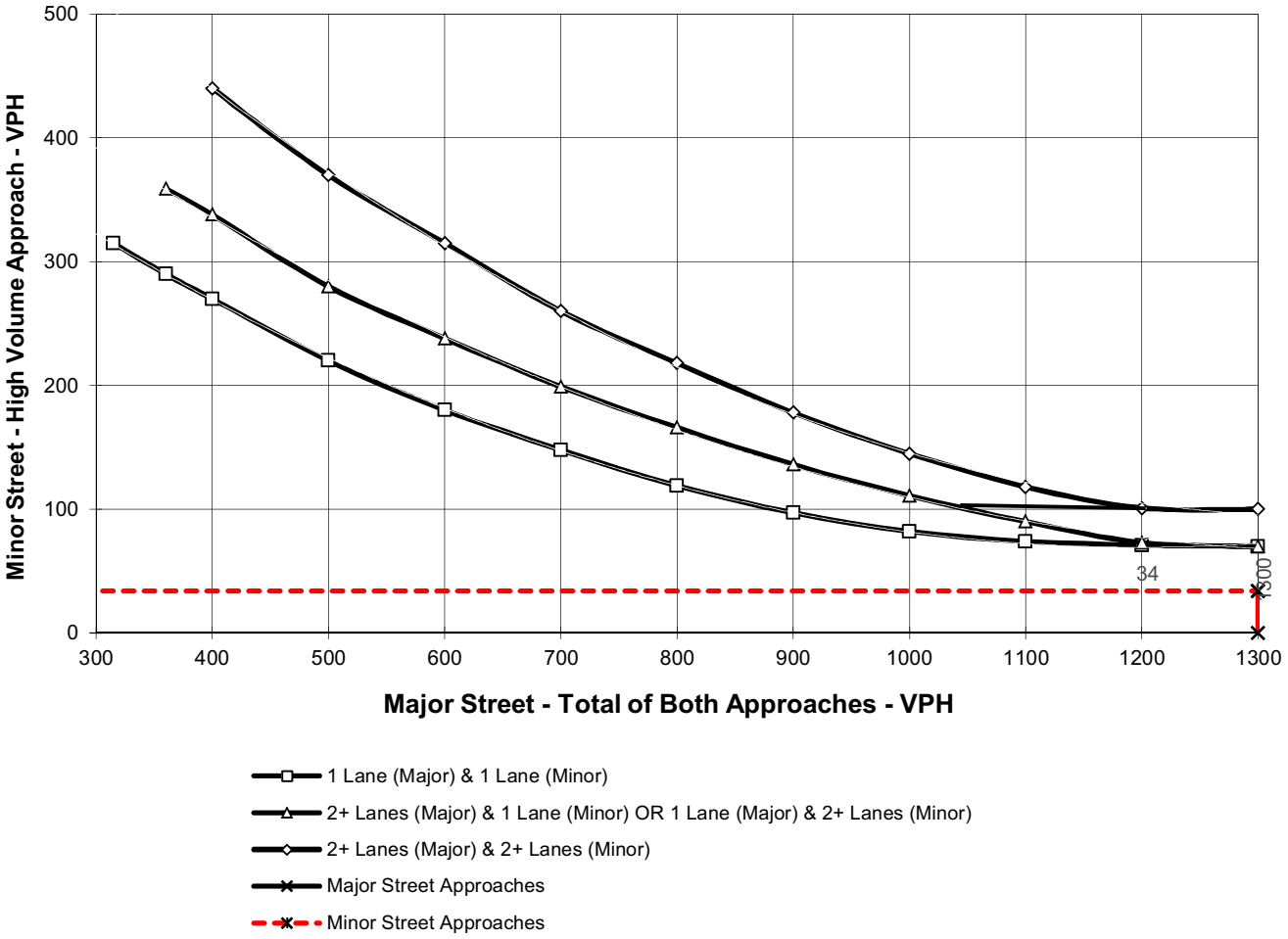
Number of Approach Lanes Major Street = **2**

Minor Street Name = **East Driveway #9**

High Volume Approach (VPH) = **34**

Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



** NOTE:
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APPENDIX F

STATE HIGHWAY LEVEL OF SERVICE WORKSHEETS

EXISTING

Panattoni Project

Vistro File: G:\...\AM_Delay.vistro
Report File: G:\...\AME_Delay.pdf

Scenario 1 Existing without Project
3/9/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Wilmington Ave (NS) at I-405 WB Ramps (EW)	Signalized	HCM 6th Edition	WB Right	0.534	22.1	C
2	Wilmington Ave (NS) at I-405 EB Ramps (EW)	Signalized	HCM 6th Edition	EB Right	0.884	20.8	C
4	Alameda St (NS) at I-405 WB Ramps (EW)	Signalized	HCM 6th Edition	SB Left	0.563	17.8	B
5	I-405 EB Ramps (NS) at 223rd St (EW)	Signalized	HCM 6th Edition	WB Left	0.518	24.8	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: Wilmington Ave (NS) at I-405 WB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	22.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.534

Intersection Setup

Name	Wilmington Ave		Wilmington Ave		I-405 WB Ramps	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Wilmington Ave		Wilmington Ave		I-405 WB Ramps	
Base Volume Input [veh/h]	459	88	0	862	1035	447
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	459	88	0	862	1035	447
Peak Hour Factor	0.9600	0.9600	1.0000	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	120	0	0	224	270	116
Total Analysis Volume [veh/h]	478	0	0	898	1078	466
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	2	0	0	6	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	7	0	0	7	7	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	21	0	0	21	79	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	L	R
C, Cycle Length [s]	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	56	56	56	36	36
g / C, Green / Cycle	0.56	0.56	0.56	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.13	0.00	0.17	0.31	0.29
s, saturation flow rate [veh/h]	3618	1615	5176	3514	1615
c, Capacity [veh/h]	2025	904	2897	1266	582
d1, Uniform Delay [s]	11.16	0.00	11.72	29.48	28.73
k, delay calibration	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.27	0.00	0.28	1.72	2.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.24	0.00	0.31	0.85	0.80
d, Delay for Lane Group [s/veh]	11.43	0.00	12.00	31.20	31.34
Lane Group LOS	B	A	B	C	C
Critical Lane Group	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.53	0.00	3.30	11.86	10.16
50th-Percentile Queue Length [ft/ln]	63.18	0.00	82.42	296.48	253.96
95th-Percentile Queue Length [veh/ln]	4.55	0.00	5.93	17.51	15.39
95th-Percentile Queue Length [ft/ln]	113.72	0.00	148.36	437.68	384.64

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.43	0.00	0.00	12.00	31.20	31.34
Movement LOS	B	A		B	C	C
d_A, Approach Delay [s/veh]	11.43		12.00		31.24	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	22.08					
Intersection LOS	C					
Intersection V/C	0.534					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	39.61
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.512
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	50.00	50.00	50.00
I_b,int, Bicycle LOS Score for Intersection	4.527	4.626	4.132
Bicycle LOS	E	E	D

Sequence

Ring 1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Wilmington Ave (NS) at I-405 EB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	20.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.884

Intersection Setup

Name	Wilmington Ave			Wilmington Ave			I-405 EB Ramps			I-405 EB Ramps		
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	2	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	340.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			Yes		

Volumes

Name	Wilmington Ave			Wilmington Ave			I-405 EB Ramps			I-405 EB Ramps		
Base Volume Input [veh/h]	0	435	892	383	1388	0	85	0	191	0	0	0
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	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	435	892	383	1388	0	85	0	191	0	0	0
Peak Hour Factor	1.0000	0.9804	0.9804	0.9804	0.9804	1.0000	0.9804	0.9804	0.9804	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]	0	111	227	98	354	0	22	0	49	0	0	0
Total Analysis Volume [veh/h]	0	444	910	391	1416	0	87	0	195	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	7	0	7	7	0	0	7	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	21	0	17	38	0	0	62	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	C	R	
C, Cycle Length [s]	100	100	100	100	100	100	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	61	61	13	78	14	14	
g / C, Green / Cycle	0.61	0.61	0.13	0.78	0.14	0.14	
(v / s)_i Volume / Saturation Flow Rate	0.09	0.56	0.11	0.27	0.05	0.12	
s, saturation flow rate [veh/h]	5176	1615	3514	5176	1810	1615	
c, Capacity [veh/h]	3135	978	455	4012	262	234	
d1, Uniform Delay [s]	8.51	17.81	42.64	3.48	38.41	41.59	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.09	16.21	4.84	0.24	0.74	7.56	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.14	0.93	0.86	0.35	0.33	0.83	
d, Delay for Lane Group [s/veh]	8.60	34.02	47.48	3.73	39.15	49.14	
Lane Group LOS	A	C	D	A	D	D	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	1.26	20.27	4.89	1.98	1.96	5.12	
50th-Percentile Queue Length [ft/ln]	31.49	506.67	122.31	49.48	49.03	128.01	
95th-Percentile Queue Length [veh/ln]	2.27	27.65	8.52	3.56	3.53	8.83	
95th-Percentile Queue Length [ft/ln]	56.67	691.24	213.00	89.06	88.25	220.78	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	8.60	34.02	47.48	3.73	0.00	39.15	39.15	49.14	0.00	0.00	0.00
Movement LOS		A	C	D	A		D	D	D			
d_A, Approach Delay [s/veh]	25.69			13.19			46.06			0.00		
Approach LOS	C			B			D			A		
d_I, Intersection Delay [s/veh]	20.80											
Intersection LOS	C											
Intersection V/C	0.884											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	39.61	39.61
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.857	2.354
Crosswalk LOS	F	F	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	340	680	1160	0
d_b, Bicycle Delay [s]	34.45	21.78	8.82	50.00
I_b,int, Bicycle LOS Score for Intersection	2.304	2.553	2.025	4.132
Bicycle LOS	B	B	B	D

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Alameda St (NS) at I-405 WB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	17.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.563

Intersection Setup

Name	Alameda St		Alameda St		I-405 WB Ramps	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	308.00	100.00	100.00	100.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Alameda St		Alameda St		I-405 WB Ramps	
Base Volume Input [veh/h]	684	110	77	1171	329	160
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	684	110	77	1171	329	160
Peak Hour Factor	0.8165	0.8165	0.8165	0.8165	0.8165	0.8165
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	209	34	24	359	101	49
Total Analysis Volume [veh/h]	838	135	94	1434	403	196
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal group	2	2	1	6	7	0
Auxiliary Signal Groups		2,7				
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	7	7	7	7	0
Maximum Green [s]	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	21	21	50	71	29	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	7	7	0	7	7	0
Pedestrian Clearance [s]	10	10	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	0.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	57	85	7	68	24	24
g / C, Green / Cycle	0.57	0.85	0.07	0.68	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.23	0.08	0.05	0.28	0.22	0.12
s, saturation flow rate [veh/h]	3618	1615	1810	5176	1810	1615
c, Capacity [veh/h]	2064	1376	124	3514	436	389
d1, Uniform Delay [s]	12.00	1.20	45.79	7.13	37.06	32.78
k, delay calibration	0.50	0.50	0.11	0.50	0.26	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.59	0.14	9.21	0.35	17.39	1.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.41	0.10	0.76	0.41	0.92	0.50
d, Delay for Lane Group [s/veh]	12.59	1.34	55.00	7.48	54.45	33.79
Lane Group LOS	B	A	D	A	D	C
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.72	0.13	2.53	3.65	11.54	4.17
50th-Percentile Queue Length [ft/ln]	118.11	3.37	63.25	91.34	288.59	104.22
95th-Percentile Queue Length [veh/ln]	8.29	0.24	4.55	6.58	17.12	7.50
95th-Percentile Queue Length [ft/ln]	207.22	6.06	113.84	164.41	427.89	187.60

Movement, Approach, & Intersection Results

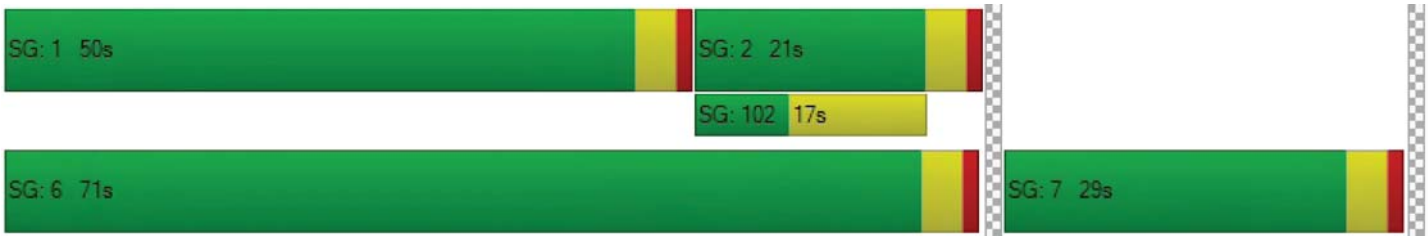
d_M, Delay for Movement [s/veh]	12.59	1.34	55.00	7.48	54.45	33.79
Movement LOS	B	A	D	A	D	C
d_A, Approach Delay [s/veh]	11.03		10.40		47.69	
Approach LOS	B		B		D	
d_I, Intersection Delay [s/veh]	17.81					
Intersection LOS	B					
Intersection V/C	0.563					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	39.61
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.214
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	50.00	50.00	50.00
I_b,int, Bicycle LOS Score for Intersection	4.935	4.973	4.132
Bicycle LOS	E	E	D

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: I-405 EB Ramps (NS) at 223rd St (EW)

Control Type:	Signalized	Delay (sec / veh):	24.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.518

Intersection Setup

Name	ICTF Dwy			I-405 EB Ramps			223rd St			223rd St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	156.00	100.00	166.00	118.00	100.00	100.00
Speed [mph]	25.00			30.00			45.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	ICTF Dwy			I-405 EB Ramps			223rd St			223rd St		
Base Volume Input [veh/h]	2	2	2	80	2	116	635	388	0	4	773	49
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	2	2	80	2	116	635	388	0	4	773	49
Peak Hour Factor	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	1	23	1	33	182	111	0	1	221	14
Total Analysis Volume [veh/h]	2	2	2	92	2	133	727	444	0	5	885	56
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	7	0	0	7	0	7	7	0	7	7	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	11	0	0	21	0	47	56	0	12	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	C	L	C	R	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	11	11	24	71	71	1	48	48
g / C, Green / Cycle	0.01	0.11	0.11	0.24	0.71	0.71	0.01	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.00	0.05	0.08	0.21	0.12	0.00	0.00	0.17	0.17
s, saturation flow rate [veh/h]	1767	1810	1619	3514	3618	1615	1810	3618	1843
c, Capacity [veh/h]	21	192	172	848	2576	1150	19	1740	887
d1, Uniform Delay [s]	49.05	42.16	43.66	36.35	4.73	0.00	49.18	16.28	16.30
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.15	1.85	7.74	2.66	0.15	0.00	7.51	0.57	1.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.28	0.48	0.79	0.86	0.17	0.00	0.27	0.36	0.36
d, Delay for Lane Group [s/veh]	56.19	44.02	51.40	39.01	4.88	0.00	56.69	16.86	17.43
Lane Group LOS	E	D	D	D	A	A	E	B	B
Critical Lane Group	Yes	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.19	2.23	3.61	8.35	1.17	0.00	0.16	4.38	4.62
50th-Percentile Queue Length [ft/ln]	4.78	55.71	90.13	208.74	29.17	0.00	4.03	109.58	115.57
95th-Percentile Queue Length [veh/ln]	0.34	4.01	6.49	13.09	2.10	0.00	0.29	7.82	8.15
95th-Percentile Queue Length [ft/ln]	8.61	100.29	162.24	327.22	52.50	0.00	7.26	195.42	203.72

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	56.19	56.19	56.19	44.02	51.40	51.40	39.01	4.88	0.00	56.69	17.03	17.43
Movement LOS	E	E	E	D	D	D	D	A	A	E	B	B
d_A, Approach Delay [s/veh]	56.19			48.41			26.07			17.26		
Approach LOS	E			D			C			B		
d_I, Intersection Delay [s/veh]	24.76											
Intersection LOS	C											
Intersection V/C	0.518											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	39.61	39.61	39.61	0.00
I_p,int, Pedestrian LOS Score for Intersection	1.725	2.383	3.131	0.000
Crosswalk LOS	A	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	140	340	1040	340
d_b, Bicycle Delay [s]	43.25	34.45	11.52	34.45
I_b,int, Bicycle LOS Score for Intersection	1.570	1.934	2.526	2.080
Bicycle LOS	A	A	B	B

Sequence

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

Panattoni Project

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Report File: G:\...\PME_Delay.pdf

Scenario 1 Existing without Project
3/9/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Wilmington Ave (NS) at I-405 WB Ramps (EW)	Signalized	HCM 6th Edition	WB Left	0.644	21.3	C
2	Wilmington Ave (NS) at I-405 EB Ramps (EW)	Signalized	HCM 6th Edition	EB Right	0.725	14.5	B
4	Alameda St (NS) at I-405 WB Ramps (EW)	Signalized	HCM 6th Edition	SB Left	0.746	21.7	C
5	I-405 EB Ramps (NS) at 223rd St (EW)	Signalized	HCM 6th Edition	WB Left	0.486	21.5	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: Wilmington Ave (NS) at I-405 WB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	21.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.644

Intersection Setup

Name	Wilmington Ave		Wilmington Ave		I-405 WB Ramps	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Wilmington Ave		Wilmington Ave		I-405 WB Ramps	
Base Volume Input [veh/h]	446	104	0	1223	1150	372
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	446	104	0	1223	1150	372
Peak Hour Factor	0.9719	0.9719	1.0000	0.9719	0.9719	0.9719
Other Adjustment Factor	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	115	0	0	315	296	96
Total Analysis Volume [veh/h]	459	0	0	1258	1183	383
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	2	0	0	6	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	7	0	0	7	7	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	21	0	0	21	79	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	L	R
C, Cycle Length [s]	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	53	53	53	39	39
g / C, Green / Cycle	0.53	0.53	0.53	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.13	0.00	0.24	0.34	0.24
s, saturation flow rate [veh/h]	3618	1615	5176	3514	1615
c, Capacity [veh/h]	1921	857	2748	1367	628
d1, Uniform Delay [s]	12.59	0.00	14.52	28.11	24.44
k, delay calibration	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.29	0.00	0.55	1.78	0.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.24	0.00	0.46	0.87	0.61
d, Delay for Lane Group [s/veh]	12.88	0.00	15.07	29.88	25.40
Lane Group LOS	B	A	B	C	C
Critical Lane Group	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.63	0.00	5.51	12.88	7.23
50th-Percentile Queue Length [ft/ln]	65.66	0.00	137.77	322.02	180.76
95th-Percentile Queue Length [veh/ln]	4.73	0.00	9.36	18.77	11.64
95th-Percentile Queue Length [ft/ln]	118.19	0.00	234.01	469.17	291.01

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12.88	0.00	0.00	15.07	29.88	25.40
Movement LOS	B	A		B	C	C
d_A, Approach Delay [s/veh]	12.88		15.07		28.79	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	21.31					
Intersection LOS	C					
Intersection V/C	0.644					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	39.61
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.518
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	50.00	50.00	50.00
I_b,int, Bicycle LOS Score for Intersection	4.511	4.824	4.132
Bicycle LOS	E	E	D

Sequence

Ring 1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Wilmington Ave (NS) at I-405 EB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	14.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.725

Intersection Setup

Name	Wilmington Ave			Wilmington Ave			I-405 EB Ramps			I-405 EB Ramps		
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	2	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	340.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			Yes		

Volumes

Name	Wilmington Ave			Wilmington Ave			I-405 EB Ramps			I-405 EB Ramps		
Base Volume Input [veh/h]	0	571	683	654	1492	0	15	1	48	0	0	0
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	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	571	683	654	1492	0	15	1	48	0	0	0
Peak Hour Factor	1.0000	0.9791	0.9791	0.9791	0.9791	1.0000	0.9791	0.9791	0.9791	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]	0	146	174	167	381	0	4	0	12	0	0	0
Total Analysis Volume [veh/h]	0	583	698	668	1524	0	15	1	49	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	7	0	7	7	0	0	7	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	58	0	30	88	0	0	12	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	C	R	
C, Cycle Length [s]	100	100	100	100	100	100	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	61	61	22	86	6	6	
g / C, Green / Cycle	0.61	0.61	0.22	0.86	0.06	0.06	
(v / s)_i Volume / Saturation Flow Rate	0.11	0.43	0.19	0.29	0.01	0.03	
s, saturation flow rate [veh/h]	5176	1615	3514	5176	1815	1615	
c, Capacity [veh/h]	3133	978	758	4456	107	95	
d1, Uniform Delay [s]	8.77	13.71	37.98	1.37	44.67	45.66	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.13	4.44	3.58	0.21	0.64	4.25	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.19	0.71	0.88	0.34	0.15	0.51	
d, Delay for Lane Group [s/veh]	8.91	18.15	41.56	1.58	45.31	49.91	
Lane Group LOS	A	B	D	A	D	D	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	1.71	10.57	7.99	0.46	0.39	1.29	
50th-Percentile Queue Length [ft/ln]	42.65	264.24	199.64	11.45	9.86	32.20	
95th-Percentile Queue Length [veh/ln]	3.07	15.90	12.62	0.82	0.71	2.32	
95th-Percentile Queue Length [ft/ln]	76.78	397.53	315.50	20.61	17.75	57.95	

Movement, Approach, & Intersection Results

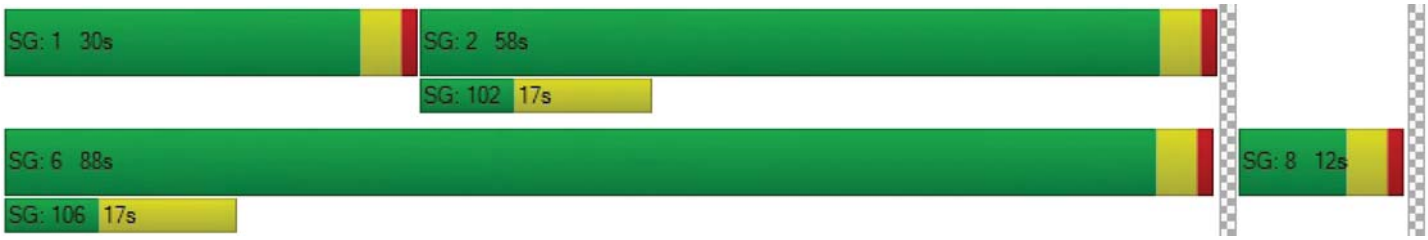
d_M, Delay for Movement [s/veh]	0.00	8.91	18.15	41.56	1.58	0.00	45.31	45.31	49.91	0.00	0.00	0.00
Movement LOS		A	B	D	A		D	D	D			
d_A, Approach Delay [s/veh]	13.95			13.76			48.78			0.00		
Approach LOS	B			B			D			A		
d_I, Intersection Delay [s/veh]	14.47											
Intersection LOS	B											
Intersection V/C	0.725											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	39.61	39.61
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.751	2.386
Crosswalk LOS	F	F	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1080	1680	160	0
d_b, Bicycle Delay [s]	10.58	1.28	42.32	50.00
I_b,int, Bicycle LOS Score for Intersection	2.264	2.765	1.667	4.132
Bicycle LOS	B	C	A	D

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Alameda St (NS) at I-405 WB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	21.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.746

Intersection Setup

Name	Alameda St		Alameda St		I-405 WB Ramps	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	308.00	100.00	100.00	100.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Alameda St		Alameda St		I-405 WB Ramps	
Base Volume Input [veh/h]	1180	282	116	1005	460	230
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1180	282	116	1005	460	230
Peak Hour Factor	0.9603	0.9603	0.9603	0.9603	0.9603	0.9603
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	307	73	30	262	120	60
Total Analysis Volume [veh/h]	1229	294	121	1047	479	240
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal group	2	2	1	6	7	0
Auxiliary Signal Groups		2,7				
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	7	7	7	7	0
Maximum Green [s]	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	21	21	44	65	35	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	7	7	0	7	7	0
Pedestrian Clearance [s]	10	10	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	0.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	51	83	9	63	29	29
g / C, Green / Cycle	0.51	0.83	0.09	0.63	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.34	0.18	0.07	0.20	0.26	0.15
s, saturation flow rate [veh/h]	3618	1615	1810	5176	1810	1615
c, Capacity [veh/h]	1833	1348	155	3271	521	465
d1, Uniform Delay [s]	18.44	1.67	44.82	8.49	34.48	29.78
k, delay calibration	0.50	0.50	0.11	0.50	0.34	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.97	0.37	8.33	0.26	18.12	0.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.67	0.22	0.78	0.32	0.92	0.52
d, Delay for Lane Group [s/veh]	20.41	2.05	53.15	8.74	52.61	30.67
Lane Group LOS	C	A	D	A	D	C
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.93	0.51	3.19	2.99	13.63	4.88
50th-Percentile Queue Length [ft/ln]	248.31	12.68	79.77	74.75	340.76	121.95
95th-Percentile Queue Length [veh/ln]	15.10	0.91	5.74	5.38	19.69	8.50
95th-Percentile Queue Length [ft/ln]	377.52	22.83	143.59	134.54	492.13	212.50

Movement, Approach, & Intersection Results

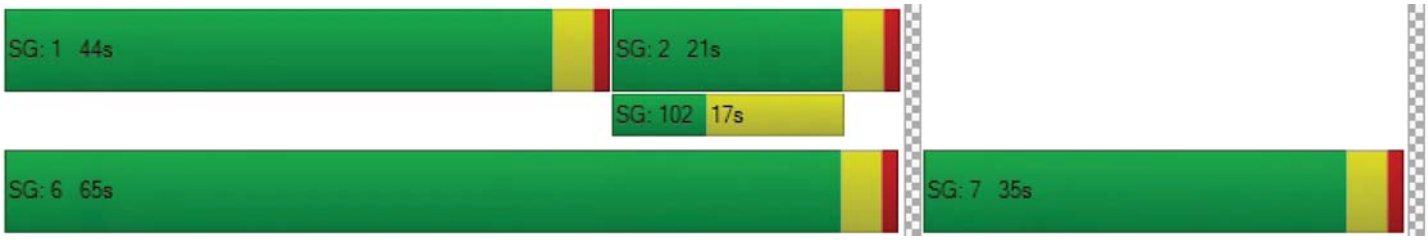
d_M, Delay for Movement [s/veh]	20.41	2.05	53.15	8.74	52.61	30.67
Movement LOS	C	A	D	A	D	C
d_A, Approach Delay [s/veh]	16.86		13.34		45.28	
Approach LOS	B		B		D	
d_I, Intersection Delay [s/veh]	21.65					
Intersection LOS	C					
Intersection V/C	0.746					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	39.61
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.314
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	50.00	50.00	50.00
I_b,int, Bicycle LOS Score for Intersection	5.389	4.775	4.132
Bicycle LOS	F	E	D

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: I-405 EB Ramps (NS) at 223rd St (EW)

Control Type:	Signalized	Delay (sec / veh):	21.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.486

Intersection Setup

Name	ICTF Dwy			I-405 EB Ramps			223rd St			223rd St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	156.00	100.00	166.00	118.00	100.00	100.00
Speed [mph]	25.00			30.00			45.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	ICTF Dwy			I-405 EB Ramps			223rd St			223rd St		
Base Volume Input [veh/h]	3	5	4	112	0	40	968	1064	5	3	257	116
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	5	4	112	0	40	968	1064	5	3	257	116
Peak Hour Factor	0.9581	0.9581	0.9581	0.9581	0.9581	0.9581	0.9581	0.9581	0.9581	0.9581	0.9581	0.9581
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	1	29	0	10	253	278	1	1	67	30
Total Analysis Volume [veh/h]	3	5	4	117	0	42	1010	1111	5	3	268	121
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	7	0	0	7	0	7	7	0	7	7	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	11	0	0	21	0	47	56	0	12	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	C	L	C	R	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	9	9	33	73	73	1	41	41
g / C, Green / Cycle	0.02	0.09	0.09	0.33	0.73	0.73	0.01	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.01	0.06	0.03	0.29	0.31	0.00	0.00	0.07	0.08
s, saturation flow rate [veh/h]	1774	1810	1615	3514	3618	1615	1810	3618	1627
c, Capacity [veh/h]	37	155	138	1142	2629	1174	12	1478	665
d1, Uniform Delay [s]	48.31	44.76	42.99	32.02	5.39	3.75	49.47	18.88	19.00
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.85	7.28	1.22	2.49	0.50	0.01	9.93	0.26	0.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.32	0.76	0.30	0.88	0.42	0.00	0.24	0.18	0.19
d, Delay for Lane Group [s/veh]	53.16	52.05	44.21	34.50	5.89	3.76	59.41	19.14	19.64
Lane Group LOS	D	D	D	C	A	A	E	B	B
Critical Lane Group	Yes	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.35	3.13	1.02	11.16	3.38	0.02	0.11	1.93	1.96
50th-Percentile Queue Length [ft/ln]	8.68	78.33	25.48	278.89	84.55	0.55	2.69	48.29	49.00
95th-Percentile Queue Length [veh/ln]	0.62	5.64	1.83	16.63	6.09	0.04	0.19	3.48	3.53
95th-Percentile Queue Length [ft/ln]	15.62	140.99	45.86	415.83	152.20	1.00	4.84	86.92	88.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.16	53.16	53.16	52.05	44.21	44.21	34.50	5.89	3.76	59.41	19.15	19.64
Movement LOS	D	D	D	D	D	D	C	A	A	E	B	B
d_A, Approach Delay [s/veh]	53.16			49.98			19.48			19.61		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	21.45											
Intersection LOS	C											
Intersection V/C	0.486											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	39.61	39.61	39.61	0.00
I_p,int, Pedestrian LOS Score for Intersection	1.728	2.452	3.176	0.000
Crosswalk LOS	A	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	140	340	1040	340
d_b, Bicycle Delay [s]	43.25	34.45	11.52	34.45
I_b,int, Bicycle LOS Score for Intersection	1.579	1.822	3.314	1.775
Bicycle LOS	A	A	C	A

Sequence

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

EXISTING PLUS PROJECT

Panattoni Project

Vistro File: G:\...\AM_Delay.vistro
Report File: G:\...\AMEp_Delay.pdf

Scenario 2 Existing with Project
3/9/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Wilmington Ave (NS) at I-405 WB Ramps (EW)	Signalized	HCM 6th Edition	WB Right	0.537	22.0	C
2	Wilmington Ave (NS) at I-405 EB Ramps (EW)	Signalized	HCM 6th Edition	EB Right	0.904	22.8	C
4	Alameda St (NS) at I-405 WB Ramps (EW)	Signalized	HCM 6th Edition	SB Left	0.586	18.8	B
5	I-405 EB Ramps (NS) at 223rd St (EW)	Signalized	HCM 6th Edition	WB Left	0.522	24.8	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: Wilmington Ave (NS) at I-405 WB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	22.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.537

Intersection Setup

Name	Wilmington Ave		Wilmington Ave		I-405 WB Ramps	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Wilmington Ave		Wilmington Ave		I-405 WB Ramps	
Base Volume Input [veh/h]	459	88	0	862	1035	447
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00
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]	4	9	0	16	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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	463	97	0	878	1035	447
Peak Hour Factor	0.9600	0.9600	1.0000	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	121	0	0	229	270	116
Total Analysis Volume [veh/h]	482	0	0	915	1078	466
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	2	0	0	6	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	7	0	0	7	7	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	21	0	0	21	79	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	L	R
C, Cycle Length [s]	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	56	56	56	36	36
g / C, Green / Cycle	0.56	0.56	0.56	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.13	0.00	0.18	0.31	0.29
s, saturation flow rate [veh/h]	3618	1615	5176	3514	1615
c, Capacity [veh/h]	2025	904	2897	1266	582
d1, Uniform Delay [s]	11.17	0.00	11.76	29.48	28.73
k, delay calibration	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.28	0.00	0.29	1.72	2.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.24	0.00	0.32	0.85	0.80
d, Delay for Lane Group [s/veh]	11.45	0.00	12.05	31.20	31.34
Lane Group LOS	B	A	B	C	C
Critical Lane Group	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.55	0.00	3.37	11.86	10.16
50th-Percentile Queue Length [ft/ln]	63.79	0.00	84.32	296.48	253.96
95th-Percentile Queue Length [veh/ln]	4.59	0.00	6.07	17.51	15.39
95th-Percentile Queue Length [ft/ln]	114.82	0.00	151.78	437.68	384.64

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.45	0.00	0.00	12.05	31.20	31.34
Movement LOS	B	A		B	C	C
d_A, Approach Delay [s/veh]	11.45		12.05		31.24	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	22.03					
Intersection LOS	C					
Intersection V/C	0.537					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	39.61
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.512
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	50.00	50.00	50.00
I_b,int, Bicycle LOS Score for Intersection	4.530	4.636	4.132
Bicycle LOS	E	E	D

Sequence

Ring 1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Wilmington Ave (NS) at I-405 EB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	22.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.904

Intersection Setup

Name	Wilmington Ave			Wilmington Ave			I-405 EB Ramps			I-405 EB Ramps		
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	2	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	340.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			Yes		

Volumes

Name	Wilmington Ave			Wilmington Ave			I-405 EB Ramps			I-405 EB Ramps		
Base Volume Input [veh/h]	0	435	892	383	1388	0	85	0	191	0	0	0
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	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	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	13	0	0	16	0	0	0	29	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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	448	892	383	1404	0	85	0	220	0	0	0
Peak Hour Factor	1.0000	0.9804	0.9804	0.9804	0.9804	1.0000	0.9804	0.9804	0.9804	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]	0	114	227	98	358	0	22	0	56	0	0	0
Total Analysis Volume [veh/h]	0	457	910	391	1432	0	87	0	224	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	7	0	7	7	0	0	7	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	21	0	17	38	0	0	62	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	C	R	
C, Cycle Length [s]	100	100	100	100	100	100	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	59	59	13	76	16	16	
g / C, Green / Cycle	0.59	0.59	0.13	0.76	0.16	0.16	
(v / s)_i Volume / Saturation Flow Rate	0.09	0.56	0.11	0.28	0.05	0.14	
s, saturation flow rate [veh/h]	5176	1615	3514	5176	1810	1615	
c, Capacity [veh/h]	3040	949	455	3918	295	263	
d1, Uniform Delay [s]	9.33	19.50	42.64	4.08	36.80	40.67	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.10	20.87	4.84	0.26	0.55	7.56	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.15	0.96	0.86	0.37	0.29	0.85	
d, Delay for Lane Group [s/veh]	9.44	40.36	47.48	4.35	37.35	48.23	
Lane Group LOS	A	D	D	A	D	D	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	1.39	22.42	4.89	2.35	1.91	5.85	
50th-Percentile Queue Length [ft/ln]	34.64	560.42	122.31	58.69	47.66	146.25	
95th-Percentile Queue Length [veh/ln]	2.49	30.18	8.52	4.23	3.43	9.82	
95th-Percentile Queue Length [ft/ln]	62.35	754.54	213.00	105.64	85.79	245.42	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	9.44	40.36	47.48	4.35	0.00	37.35	37.35	48.23	0.00	0.00	0.00
Movement LOS		A	D	D	A		D	D	D			
d_A, Approach Delay [s/veh]	30.02			13.60			45.19			0.00		
Approach LOS	C			B			D			A		
d_I, Intersection Delay [s/veh]	22.82											
Intersection LOS	C											
Intersection V/C	0.904											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	39.61	39.61
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.871	2.354
Crosswalk LOS	F	F	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	340	680	1160	0
d_b, Bicycle Delay [s]	34.45	21.78	8.82	50.00
I_b,int, Bicycle LOS Score for Intersection	2.311	2.562	2.073	4.132
Bicycle LOS	B	B	B	D

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Alameda St (NS) at I-405 WB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	18.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.586

Intersection Setup

Name	Alameda St		Alameda St		I-405 WB Ramps	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	308.00	100.00	100.00	100.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Alameda St		Alameda St		I-405 WB Ramps	
Base Volume Input [veh/h]	684	110	77	1171	329	160
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
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]	4	0	0	13	29	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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	688	110	77	1184	358	160
Peak Hour Factor	0.8165	0.8165	0.8165	0.8165	0.8165	0.8165
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	211	34	24	363	110	49
Total Analysis Volume [veh/h]	843	135	94	1450	438	196
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal group	2	2	1	6	7	0
Auxiliary Signal Groups		2,7				
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	7	7	7	7	0
Maximum Green [s]	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	21	21	47	68	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	7	7	0	7	7	0
Pedestrian Clearance [s]	10	10	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	0.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	55	85	7	66	26	26
g / C, Green / Cycle	0.55	0.85	0.07	0.66	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.23	0.08	0.05	0.28	0.24	0.12
s, saturation flow rate [veh/h]	3618	1615	1810	5176	1810	1615
c, Capacity [veh/h]	1988	1376	124	3404	475	424
d1, Uniform Delay [s]	13.23	1.20	45.79	8.14	35.91	30.98
k, delay calibration	0.50	0.50	0.11	0.50	0.31	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.67	0.14	9.23	0.39	18.37	0.79
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.42	0.10	0.76	0.43	0.92	0.46
d, Delay for Lane Group [s/veh]	13.90	1.34	55.02	8.53	54.28	31.76
Lane Group LOS	B	A	E	A	D	C
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.10	0.13	2.53	4.11	12.60	4.02
50th-Percentile Queue Length [ft/ln]	127.41	3.36	63.26	102.82	314.95	100.53
95th-Percentile Queue Length [veh/ln]	8.80	0.24	4.55	7.40	18.42	7.24
95th-Percentile Queue Length [ft/ln]	219.96	6.05	113.87	185.07	460.48	180.95

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	13.90	1.34	55.02	8.53	54.28	31.76
Movement LOS	B	A	E	A	D	C
d_A, Approach Delay [s/veh]	12.16		11.36		47.32	
Approach LOS	B		B		D	
d_I, Intersection Delay [s/veh]	18.83					
Intersection LOS	B					
Intersection V/C	0.586					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	39.61
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.226
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	50.00	50.00	50.00
I_b,int, Bicycle LOS Score for Intersection	4.939	4.982	4.132
Bicycle LOS	E	E	D

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 5: I-405 EB Ramps (NS) at 223rd St (EW)

Control Type:	Signalized	Delay (sec / veh):	24.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.522

Intersection Setup

Name	ICTF Dwy			I-405 EB Ramps			223rd St			223rd St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	156.00	100.00	166.00	118.00	100.00	100.00
Speed [mph]	25.00			30.00			45.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	ICTF Dwy			I-405 EB Ramps			223rd St			223rd St		
Base Volume Input [veh/h]	2	2	2	80	2	116	635	388	0	4	773	49
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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	7	1	0	0	3	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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	2	2	80	2	116	642	389	0	4	776	49
Peak Hour Factor	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	1	23	1	33	184	111	0	1	222	14
Total Analysis Volume [veh/h]	2	2	2	92	2	133	735	446	0	5	889	56
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	7	0	0	7	0	7	7	0	7	7	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	11	0	0	21	0	47	56	0	12	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	C	L	C	R	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	11	11	24	71	71	1	48	48
g / C, Green / Cycle	0.01	0.11	0.11	0.24	0.71	0.71	0.01	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.00	0.05	0.08	0.21	0.12	0.00	0.00	0.17	0.17
s, saturation flow rate [veh/h]	1767	1810	1619	3514	3618	1615	1810	3618	1843
c, Capacity [veh/h]	21	192	172	856	2576	1150	19	1732	882
d1, Uniform Delay [s]	49.05	42.16	43.66	36.23	4.74	0.00	49.18	16.45	16.46
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.15	1.85	7.74	2.65	0.15	0.00	7.51	0.59	1.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.28	0.48	0.79	0.86	0.17	0.00	0.27	0.36	0.36
d, Delay for Lane Group [s/veh]	56.19	44.02	51.40	38.88	4.88	0.00	56.69	17.04	17.62
Lane Group LOS	E	D	D	D	A	A	E	B	B
Critical Lane Group	Yes	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.19	2.23	3.61	8.43	1.17	0.00	0.16	4.43	4.67
50th-Percentile Queue Length [ft/ln]	4.78	55.71	90.13	210.82	29.32	0.00	4.03	110.81	116.87
95th-Percentile Queue Length [veh/ln]	0.34	4.01	6.49	13.20	2.11	0.00	0.29	7.88	8.22
95th-Percentile Queue Length [ft/ln]	8.61	100.29	162.24	329.88	52.77	0.00	7.26	197.12	205.52

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	56.19	56.19	56.19	44.02	51.40	51.40	38.88	4.88	0.00	56.69	17.21	17.62
Movement LOS	E	E	E	D	D	D	D	A	A	E	B	B
d_A, Approach Delay [s/veh]	56.19			48.41			26.04			17.44		
Approach LOS	E			D			C			B		
d_I, Intersection Delay [s/veh]	24.81											
Intersection LOS	C											
Intersection V/C	0.522											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	39.61	39.61	39.61	0.00
I_p,int, Pedestrian LOS Score for Intersection	1.725	2.385	3.133	0.000
Crosswalk LOS	A	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	140	340	1040	340
d_b, Bicycle Delay [s]	43.25	34.45	11.52	34.45
I_b,int, Bicycle LOS Score for Intersection	1.570	1.934	2.534	2.082
Bicycle LOS	A	A	B	B

Sequence

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

Panattoni Project

Vistro File: G:\...\PM_Delay.vistro
Report File: G:\...\PMEp_Delay.pdf

Scenario 2 Existing with Project
3/9/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Wilmington Ave (NS) at I-405 WB Ramps (EW)	Signalized	HCM 6th Edition	WB Left	0.646	21.3	C
2	Wilmington Ave (NS) at I-405 EB Ramps (EW)	Signalized	HCM 6th Edition	EB Right	0.732	14.6	B
4	Alameda St (NS) at I-405 WB Ramps (EW)	Signalized	HCM 6th Edition	SB Left	0.755	21.9	C
5	I-405 EB Ramps (NS) at 223rd St (EW)	Signalized	HCM 6th Edition	WB Left	0.495	21.5	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: Wilmington Ave (NS) at I-405 WB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	21.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.646

Intersection Setup

Name	Wilmington Ave		Wilmington Ave		I-405 WB Ramps	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Wilmington Ave		Wilmington Ave		I-405 WB Ramps	
Base Volume Input [veh/h]	446	104	0	1223	1150	372
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00
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]	14	25	0	6	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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	460	129	0	1229	1150	372
Peak Hour Factor	0.9719	0.9719	1.0000	0.9719	0.9719	0.9719
Other Adjustment Factor	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	118	0	0	316	296	96
Total Analysis Volume [veh/h]	473	0	0	1265	1183	383
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	2	0	0	6	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	7	0	0	7	7	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	21	0	0	21	79	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	L	R
C, Cycle Length [s]	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	53	53	53	39	39
g / C, Green / Cycle	0.53	0.53	0.53	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.13	0.00	0.24	0.34	0.24
s, saturation flow rate [veh/h]	3618	1615	5176	3514	1615
c, Capacity [veh/h]	1921	857	2748	1367	628
d1, Uniform Delay [s]	12.64	0.00	14.54	28.11	24.44
k, delay calibration	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.31	0.00	0.56	1.78	0.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.25	0.00	0.46	0.87	0.61
d, Delay for Lane Group [s/veh]	12.95	0.00	15.10	29.88	25.40
Lane Group LOS	B	A	B	C	C
Critical Lane Group	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.72	0.00	5.55	12.88	7.23
50th-Percentile Queue Length [ft/ln]	67.98	0.00	138.79	322.02	180.76
95th-Percentile Queue Length [veh/ln]	4.89	0.00	9.42	18.77	11.64
95th-Percentile Queue Length [ft/ln]	122.36	0.00	235.39	469.17	291.01

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12.95	0.00	0.00	15.10	29.88	25.40
Movement LOS	B	A		B	C	C
d_A, Approach Delay [s/veh]	12.95		15.10		28.79	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	21.28					
Intersection LOS	C					
Intersection V/C	0.646					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	39.61
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.518
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	50.00	50.00	50.00
I_b,int, Bicycle LOS Score for Intersection	4.523	4.828	4.132
Bicycle LOS	E	E	D

Sequence

Ring 1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Wilmington Ave (NS) at I-405 EB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	14.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.732

Intersection Setup

Name	Wilmington Ave			Wilmington Ave			I-405 EB Ramps			I-405 EB Ramps		
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	2	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	340.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			Yes		

Volumes

Name	Wilmington Ave			Wilmington Ave			I-405 EB Ramps			I-405 EB Ramps		
Base Volume Input [veh/h]	0	571	683	654	1492	0	15	1	48	0	0	0
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	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	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	39	0	0	6	0	0	0	10	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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	610	683	654	1498	0	15	1	58	0	0	0
Peak Hour Factor	1.0000	0.9791	0.9791	0.9791	0.9791	1.0000	0.9791	0.9791	0.9791	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]	0	156	174	167	382	0	4	0	15	0	0	0
Total Analysis Volume [veh/h]	0	623	698	668	1530	0	15	1	59	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	7	0	7	7	0	0	7	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	57	0	31	88	0	0	12	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	C	R	
C, Cycle Length [s]	100	100	100	100	100	100	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	60	60	22	86	6	6	
g / C, Green / Cycle	0.60	0.60	0.22	0.86	0.06	0.06	
(v / s)_i Volume / Saturation Flow Rate	0.12	0.43	0.19	0.30	0.01	0.04	
s, saturation flow rate [veh/h]	5176	1615	3514	5176	1815	1615	
c, Capacity [veh/h]	3114	972	761	4442	112	100	
d1, Uniform Delay [s]	9.02	13.98	37.88	1.43	44.41	45.69	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.14	4.56	3.44	0.21	0.58	5.48	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.20	0.72	0.88	0.34	0.14	0.59	
d, Delay for Lane Group [s/veh]	9.17	18.54	41.32	1.64	44.99	51.17	
Lane Group LOS	A	B	D	A	D	D	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	1.86	10.72	7.96	0.52	0.39	1.57	
50th-Percentile Queue Length [ft/ln]	46.62	268.12	199.02	12.93	9.81	39.29	
95th-Percentile Queue Length [veh/ln]	3.36	16.10	12.59	0.93	0.71	2.83	
95th-Percentile Queue Length [ft/ln]	83.92	402.40	314.70	23.27	17.65	70.73	

Movement, Approach, & Intersection Results

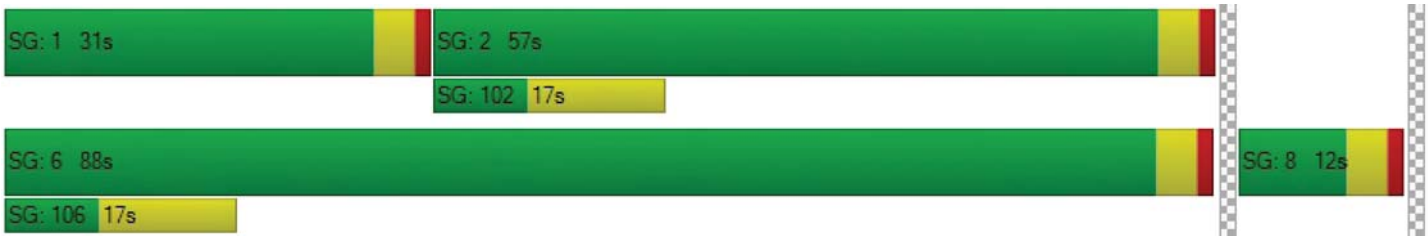
d_M, Delay for Movement [s/veh]	0.00	9.17	18.54	41.32	1.64	0.00	44.99	44.99	51.17	0.00	0.00	0.00
Movement LOS		A	B	D	A		D	D	D			
d_A, Approach Delay [s/veh]	14.12			13.70			49.85			0.00		
Approach LOS	B			B			D			A		
d_I, Intersection Delay [s/veh]	14.61											
Intersection LOS	B											
Intersection V/C	0.732											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	39.61	39.61
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.756	2.386
Crosswalk LOS	F	F	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1060	1680	160	0
d_b, Bicycle Delay [s]	11.05	1.28	42.32	50.00
I_b,int, Bicycle LOS Score for Intersection	2.286	2.769	1.683	4.132
Bicycle LOS	B	C	A	D

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Alameda St (NS) at I-405 WB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	21.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.755

Intersection Setup

Name	Alameda St		Alameda St		I-405 WB Ramps	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	308.00	100.00	100.00	100.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Alameda St		Alameda St		I-405 WB Ramps	
Base Volume Input [veh/h]	1180	282	116	1005	460	230
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
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]	11	0	0	5	10	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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1191	282	116	1010	470	230
Peak Hour Factor	0.9603	0.9603	0.9603	0.9603	0.9603	0.9603
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	310	73	30	263	122	60
Total Analysis Volume [veh/h]	1240	294	121	1052	489	240
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal group	2	2	1	6	7	0
Auxiliary Signal Groups		2,7				
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	7	7	7	7	0
Maximum Green [s]	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	21	21	43	64	36	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	7	7	0	7	7	0
Pedestrian Clearance [s]	10	10	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	0.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	50	83	9	63	29	29
g / C, Green / Cycle	0.50	0.83	0.09	0.63	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.34	0.18	0.07	0.20	0.27	0.15
s, saturation flow rate [veh/h]	3618	1615	1810	5176	1810	1615
c, Capacity [veh/h]	1810	1348	155	3238	533	475
d1, Uniform Delay [s]	19.00	1.67	44.82	8.79	34.12	29.25
k, delay calibration	0.50	0.50	0.11	0.50	0.34	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.13	0.37	8.34	0.27	17.46	0.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.69	0.22	0.78	0.32	0.92	0.50
d, Delay for Lane Group [s/veh]	21.13	2.05	53.16	9.06	51.59	30.08
Lane Group LOS	C	A	D	A	D	C
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	10.26	0.51	3.19	3.09	13.79	4.82
50th-Percentile Queue Length [ft/ln]	256.53	12.68	79.78	77.18	344.67	120.57
95th-Percentile Queue Length [veh/ln]	15.51	0.91	5.74	5.56	19.88	8.42
95th-Percentile Queue Length [ft/ln]	387.87	22.82	143.61	138.92	496.90	210.62

Movement, Approach, & Intersection Results

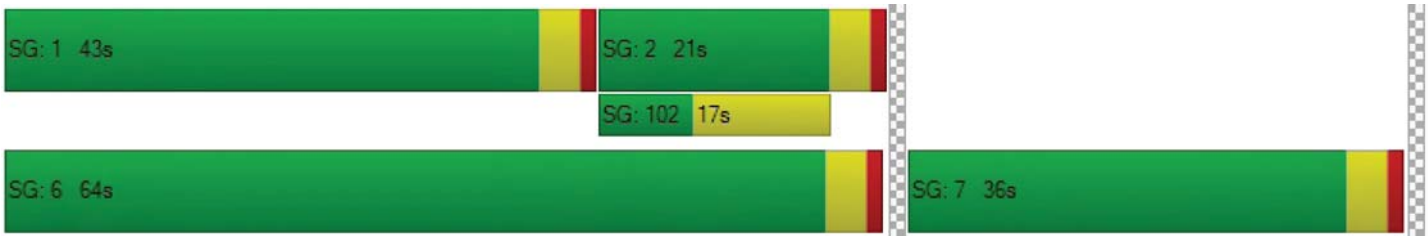
d_M, Delay for Movement [s/veh]	21.13	2.05	53.16	9.06	51.59	30.08
Movement LOS	C	A	D	A	D	C
d_A, Approach Delay [s/veh]	17.48		13.61		44.51	
Approach LOS	B		B		D	
d_I, Intersection Delay [s/veh]	21.89					
Intersection LOS	C					
Intersection V/C	0.755					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	39.61
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.317
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	50.00	50.00	50.00
I_b,int, Bicycle LOS Score for Intersection	5.398	4.778	4.132
Bicycle LOS	F	E	D

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: I-405 EB Ramps (NS) at 223rd St (EW)

Control Type:	Signalized	Delay (sec / veh):	21.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.495

Intersection Setup

Name	ICTF Dwy			I-405 EB Ramps			223rd St			223rd St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	156.00	100.00	166.00	118.00	100.00	100.00
Speed [mph]	25.00			30.00			45.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	ICTF Dwy			I-405 EB Ramps			223rd St			223rd St		
Base Volume Input [veh/h]	3	5	4	112	0	40	968	1064	5	3	257	116
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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	27	3	0	0	1	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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	5	4	112	0	40	995	1067	5	3	258	116
Peak Hour Factor	0.9581	0.9581	0.9581	0.9581	0.9581	0.9581	0.9581	0.9581	0.9581	0.9581	0.9581	0.9581
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	1	29	0	10	260	278	1	1	67	30
Total Analysis Volume [veh/h]	3	5	4	117	0	42	1039	1114	5	3	269	121
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	7	0	0	7	0	7	7	0	7	7	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	11	0	0	21	0	47	56	0	12	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	C	L	C	R	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	9	9	33	73	73	1	40	40
g / C, Green / Cycle	0.02	0.09	0.09	0.33	0.73	0.73	0.01	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.01	0.06	0.03	0.30	0.31	0.00	0.00	0.07	0.08
s, saturation flow rate [veh/h]	1774	1810	1615	3514	3618	1615	1810	3618	1628
c, Capacity [veh/h]	37	155	138	1171	2629	1174	12	1448	652
d1, Uniform Delay [s]	48.31	44.76	42.99	31.61	5.40	3.75	49.47	19.41	19.53
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.85	7.28	1.22	2.49	0.50	0.01	9.93	0.27	0.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.32	0.76	0.30	0.89	0.42	0.00	0.24	0.18	0.20
d, Delay for Lane Group [s/veh]	53.16	52.05	44.21	34.10	5.90	3.76	59.41	19.68	20.21
Lane Group LOS	D	D	D	C	A	A	E	B	C
Critical Lane Group	Yes	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.35	3.13	1.02	11.43	3.40	0.02	0.11	1.97	2.00
50th-Percentile Queue Length [ft/ln]	8.68	78.33	25.48	285.78	84.89	0.55	2.69	49.29	50.04
95th-Percentile Queue Length [veh/ln]	0.62	5.64	1.83	16.98	6.11	0.04	0.19	3.55	3.60
95th-Percentile Queue Length [ft/ln]	15.62	140.99	45.86	424.40	152.80	1.00	4.84	88.72	90.06

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.16	53.16	53.16	52.05	44.21	44.21	34.10	5.90	3.76	59.41	19.70	20.21
Movement LOS	D	D	D	D	D	D	C	A	A	E	B	C
d_A, Approach Delay [s/veh]	53.16			49.98			19.48			20.16		
Approach LOS	D			D			B			C		
d_I, Intersection Delay [s/veh]	21.50											
Intersection LOS	C											
Intersection V/C	0.495											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	39.61	39.61	39.61	0.00
I_p,int, Pedestrian LOS Score for Intersection	1.728	2.459	3.182	0.000
Crosswalk LOS	A	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	140	340	1040	340
d_b, Bicycle Delay [s]	43.25	34.45	11.52	34.45
I_b,int, Bicycle LOS Score for Intersection	1.579	1.822	3.340	1.776
Bicycle LOS	A	A	C	A

Sequence

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

OPENING YEAR (2021) WITHOUT PROJECT

Panattoni Project

Vistro File: G:\...\AM_Delay.vistro
Report File: G:\...\AMOY_Delay.pdf

Scenario 3 Opening Year without Project
3/9/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Wilmington Ave (NS) at I-405 WB Ramps (EW)	Signalized	HCM 6th Edition	WB Right	0.536	22.2	C
2	Wilmington Ave (NS) at I-405 EB Ramps (EW)	Signalized	HCM 6th Edition	EB Right	0.888	21.5	C
4	Alameda St (NS) at I-405 WB Ramps (EW)	Signalized	HCM 6th Edition	SB Left	0.592	18.8	B
5	I-405 EB Ramps (NS) at 223rd St (EW)	Signalized	HCM 6th Edition	WB Left	0.534	25.1	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: Wilmington Ave (NS) at I-405 WB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	22.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.536

Intersection Setup

Name	Wilmington Ave		Wilmington Ave		I-405 WB Ramps	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Wilmington Ave		Wilmington Ave		I-405 WB Ramps	
Base Volume Input [veh/h]	459	88	0	862	1035	447
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.00	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	11	0	0	17	-13	16
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	472	88	0	883	1027	465
Peak Hour Factor	0.9600	0.9600	1.0000	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	123	0	0	230	267	121
Total Analysis Volume [veh/h]	492	0	0	920	1070	484
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	2	0	0	6	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	7	0	0	7	7	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	21	0	0	21	79	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	L	R
C, Cycle Length [s]	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	56	56	56	36	36
g / C, Green / Cycle	0.56	0.56	0.56	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.14	0.00	0.18	0.30	0.30
s, saturation flow rate [veh/h]	3618	1615	5176	3514	1615
c, Capacity [veh/h]	2031	907	2905	1260	579
d1, Uniform Delay [s]	11.12	0.00	11.68	29.55	29.34
k, delay calibration	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.28	0.00	0.29	1.70	3.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.24	0.00	0.32	0.85	0.84
d, Delay for Lane Group [s/veh]	11.40	0.00	11.97	31.24	32.62
Lane Group LOS	B	A	B	C	C
Critical Lane Group	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.60	0.00	3.38	11.77	10.83
50th-Percentile Queue Length [ft/ln]	64.98	0.00	84.43	294.20	270.83
95th-Percentile Queue Length [veh/ln]	4.68	0.00	6.08	17.39	16.23
95th-Percentile Queue Length [ft/ln]	116.96	0.00	151.98	434.85	405.78

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.40	0.00	0.00	11.97	31.24	32.62
Movement LOS	B	A		B	C	C
d_A, Approach Delay [s/veh]	11.40		11.97		31.67	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	22.20					
Intersection LOS	C					
Intersection V/C	0.536					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	39.61
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.515
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	50.00	50.00	50.00
I_b,int, Bicycle LOS Score for Intersection	4.538	4.638	4.132
Bicycle LOS	E	E	D

Sequence

Ring 1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Wilmington Ave (NS) at I-405 EB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	21.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.888

Intersection Setup

Name	Wilmington Ave			Wilmington Ave			I-405 EB Ramps			I-405 EB Ramps		
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	2	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	340.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			Yes		

Volumes

Name	Wilmington Ave			Wilmington Ave			I-405 EB Ramps			I-405 EB Ramps		
Base Volume Input [veh/h]	0	435	892	383	1388	0	85	0	191	0	0	0
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	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Rate	1.00	1.01	1.01	1.01	1.01	1.00	1.01	1.01	1.01	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	-2	-19	13	-16	0	13	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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	435	877	398	1379	0	98	0	205	0	0	0
Peak Hour Factor	1.0000	0.9804	0.9804	0.9804	0.9804	1.0000	0.9804	0.9804	0.9804	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]	0	111	224	101	352	0	25	0	52	0	0	0
Total Analysis Volume [veh/h]	0	444	895	406	1407	0	100	0	209	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	7	0	7	7	0	0	7	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	21	0	17	38	0	0	62	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	C	R	
C, Cycle Length [s]	100	100	100	100	100	100	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	60	60	13	77	15	15	
g / C, Green / Cycle	0.60	0.60	0.13	0.77	0.15	0.15	
(v / s)_i Volume / Saturation Flow Rate	0.09	0.55	0.12	0.27	0.06	0.13	
s, saturation flow rate [veh/h]	5176	1615	3514	5176	1810	1615	
c, Capacity [veh/h]	3082	962	459	3965	279	249	
d1, Uniform Delay [s]	8.95	18.35	42.73	3.76	37.89	41.12	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.10	16.45	5.84	0.25	0.78	7.48	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.14	0.93	0.88	0.35	0.36	0.84	
d, Delay for Lane Group [s/veh]	9.05	34.80	48.57	4.01	38.67	48.59	
Lane Group LOS	A	C	D	A	D	D	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	1.31	20.23	5.15	2.13	2.24	5.47	
50th-Percentile Queue Length [ft/ln]	32.63	505.77	128.78	53.14	56.08	136.67	
95th-Percentile Queue Length [veh/ln]	2.35	27.61	8.87	3.83	4.04	9.30	
95th-Percentile Queue Length [ft/ln]	58.73	690.18	221.84	95.66	100.94	232.54	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	9.05	34.80	48.57	4.01	0.00	38.67	38.67	48.59	0.00	0.00	0.00
Movement LOS		A	C	D	A		D	D	D			
d_A, Approach Delay [s/veh]	26.26			13.99			45.38			0.00		
Approach LOS	C			B			D			A		
d_I, Intersection Delay [s/veh]	21.54											
Intersection LOS	C											
Intersection V/C	0.888											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	39.61	39.61
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.870	2.354
Crosswalk LOS	F	F	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	340	680	1160	0
d_b, Bicycle Delay [s]	34.45	21.78	8.82	50.00
I_b,int, Bicycle LOS Score for Intersection	2.296	2.557	2.069	4.132
Bicycle LOS	B	B	B	D

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Alameda St (NS) at I-405 WB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	18.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.592

Intersection Setup

Name	Alameda St		Alameda St		I-405 WB Ramps	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	308.00	100.00	100.00	100.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Alameda St		Alameda St		I-405 WB Ramps	
Base Volume Input [veh/h]	684	110	77	1171	329	160
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	22	6	0	8	25	13
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	709	117	77	1185	356	174
Peak Hour Factor	0.8165	0.8165	0.8165	0.8165	0.8165	0.8165
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	217	36	24	363	109	53
Total Analysis Volume [veh/h]	868	143	94	1451	436	213
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal group	2	2	1	6	7	0
Auxiliary Signal Groups		2,7				
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	7	7	7	7	0
Maximum Green [s]	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	21	21	47	68	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	7	7	0	7	7	0
Pedestrian Clearance [s]	10	10	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	0.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	55	85	7	66	26	26
g / C, Green / Cycle	0.55	0.85	0.07	0.66	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.24	0.09	0.05	0.28	0.24	0.13
s, saturation flow rate [veh/h]	3618	1615	1810	5176	1810	1615
c, Capacity [veh/h]	1990	1376	124	3408	473	422
d1, Uniform Delay [s]	13.31	1.21	45.79	8.11	35.92	31.41
k, delay calibration	0.50	0.50	0.11	0.50	0.31	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.70	0.15	9.23	0.39	18.06	0.93
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.44	0.10	0.76	0.43	0.92	0.50
d, Delay for Lane Group [s/veh]	14.01	1.36	55.02	8.50	53.98	32.34
Lane Group LOS	B	A	E	A	D	C
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.29	0.14	2.53	4.10	12.50	4.44
50th-Percentile Queue Length [ft/ln]	132.15	3.58	63.26	102.58	312.51	110.88
95th-Percentile Queue Length [veh/ln]	9.06	0.26	4.55	7.39	18.30	7.89
95th-Percentile Queue Length [ft/ln]	226.42	6.45	113.87	184.65	457.47	197.22

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	14.01	1.36	55.02	8.50	53.98	32.34
Movement LOS	B	A	E	A	D	C
d_A, Approach Delay [s/veh]	12.22		11.33		46.88	
Approach LOS	B		B		D	
d_I, Intersection Delay [s/veh]	18.81					
Intersection LOS	B					
Intersection V/C	0.592					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	39.61
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.233
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	50.00	50.00	50.00
I_b,int, Bicycle LOS Score for Intersection	4.966	4.982	4.132
Bicycle LOS	E	E	D

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 5: I-405 EB Ramps (NS) at 223rd St (EW)

Control Type:	Signalized	Delay (sec / veh):	25.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.534

Intersection Setup

Name	ICTF Dwy			I-405 EB Ramps			223rd St			223rd St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	156.00	100.00	166.00	118.00	100.00	100.00
Speed [mph]	25.00			30.00			45.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	ICTF Dwy			I-405 EB Ramps			223rd St			223rd St		
Base Volume Input [veh/h]	2	2	2	80	2	116	635	388	0	4	773	49
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	8	13	10	0	0	6	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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	2	2	80	2	125	651	400	0	4	783	49
Peak Hour Factor	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	1	23	1	36	186	115	0	1	224	14
Total Analysis Volume [veh/h]	2	2	2	92	2	143	746	458	0	5	897	56
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	7	0	0	7	0	7	7	0	7	7	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	12	0	0	21	0	46	55	0	12	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	C	L	C	R	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	11	11	25	71	71	1	47	47
g / C, Green / Cycle	0.01	0.11	0.11	0.25	0.71	0.71	0.01	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.00	0.05	0.09	0.21	0.13	0.00	0.00	0.17	0.17
s, saturation flow rate [veh/h]	1767	1810	1618	3514	3618	1615	1810	3618	1844
c, Capacity [veh/h]	21	203	182	867	2553	1140	19	1697	865
d1, Uniform Delay [s]	49.05	41.56	43.33	36.05	4.97	0.00	49.18	17.10	17.11
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.15	1.57	7.75	2.64	0.15	0.00	7.51	0.63	1.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.28	0.45	0.80	0.86	0.18	0.00	0.27	0.37	0.37
d, Delay for Lane Group [s/veh]	56.19	43.13	51.09	38.70	5.12	0.00	56.69	17.72	18.34
Lane Group LOS	E	D	D	D	A	A	E	B	B
Critical Lane Group	Yes	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.19	2.20	3.86	8.55	1.26	0.00	0.16	4.59	4.84
50th-Percentile Queue Length [ft/ln]	4.78	55.03	96.58	213.67	31.40	0.00	4.03	114.63	120.95
95th-Percentile Queue Length [veh/ln]	0.34	3.96	6.95	13.34	2.26	0.00	0.29	8.10	8.45
95th-Percentile Queue Length [ft/ln]	8.61	99.06	173.84	333.53	56.52	0.00	7.26	202.42	211.14

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	56.19	56.19	56.19	43.13	51.09	51.09	38.70	5.12	0.00	56.69	17.91	18.34
Movement LOS	E	E	E	D	D	D	D	A	A	E	B	B
d_A, Approach Delay [s/veh]	56.19			48.00			25.93			18.13		
Approach LOS	E			D			C			B		
d_I, Intersection Delay [s/veh]	25.07											
Intersection LOS	C											
Intersection V/C	0.534											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	39.61	39.61	39.61	0.00
I_p,int, Pedestrian LOS Score for Intersection	1.725	2.390	3.141	0.000
Crosswalk LOS	A	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	160	340	1020	340
d_b, Bicycle Delay [s]	42.32	34.45	12.01	34.45
I_b,int, Bicycle LOS Score for Intersection	1.570	1.951	2.553	2.087
Bicycle LOS	A	A	B	B

Sequence

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

Panattoni Project

Vistro File: G:\...\PM_Delay.vistro
Report File: G:\...\PMOY_Delay.pdf

Scenario 3 Opening Year without Project
3/9/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Wilmington Ave (NS) at I-405 WB Ramps (EW)	Signalized	HCM 6th Edition	WB Left	0.646	21.2	C
2	Wilmington Ave (NS) at I-405 EB Ramps (EW)	Signalized	HCM 6th Edition	EB Right	0.712	14.8	B
4	Alameda St (NS) at I-405 WB Ramps (EW)	Signalized	HCM 6th Edition	SB Left	0.767	22.4	C
5	I-405 EB Ramps (NS) at 223rd St (EW)	Signalized	HCM 6th Edition	WB Left	0.500	21.6	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: Wilmington Ave (NS) at I-405 WB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	21.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.646

Intersection Setup

Name	Wilmington Ave		Wilmington Ave		I-405 WB Ramps	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Wilmington Ave		Wilmington Ave		I-405 WB Ramps	
Base Volume Input [veh/h]	446	104	0	1223	1150	372
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.00	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	5	0	49	-39	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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	449	110	0	1278	1117	382
Peak Hour Factor	0.9719	0.9719	1.0000	0.9719	0.9719	0.9719
Other Adjustment Factor	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	115	0	0	329	287	98
Total Analysis Volume [veh/h]	462	0	0	1315	1149	393
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	2	0	0	6	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	7	0	0	7	7	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	21	0	0	21	79	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	L	R
C, Cycle Length [s]	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	54	54	54	38	38
g / C, Green / Cycle	0.54	0.54	0.54	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.13	0.00	0.25	0.33	0.24
s, saturation flow rate [veh/h]	3618	1615	5176	3514	1615
c, Capacity [veh/h]	1957	873	2799	1332	612
d1, Uniform Delay [s]	12.07	0.00	14.11	28.61	25.45
k, delay calibration	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.28	0.00	0.57	1.78	1.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.24	0.00	0.47	0.86	0.64
d, Delay for Lane Group [s/veh]	12.35	0.00	14.68	30.39	26.58
Lane Group LOS	B	A	B	C	C
Critical Lane Group	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.57	0.00	5.68	12.57	7.64
50th-Percentile Queue Length [ft/ln]	64.28	0.00	142.05	314.31	191.04
95th-Percentile Queue Length [veh/ln]	4.63	0.00	9.59	18.39	12.18
95th-Percentile Queue Length [ft/ln]	115.71	0.00	239.78	459.68	304.38

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12.35	0.00	0.00	14.68	30.39	26.58
Movement LOS	B	A		B	C	C
d_A, Approach Delay [s/veh]	12.35		14.68		29.42	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	21.20					
Intersection LOS	C					
Intersection V/C	0.646					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	39.61
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.512
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	50.00	50.00	50.00
I_b,int, Bicycle LOS Score for Intersection	4.514	4.856	4.132
Bicycle LOS	E	E	D

Sequence

Ring 1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Wilmington Ave (NS) at I-405 EB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	14.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.712

Intersection Setup

Name	Wilmington Ave			Wilmington Ave			I-405 EB Ramps			I-405 EB Ramps		
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	2	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	340.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			Yes		

Volumes

Name	Wilmington Ave			Wilmington Ave			I-405 EB Ramps			I-405 EB Ramps		
Base Volume Input [veh/h]	0	571	683	654	1492	0	15	1	48	0	0	0
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	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Rate	1.00	1.01	1.01	1.01	1.01	1.00	1.01	1.01	1.01	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	-4	-32	40	-46	0	10	0	-9	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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	570	654	697	1453	0	25	1	39	0	0	0
Peak Hour Factor	1.0000	0.9791	0.9791	0.9791	0.9791	1.0000	0.9791	0.9791	0.9791	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]	0	146	167	178	371	0	6	0	10	0	0	0
Total Analysis Volume [veh/h]	0	582	668	712	1484	0	26	1	40	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	7	0	7	7	0	0	7	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	21	0	67	88	0	0	12	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	C	R	
C, Cycle Length [s]	100	100	100	100	100	100	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	58	58	24	86	6	6	
g / C, Green / Cycle	0.58	0.58	0.24	0.86	0.06	0.06	
(v / s)_i Volume / Saturation Flow Rate	0.11	0.41	0.20	0.29	0.01	0.02	
s, saturation flow rate [veh/h]	5176	1615	3514	5176	1813	1615	
c, Capacity [veh/h]	3023	943	830	4453	108	96	
d1, Uniform Delay [s]	9.74	14.75	36.57	1.37	44.89	45.34	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.14	4.48	2.70	0.20	1.20	2.84	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.19	0.71	0.86	0.33	0.25	0.42	
d, Delay for Lane Group [s/veh]	9.89	19.22	39.28	1.57	46.08	48.19	
Lane Group LOS	A	B	D	A	D	D	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	1.83	10.52	8.29	0.45	0.67	1.03	
50th-Percentile Queue Length [ft/ln]	45.84	263.08	207.33	11.33	16.82	25.74	
95th-Percentile Queue Length [veh/ln]	3.30	15.84	13.02	0.82	1.21	1.85	
95th-Percentile Queue Length [ft/ln]	82.52	396.08	325.40	20.39	30.28	46.33	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	9.89	19.22	39.28	1.57	0.00	46.08	46.08	48.19	0.00	0.00	0.00
Movement LOS		A	B	D	A		D	D	D			
d_A, Approach Delay [s/veh]	14.88			13.79			47.34			0.00		
Approach LOS	B			B			D			A		
d_I, Intersection Delay [s/veh]	14.82											
Intersection LOS	B											
Intersection V/C	0.712											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	39.61	39.61
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.752	2.393
Crosswalk LOS	F	F	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	340	1680	160	0
d_b, Bicycle Delay [s]	34.45	1.28	42.32	50.00
I_b,int, Bicycle LOS Score for Intersection	2.247	2.767	1.670	4.132
Bicycle LOS	B	C	A	D

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Alameda St (NS) at I-405 WB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	22.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.767

Intersection Setup

Name	Alameda St		Alameda St		I-405 WB Ramps	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	308.00	100.00	100.00	100.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Alameda St		Alameda St		I-405 WB Ramps	
Base Volume Input [veh/h]	1180	282	116	1005	460	230
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	12	10	0	18	21	15
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1198	293	117	1028	483	246
Peak Hour Factor	0.9603	0.9603	0.9603	0.9603	0.9603	0.9603
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	312	76	30	268	126	64
Total Analysis Volume [veh/h]	1248	305	122	1070	503	256
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal group	2	2	1	6	7	0
Auxiliary Signal Groups		2,7				
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	7	7	7	7	0
Maximum Green [s]	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	21	21	43	64	36	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	7	7	0	7	7	0
Pedestrian Clearance [s]	10	10	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	0.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	49	83	9	62	30	30
g / C, Green / Cycle	0.49	0.83	0.09	0.62	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.34	0.19	0.07	0.21	0.28	0.16
s, saturation flow rate [veh/h]	3618	1615	1810	5176	1810	1615
c, Capacity [veh/h]	1785	1347	156	3206	544	486
d1, Uniform Delay [s]	19.60	1.70	44.79	9.13	33.87	29.07
k, delay calibration	0.50	0.50	0.11	0.50	0.36	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.31	0.39	8.32	0.28	18.69	0.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.70	0.23	0.78	0.33	0.92	0.53
d, Delay for Lane Group [s/veh]	21.90	2.09	53.11	9.41	52.56	29.96
Lane Group LOS	C	A	D	A	D	C
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	10.58	0.54	3.22	3.23	14.35	5.15
50th-Percentile Queue Length [ft/ln]	264.41	13.44	80.39	80.86	358.75	128.83
95th-Percentile Queue Length [veh/ln]	15.91	0.97	5.79	5.82	20.56	8.88
95th-Percentile Queue Length [ft/ln]	397.75	24.19	144.71	145.54	514.06	221.90

Movement, Approach, & Intersection Results

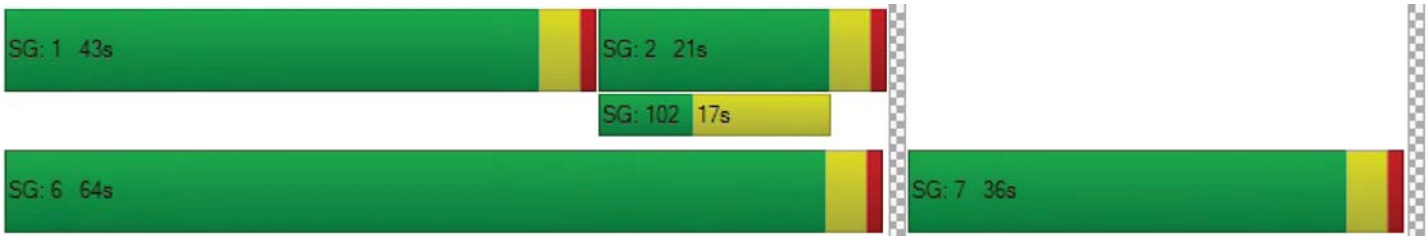
d_M, Delay for Movement [s/veh]	21.90	2.09	53.11	9.41	52.56	29.96
Movement LOS	C	A	D	A	D	C
d_A, Approach Delay [s/veh]	18.01		13.89		44.94	
Approach LOS	B		B		D	
d_I, Intersection Delay [s/veh]	22.44					
Intersection LOS	C					
Intersection V/C	0.767					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	39.61
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.330
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	50.00	50.00	50.00
I_b,int, Bicycle LOS Score for Intersection	5.414	4.788	4.132
Bicycle LOS	F	E	D

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: I-405 EB Ramps (NS) at 223rd St (EW)

Control Type:	Signalized	Delay (sec / veh):	21.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.500

Intersection Setup

Name	ICTF Dwy			I-405 EB Ramps			223rd St			223rd St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	156.00	100.00	166.00	118.00	100.00	100.00
Speed [mph]	25.00			30.00			45.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	ICTF Dwy			I-405 EB Ramps			223rd St			223rd St		
Base Volume Input [veh/h]	3	5	4	112	0	40	968	1064	5	3	257	116
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	9	29	6	0	0	9	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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	5	4	113	0	49	1002	1075	5	3	267	117
Peak Hour Factor	0.9581	0.9581	0.9581	0.9581	0.9581	0.9581	0.9581	0.9581	0.9581	0.9581	0.9581	0.9581
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	1	29	0	13	261	281	1	1	70	31
Total Analysis Volume [veh/h]	3	5	4	118	0	51	1046	1122	5	3	279	122
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	7	0	0	7	0	7	7	0	7	7	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	11	0	0	21	0	47	56	0	12	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	C	L	C	R	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	9	9	34	73	73	1	40	40
g / C, Green / Cycle	0.02	0.09	0.09	0.34	0.73	0.73	0.01	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.01	0.07	0.03	0.30	0.31	0.00	0.00	0.07	0.08
s, saturation flow rate [veh/h]	1774	1810	1615	3514	3618	1615	1810	3618	1632
c, Capacity [veh/h]	37	157	140	1178	2626	1172	12	1438	649
d1, Uniform Delay [s]	48.31	44.69	43.14	31.51	5.46	3.78	49.47	19.64	19.77
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.85	7.14	1.59	2.50	0.51	0.01	9.93	0.29	0.70
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.32	0.75	0.36	0.89	0.43	0.00	0.24	0.19	0.20
d, Delay for Lane Group [s/veh]	53.16	51.83	44.73	34.01	5.97	3.78	59.41	19.93	20.47
Lane Group LOS	D	D	D	C	A	A	E	B	C
Critical Lane Group	Yes	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.35	3.15	1.25	11.50	3.45	0.02	0.11	2.04	2.08
50th-Percentile Queue Length [ft/ln]	8.68	78.81	31.19	287.43	86.34	0.56	2.69	51.12	51.88
95th-Percentile Queue Length [veh/ln]	0.62	5.67	2.25	17.06	6.22	0.04	0.19	3.68	3.74
95th-Percentile Queue Length [ft/ln]	15.62	141.86	56.14	426.46	155.42	1.00	4.84	92.02	93.39

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.16	53.16	53.16	51.83	44.73	44.73	34.01	5.97	3.78	59.41	19.95	20.47
Movement LOS	D	D	D	D	D	D	C	A	A	E	B	C
d_A, Approach Delay [s/veh]	53.16			49.69			19.46			20.40		
Approach LOS	D			D			B			C		
d_I, Intersection Delay [s/veh]	21.60											
Intersection LOS	C											
Intersection V/C	0.500											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	39.61	39.61	39.61	0.00
I_p,int, Pedestrian LOS Score for Intersection	1.728	2.463	3.188	0.000
Crosswalk LOS	A	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	140	340	1040	340
d_b, Bicycle Delay [s]	43.25	34.45	11.52	34.45
I_b,int, Bicycle LOS Score for Intersection	1.579	1.838	3.352	1.782
Bicycle LOS	A	A	C	A

Sequence

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

OPENING YEAR (2021) WITH PROJECT

Panattoni Project

Vistro File: G:\...\AM_Delay.vistro
Report File: G:\...\AMOYp_Delay.pdf

Scenario 4 Opening Year with Project
3/9/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Wilmington Ave (NS) at I-405 WB Ramps (EW)	Signalized	HCM 6th Edition	WB Right	0.539	22.1	C
2	Wilmington Ave (NS) at I-405 EB Ramps (EW)	Signalized	HCM 6th Edition	EB Right	0.909	23.9	C
4	Alameda St (NS) at I-405 WB Ramps (EW)	Signalized	HCM 6th Edition	SB Left	0.616	20.0	B
5	I-405 EB Ramps (NS) at 223rd St (EW)	Signalized	HCM 6th Edition	WB Left	0.537	25.1	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: Wilmington Ave (NS) at I-405 WB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	22.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.539

Intersection Setup

Name	Wilmington Ave		Wilmington Ave		I-405 WB Ramps	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Wilmington Ave		Wilmington Ave		I-405 WB Ramps	
Base Volume Input [veh/h]	459	88	0	862	1035	447
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.00	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	15	9	0	33	-13	16
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	476	97	0	899	1027	465
Peak Hour Factor	0.9600	0.9600	1.0000	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	124	0	0	234	267	121
Total Analysis Volume [veh/h]	496	0	0	936	1070	484
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	2	0	0	6	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	7	0	0	7	7	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	21	0	0	21	79	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	L	R
C, Cycle Length [s]	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	56	56	56	36	36
g / C, Green / Cycle	0.56	0.56	0.56	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.14	0.00	0.18	0.30	0.30
s, saturation flow rate [veh/h]	3618	1615	5176	3514	1615
c, Capacity [veh/h]	2031	907	2905	1260	579
d1, Uniform Delay [s]	11.13	0.00	11.73	29.55	29.34
k, delay calibration	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.29	0.00	0.29	1.70	3.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.24	0.00	0.32	0.85	0.84
d, Delay for Lane Group [s/veh]	11.42	0.00	12.02	31.24	32.62
Lane Group LOS	B	A	B	C	C
Critical Lane Group	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.62	0.00	3.45	11.77	10.83
50th-Percentile Queue Length [ft/ln]	65.59	0.00	86.23	294.20	270.83
95th-Percentile Queue Length [veh/ln]	4.72	0.00	6.21	17.39	16.23
95th-Percentile Queue Length [ft/ln]	118.07	0.00	155.22	434.85	405.78

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.42	0.00	0.00	12.02	31.24	32.62
Movement LOS	B	A		B	C	C
d_A, Approach Delay [s/veh]	11.42		12.02		31.67	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	22.15					
Intersection LOS	C					
Intersection V/C	0.539					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	39.61
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.515
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	50.00	50.00	50.00
I_b,int, Bicycle LOS Score for Intersection	4.542	4.647	4.132
Bicycle LOS	E	E	D

Sequence

Ring 1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Wilmington Ave (NS) at I-405 EB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	23.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.909

Intersection Setup

Name	Wilmington Ave			Wilmington Ave			I-405 EB Ramps			I-405 EB Ramps		
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	2	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	340.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			Yes		

Volumes

Name	Wilmington Ave			Wilmington Ave			I-405 EB Ramps			I-405 EB Ramps		
Base Volume Input [veh/h]	0	435	892	383	1388	0	85	0	191	0	0	0
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	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Rate	1.00	1.01	1.01	1.01	1.01	1.00	1.01	1.01	1.01	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	-19	13	0	0	13	0	42	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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	448	877	398	1395	0	98	0	234	0	0	0
Peak Hour Factor	1.0000	0.9804	0.9804	0.9804	0.9804	1.0000	0.9804	0.9804	0.9804	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]	0	114	224	101	356	0	25	0	60	0	0	0
Total Analysis Volume [veh/h]	0	457	895	406	1423	0	100	0	239	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	7	0	7	7	0	0	7	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	21	0	18	39	0	0	61	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	C	R	
C, Cycle Length [s]	100	100	100	100	100	100	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	57	57	13	75	17	17	
g / C, Green / Cycle	0.57	0.57	0.13	0.75	0.17	0.17	
(v / s)_i Volume / Saturation Flow Rate	0.09	0.55	0.12	0.27	0.06	0.15	
s, saturation flow rate [veh/h]	5176	1615	3514	5176	1810	1615	
c, Capacity [veh/h]	2965	925	473	3868	313	279	
d1, Uniform Delay [s]	10.01	20.47	42.35	4.40	36.23	40.17	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.11	22.68	4.68	0.27	0.58	7.48	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.15	0.97	0.86	0.37	0.32	0.86	
d, Delay for Lane Group [s/veh]	10.12	43.15	47.03	4.67	36.81	47.65	
Lane Group LOS	B	D	D	A	D	D	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	1.45	22.94	5.06	2.50	2.18	6.22	
50th-Percentile Queue Length [ft/ln]	36.36	573.44	126.51	62.62	54.45	155.43	
95th-Percentile Queue Length [veh/ln]	2.62	30.79	8.75	4.51	3.92	10.31	
95th-Percentile Queue Length [ft/ln]	65.44	769.81	218.74	112.72	98.02	257.66	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	10.12	43.15	47.03	4.67	0.00	36.81	36.81	47.65	0.00	0.00	0.00
Movement LOS		B	D	D	A		D	D	D			
d_A, Approach Delay [s/veh]	31.98			14.08			44.45			0.00		
Approach LOS	C			B			D			A		
d_I, Intersection Delay [s/veh]	23.88											
Intersection LOS	C											
Intersection V/C	0.909											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	39.61	39.61
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.885	2.354
Crosswalk LOS	F	F	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	340	700	1140	0
d_b, Bicycle Delay [s]	34.45	21.13	9.25	50.00
I_b,int, Bicycle LOS Score for Intersection	2.303	2.566	2.119	4.132
Bicycle LOS	B	B	B	D

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Alameda St (NS) at I-405 WB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	20.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.616

Intersection Setup

Name	Alameda St		Alameda St		I-405 WB Ramps	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	308.00	100.00	100.00	100.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Alameda St		Alameda St		I-405 WB Ramps	
Base Volume Input [veh/h]	684	110	77	1171	329	160
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	26	6	0	21	54	13
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	713	117	77	1198	385	174
Peak Hour Factor	0.8165	0.8165	0.8165	0.8165	0.8165	0.8165
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	218	36	24	367	118	53
Total Analysis Volume [veh/h]	873	143	94	1467	472	213
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal group	2	2	1	6	7	0
Auxiliary Signal Groups		2,7				
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	7	7	7	7	0
Maximum Green [s]	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	21	21	45	66	34	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	7	7	0	7	7	0
Pedestrian Clearance [s]	10	10	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	0.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	53	85	7	64	28	28
g / C, Green / Cycle	0.53	0.85	0.07	0.64	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.24	0.09	0.05	0.28	0.26	0.13
s, saturation flow rate [veh/h]	3618	1615	1810	5176	1810	1615
c, Capacity [veh/h]	1919	1376	123	3306	509	454
d1, Uniform Delay [s]	14.53	1.21	45.79	9.11	34.94	29.75
k, delay calibration	0.50	0.50	0.11	0.50	0.36	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.78	0.15	9.24	0.43	19.91	0.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.45	0.10	0.76	0.44	0.93	0.47
d, Delay for Lane Group [s/veh]	15.31	1.36	55.03	9.54	54.85	30.50
Lane Group LOS	B	A	E	A	D	C
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.66	0.14	2.53	4.55	13.72	4.29
50th-Percentile Queue Length [ft/ln]	141.39	3.58	63.27	113.72	343.05	107.15
95th-Percentile Queue Length [veh/ln]	9.56	0.26	4.56	8.05	19.80	7.68
95th-Percentile Queue Length [ft/ln]	238.89	6.45	113.89	201.16	494.92	192.03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	15.31	1.36	55.03	9.54	54.85	30.50
Movement LOS	B	A	E	A	D	C
d_A, Approach Delay [s/veh]	13.35		12.28		47.28	
Approach LOS	B		B		D	
d_I, Intersection Delay [s/veh]	19.96					
Intersection LOS	B					
Intersection V/C	0.616					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	39.61
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.245
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	50.00	50.00	50.00
I_b,int, Bicycle LOS Score for Intersection	4.971	4.991	4.132
Bicycle LOS	E	E	D

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 5: I-405 EB Ramps (NS) at 223rd St (EW)

Control Type:	Signalized	Delay (sec / veh):	25.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.537

Intersection Setup

Name	ICTF Dwy			I-405 EB Ramps			223rd St			223rd St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	156.00	100.00	166.00	118.00	100.00	100.00
Speed [mph]	25.00			30.00			45.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	ICTF Dwy			I-405 EB Ramps			223rd St			223rd St		
Base Volume Input [veh/h]	2	2	2	80	2	116	635	388	0	4	773	49
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	8	20	11	0	0	9	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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	2	2	80	2	125	658	401	0	4	786	49
Peak Hour Factor	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	1	23	1	36	188	115	0	1	225	14
Total Analysis Volume [veh/h]	2	2	2	92	2	143	754	459	0	5	900	56
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	7	0	0	7	0	7	7	0	7	7	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	12	0	0	21	0	46	55	0	12	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	C	L	C	R	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	11	11	25	71	71	1	47	47
g / C, Green / Cycle	0.01	0.11	0.11	0.25	0.71	0.71	0.01	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.00	0.05	0.09	0.21	0.13	0.00	0.00	0.17	0.18
s, saturation flow rate [veh/h]	1767	1810	1618	3514	3618	1615	1810	3618	1844
c, Capacity [veh/h]	21	203	182	876	2553	1140	19	1688	860
d1, Uniform Delay [s]	49.05	41.56	43.33	35.93	4.97	0.00	49.18	17.26	17.27
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.15	1.57	7.75	2.63	0.15	0.00	7.51	0.64	1.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.28	0.45	0.80	0.86	0.18	0.00	0.27	0.37	0.38
d, Delay for Lane Group [s/veh]	56.19	43.13	51.09	38.56	5.12	0.00	56.69	17.90	18.53
Lane Group LOS	E	D	D	D	A	A	E	B	B
Critical Lane Group	Yes	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.19	2.20	3.86	8.63	1.26	0.00	0.16	4.63	4.89
50th-Percentile Queue Length [ft/ln]	4.78	55.03	96.58	215.73	31.48	0.00	4.03	115.74	122.14
95th-Percentile Queue Length [veh/ln]	0.34	3.96	6.95	13.45	2.27	0.00	0.29	8.16	8.51
95th-Percentile Queue Length [ft/ln]	8.61	99.06	173.84	336.17	56.66	0.00	7.26	203.96	212.77

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	56.19	56.19	56.19	43.13	51.09	51.09	38.56	5.12	0.00	56.69	18.09	18.53
Movement LOS	E	E	E	D	D	D	D	A	A	E	B	B
d_A, Approach Delay [s/veh]	56.19			48.00			25.91			18.31		
Approach LOS	E			D			C			B		
d_I, Intersection Delay [s/veh]	25.13											
Intersection LOS	C											
Intersection V/C	0.537											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	39.61	39.61	39.61	0.00
I_p,int, Pedestrian LOS Score for Intersection	1.725	2.392	3.143	0.000
Crosswalk LOS	A	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	160	340	1020	340
d_b, Bicycle Delay [s]	42.32	34.45	12.01	34.45
I_b,int, Bicycle LOS Score for Intersection	1.570	1.951	2.560	2.088
Bicycle LOS	A	A	B	B

Sequence

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

Panattoni Project

Vistro File: G:\...\PM_Delay.vistro
Report File: G:\...\PMOYp_Delay.pdf

Scenario 4 Opening Year with Project
3/9/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Wilmington Ave (NS) at I-405 WB Ramps (EW)	Signalized	HCM 6th Edition	WB Left	0.647	21.2	C
2	Wilmington Ave (NS) at I-405 EB Ramps (EW)	Signalized	HCM 6th Edition	EB Right	0.719	15.0	B
4	Alameda St (NS) at I-405 WB Ramps (EW)	Signalized	HCM 6th Edition	SB Left	0.777	22.7	C
5	I-405 EB Ramps (NS) at 223rd St (EW)	Signalized	HCM 6th Edition	WB Left	0.509	21.6	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: Wilmington Ave (NS) at I-405 WB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	21.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.647

Intersection Setup

Name	Wilmington Ave		Wilmington Ave		I-405 WB Ramps	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Wilmington Ave		Wilmington Ave		I-405 WB Ramps	
Base Volume Input [veh/h]	446	104	0	1223	1150	372
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.00	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	15	30	0	55	-39	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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	463	135	0	1284	1117	382
Peak Hour Factor	0.9719	0.9719	1.0000	0.9719	0.9719	0.9719
Other Adjustment Factor	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	119	0	0	330	287	98
Total Analysis Volume [veh/h]	476	0	0	1321	1149	393
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	2	0	0	6	7	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	7	0	0	7	7	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	21	0	0	21	79	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	L	R
C, Cycle Length [s]	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	54	54	54	38	38
g / C, Green / Cycle	0.54	0.54	0.54	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.13	0.00	0.26	0.33	0.24
s, saturation flow rate [veh/h]	3618	1615	5176	3514	1615
c, Capacity [veh/h]	1957	873	2799	1332	612
d1, Uniform Delay [s]	12.12	0.00	14.14	28.61	25.45
k, delay calibration	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.30	0.00	0.57	1.78	1.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.24	0.00	0.47	0.86	0.64
d, Delay for Lane Group [s/veh]	12.42	0.00	14.71	30.39	26.58
Lane Group LOS	B	A	B	C	C
Critical Lane Group	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.66	0.00	5.72	12.57	7.64
50th-Percentile Queue Length [ft/ln]	66.54	0.00	142.93	314.31	191.04
95th-Percentile Queue Length [veh/ln]	4.79	0.00	9.64	18.39	12.18
95th-Percentile Queue Length [ft/ln]	119.77	0.00	240.96	459.68	304.38

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12.42	0.00	0.00	14.71	30.39	26.58
Movement LOS	B	A		B	C	C
d_A, Approach Delay [s/veh]	12.42		14.71		29.42	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	21.18					
Intersection LOS	C					
Intersection V/C	0.647					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	39.61
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.512
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	50.00	50.00	50.00
I_b,int, Bicycle LOS Score for Intersection	4.525	4.859	4.132
Bicycle LOS	E	E	D

Sequence

Ring 1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Wilmington Ave (NS) at I-405 EB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	15.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.719

Intersection Setup

Name	Wilmington Ave			Wilmington Ave			I-405 EB Ramps			I-405 EB Ramps		
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	2	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	340.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			Yes			Yes		

Volumes

Name	Wilmington Ave			Wilmington Ave			I-405 EB Ramps			I-405 EB Ramps		
Base Volume Input [veh/h]	0	571	683	654	1492	0	15	1	48	0	0	0
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	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Rate	1.00	1.01	1.01	1.01	1.01	1.00	1.01	1.01	1.01	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	35	-32	40	-40	0	10	0	1	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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	609	654	697	1459	0	25	1	49	0	0	0
Peak Hour Factor	1.0000	0.9791	0.9791	0.9791	0.9791	1.0000	0.9791	0.9791	0.9791	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]	0	155	167	178	373	0	6	0	13	0	0	0
Total Analysis Volume [veh/h]	0	622	668	712	1490	0	26	1	50	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	7	0	7	7	0	0	7	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	21	0	67	88	0	0	12	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	C	R	
C, Cycle Length [s]	100	100	100	100	100	100	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	58	58	24	86	6	6	
g / C, Green / Cycle	0.58	0.58	0.24	0.86	0.06	0.06	
(v / s)_i Volume / Saturation Flow Rate	0.12	0.41	0.20	0.29	0.01	0.03	
s, saturation flow rate [veh/h]	5176	1615	3514	5176	1813	1615	
c, Capacity [veh/h]	3010	939	830	4440	113	100	
d1, Uniform Delay [s]	9.95	14.94	36.57	1.42	44.64	45.38	
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.16	4.56	2.70	0.20	1.08	3.77	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.21	0.71	0.86	0.34	0.24	0.50	
d, Delay for Lane Group [s/veh]	10.11	19.50	39.28	1.62	45.72	49.15	
Lane Group LOS	B	B	D	A	D	D	
Critical Lane Group	No	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	1.99	10.62	8.29	0.51	0.67	1.30	
50th-Percentile Queue Length [ft/ln]	49.87	265.60	207.33	12.68	16.72	32.52	
95th-Percentile Queue Length [veh/ln]	3.59	15.97	13.02	0.91	1.20	2.34	
95th-Percentile Queue Length [ft/ln]	89.77	399.23	325.40	22.82	30.10	58.54	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	10.11	19.50	39.28	1.62	0.00	45.72	45.72	49.15	0.00	0.00	0.00
Movement LOS		B	B	D	A		D	D	D			
d_A, Approach Delay [s/veh]	14.97			13.80			47.95			0.00		
Approach LOS	B			B			D			A		
d_I, Intersection Delay [s/veh]	14.96											
Intersection LOS	B											
Intersection V/C	0.719											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	39.61	39.61
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.757	2.393
Crosswalk LOS	F	F	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	340	1680	160	0
d_b, Bicycle Delay [s]	34.45	1.28	42.32	50.00
I_b,int, Bicycle LOS Score for Intersection	2.269	2.771	1.687	4.132
Bicycle LOS	B	C	A	D

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Alameda St (NS) at I-405 WB Ramps (EW)

Control Type:	Signalized	Delay (sec / veh):	22.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.777

Intersection Setup

Name	Alameda St		Alameda St		I-405 WB Ramps	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	308.00	100.00	100.00	100.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Alameda St		Alameda St		I-405 WB Ramps	
Base Volume Input [veh/h]	1180	282	116	1005	460	230
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	23	10	0	23	31	15
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1209	293	117	1033	493	246
Peak Hour Factor	0.9603	0.9603	0.9603	0.9603	0.9603	0.9603
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	315	76	30	269	128	64
Total Analysis Volume [veh/h]	1259	305	122	1076	513	256
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal group	2	2	1	6	7	0
Auxiliary Signal Groups		2,7				
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	7	7	7	7	0
Maximum Green [s]	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	21	21	42	63	37	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	7	7	0	7	7	0
Pedestrian Clearance [s]	10	10	0	10	10	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	0.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	49	83	9	61	31	31
g / C, Green / Cycle	0.49	0.83	0.09	0.61	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.35	0.19	0.07	0.21	0.28	0.16
s, saturation flow rate [veh/h]	3618	1615	1810	5176	1810	1615
c, Capacity [veh/h]	1761	1347	156	3172	556	496
d1, Uniform Delay [s]	20.19	1.70	44.79	9.46	33.51	28.53
k, delay calibration	0.50	0.50	0.11	0.50	0.35	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.51	0.39	8.33	0.29	17.98	0.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.23	0.78	0.34	0.92	0.52
d, Delay for Lane Group [s/veh]	22.71	2.09	53.12	9.75	51.49	29.36
Lane Group LOS	C	A	D	A	D	C
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	10.93	0.54	3.22	3.34	14.49	5.09
50th-Percentile Queue Length [ft/ln]	273.19	13.43	80.40	83.50	362.32	127.33
95th-Percentile Queue Length [veh/ln]	16.35	0.97	5.79	6.01	20.74	8.79
95th-Percentile Queue Length [ft/ln]	408.72	24.18	144.73	150.29	518.40	219.86

Movement, Approach, & Intersection Results

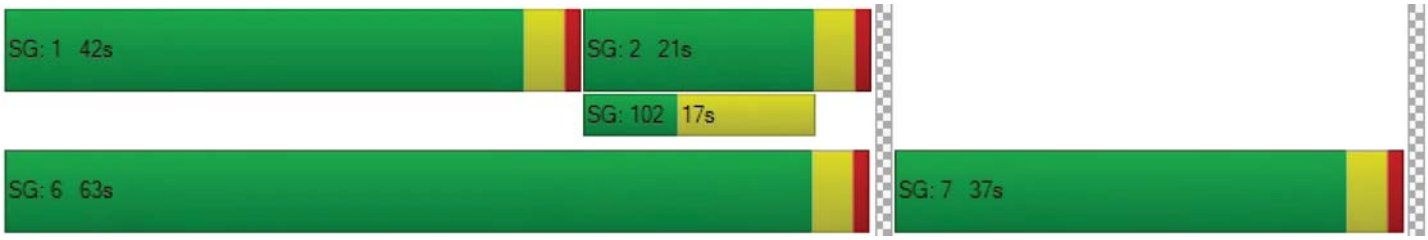
d_M, Delay for Movement [s/veh]	22.71	2.09	53.12	9.75	51.49	29.36
Movement LOS	C	A	D	A	D	C
d_A, Approach Delay [s/veh]	18.69		14.17		44.13	
Approach LOS	B		B		D	
d_I, Intersection Delay [s/veh]	22.69					
Intersection LOS	C					
Intersection V/C	0.777					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	39.61
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.334
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	50.00	50.00	50.00
I_b,int, Bicycle LOS Score for Intersection	5.423	4.791	4.132
Bicycle LOS	F	E	D

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: I-405 EB Ramps (NS) at 223rd St (EW)

Control Type:	Signalized	Delay (sec / veh):	21.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.509

Intersection Setup

Name	ICTF Dwy			I-405 EB Ramps			223rd St			223rd St		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	2	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	156.00	100.00	166.00	118.00	100.00	100.00
Speed [mph]	25.00			30.00			45.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	ICTF Dwy			I-405 EB Ramps			223rd St			223rd St		
Base Volume Input [veh/h]	3	5	4	112	0	40	968	1064	5	3	257	116
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
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	9	56	9	0	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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	5	4	113	0	49	1029	1078	5	3	268	117
Peak Hour Factor	0.9581	0.9581	0.9581	0.9581	0.9581	0.9581	0.9581	0.9581	0.9581	0.9581	0.9581	0.9581
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	1	29	0	13	269	281	1	1	70	31
Total Analysis Volume [veh/h]	3	5	4	118	0	51	1074	1125	5	3	280	122
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	7	0	0	7	0	7	7	0	7	7	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	11	0	0	21	0	47	56	0	12	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	C	L	C	R	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	9	9	34	73	73	1	39	39
g / C, Green / Cycle	0.02	0.09	0.09	0.34	0.73	0.73	0.01	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.01	0.07	0.03	0.31	0.31	0.00	0.00	0.07	0.08
s, saturation flow rate [veh/h]	1774	1810	1615	3514	3618	1615	1810	3618	1633
c, Capacity [veh/h]	37	157	140	1206	2626	1172	12	1409	636
d1, Uniform Delay [s]	48.31	44.69	43.14	31.11	5.46	3.78	49.47	20.17	20.30
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.85	7.14	1.59	2.50	0.51	0.01	9.93	0.30	0.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.32	0.75	0.36	0.89	0.43	0.00	0.24	0.19	0.21
d, Delay for Lane Group [s/veh]	53.16	51.83	44.73	33.62	5.98	3.78	59.41	20.47	21.04
Lane Group LOS	D	D	D	C	A	A	E	C	C
Critical Lane Group	Yes	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.35	3.15	1.25	11.76	3.47	0.02	0.11	2.09	2.12
50th-Percentile Queue Length [ft/ln]	8.68	78.81	31.19	293.97	86.68	0.56	2.69	52.13	52.92
95th-Percentile Queue Length [veh/ln]	0.62	5.67	2.25	17.38	6.24	0.04	0.19	3.75	3.81
95th-Percentile Queue Length [ft/ln]	15.62	141.86	56.14	434.56	156.03	1.00	4.84	93.84	95.26

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.16	53.16	53.16	51.83	44.73	44.73	33.62	5.98	3.78	59.41	20.49	21.04
Movement LOS	D	D	D	D	D	D	C	A	A	E	C	C
d_A, Approach Delay [s/veh]	53.16			49.69			19.44			20.94		
Approach LOS	D			D			B			C		
d_I, Intersection Delay [s/veh]	21.64											
Intersection LOS	C											
Intersection V/C	0.509											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	39.61	39.61	39.61	0.00
I_p,int, Pedestrian LOS Score for Intersection	1.728	2.470	3.194	0.000
Crosswalk LOS	A	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	140	340	1040	340
d_b, Bicycle Delay [s]	43.25	34.45	11.52	34.45
I_b,int, Bicycle LOS Score for Intersection	1.579	1.838	3.378	1.782
Bicycle LOS	A	A	C	A

Sequence

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

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FEHR PEERS

Draft Memorandum

Date: May 22, 2020

To: Alicia Gonzalez, Michael Baker International

From: Miguel Nunez, Fatemeh Ranaiefar, John Muggridge, Nico Boyd, and Johnny Schmidt

Subject: Panattoni Warehouse Project: Vehicle Miles Traveled Analysis

LA20-3188

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This technical memorandum documents the Vehicle Miles Traveled (VMT) analysis for the Panattoni Warehouse Project located at 2112 East 223rd Street. The proposed project includes two options with the following land use components:

1. Warehouse and manufacturing option
    - 165,200 square feet of warehouse
    - 127,200 square feet of manufacturing
2. Warehouse only option: 292,400 square feet of warehouse

The Project is estimated to include up to 124 employees regardless of which project option is selected.

This VMT analysis is part of an environmental impact report being prepared for the proposed Project and follows the California Environmental Quality Act (CEQA) guidance for determining transportation impacts in accordance with Senate Bill (SB) 743. In lieu of the City adopting and setting its own VMT metric and thresholds, this analysis is consistent with the approach provided in the Office of Planning and Research (OPR) Technical Advisory on Evaluating Transportation Impacts in CEQA (December 2018).

The following information describes the VMT thresholds developed for the Project along with the VMT analysis findings.

Baseline VMT

On September 27, 2013, Governor Jerry Brown signed SB 743 into law, which initiated a process to change transportation impact analyses completed in support of CEQA documentation. SB 743 eliminates level of service (LOS) as a basis for determining significant transportation impacts under

CEQA and provides a new performance metric, VMT. As a result, the State is shifting from measuring a project's impact to drivers (LOS) to measuring the impact of driving (VMT) as it relates to achieving State goals of reducing greenhouse gas (GHG) emissions, encouraging infill development, and improving public health through active transportation.

The Southern California Association of Governments (SCAG) 2016 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) trip-based model was used to estimate the baseline VMT for the City of Carson. The current SCAG model has a 2012 base year, a 2016 scenario and 2040 as the forecast year. The VMT analysis for this project is based on year 2016 results.

This baseline VMT methodology includes vehicle trips within the SCAG model to generate the following metric, per the OPR advisory:

1. Home-based Work VMT per Employee: Vehicle trips between home and work are counted, and then divided by the number of employees within the geographic area. This metric is used to estimate VMT for the manufacturing, warehousing, and areas associated with offices or administrative functions.

The City's baseline VMT for each metric is shown in Table 1 below. From this point forward the memo will focus exclusively on the work VMT as there are no residential components to the project.

Table 1: VMT for the City of Carson

VMT Metrics	Baseline VMT
Home Based Work VMT (VMT per employee)	19.6

VMT Impact Thresholds

Following guidance from OPR[1], the City of Carson identified a threshold of 15% reduction from baseline VMT as the threshold that would be appropriate to apply to the Project. If the Project would generate VMT higher than the threshold, then it would be expected to have a VMT impact, and if the Project would generate VMT lower than the threshold, then it would not be expected to have a VMT impact. The City's baseline VMT and VMT impact thresholds are summarized in Table 2.

[1] Governor's Office of Planning and Research, *Technical Advisory on Evaluating Transportation Impacts in CEQA*, 2018.

Table 2: City of Carson Baseline VMT and VMT Impact Thresholds for Home Based Work VMT

VMT Metrics	Baseline VMT	VMT Impact Threshold*
Home Based Work VMT (VMT per employee)	19.6	16.7

* The VMT Impact Threshold for each VMT metric is 15% below the respective Baseline VMT.

VMT Screening

The first step of a VMT analysis is to determine what type of analysis, if any, is needed. The project was evaluated against three different screening criteria to assess if a VMT analysis would be applicable as recommended by OPR's *Technical Advisory*. The screening criteria are detailed below and applied for the Project to determine if the project has the potential to result in a VMT impact.

Screening Criteria 1: Project Size

Land use projects that generate less than 110 daily trips and local-serving retail projects, defined as commercial projects with local-serving retail uses less than 50 thousand square feet (ksf), are presumed to have less than significant VMT impacts absent substantial evidence to the contrary. Therefore, these projects are screened out from completing a VMT analysis based on project size.

The Project options' estimated trip generation is greater than 110 daily trips and therefore is not screened out from VMT analysis under this screening criteria.

Screening Criteria 2: Low VMT Area Screening

OPR guidance states that residential and office projects located within a low VMT generating area may be presumed to have a less than significant impact absent substantial evidence to the contrary. In the City of Carson, a low VMT area for employment projects generates no more than 16.7 VMT per employee as shown above in Table 2. The traffic analysis zones (TAZ) contained in the SCAG model can be used to identify the low VMT areas in the City of Carson.

The TAZ the Project is located in is estimated to generate VMT per employment greater than 15% below the City's baseline VMT. Therefore, the Project is not in an area with low employment VMT, which means the Project cannot be presumed to have a less than significant VMT impact and may require further VMT analysis.

Screening Criteria 3: Transit Priority Areas (TPA) Screening

Projects located in a Transit Priority Area (TPA) or along a High-Quality Transit Corridor (HQTC) may also be screened out from conducting a VMT analysis because they are presumed to have a less

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than significant impact absent substantial evidence to the contrary. TPAs are defined in the OPR technical advisory as a ½ mile radius around an existing or planned major transit stop or an existing stop along a HQTC. A HQTC is defined as a corridor with fixed route bus service frequency of 15 minutes (or less) during peak commute hours.

The presumption that a project in a TPA will have a less than significant impact absent substantial evidence to the contrary may not be appropriate if the project:

1. Has a Floor Area Ratio (FAR) of less than 0.75;
2. Includes more parking for use by residents, customers, or employees of the project than required by the jurisdiction (if the jurisdiction requires the project to supply parking);
3. Is inconsistent with the applicable Sustainable Communities Strategy (as determined by the lead agency, with input from the Metropolitan Planning Organization); or
4. Replaces affordable residential units with a smaller number of moderate- or high-income residential units.

Based on existing transit service in Carson, the Project is not located in an area that qualifies as a TPA or HQTC, so the Project is not screened out from further VMT analysis under this screening criteria.

VMT Methodology

This section presents the methodology for calculating VMT for the proposed Project. The SCAG 2016 RTP/SCS model was used as the basis for the information and analysis. Given that the Project is located in an area that does not qualify for Low VMT screening or within a Transit Priority Area (TPA)/High-Quality Transit Corridor, the Project's impact is to be assessed against the VMT per employee threshold described in Table 2.

The following steps were undertaken to develop the Project generated VMT.

Step 1 – Determine Average Person Trip Rates from the SCAG Model

Analysis was performed using the SCAG travel model to estimate an average trip rate for both warehouse and manufacturing uses. The trip generation rates at each TAZ were averaged to obtain a home-based work attraction trip per employee. Table 3 presents these results.

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Table 3: Person trip rates for the City of Carson

Metrics	Trip Rate
Home Based Work Attractions per Employee for Warehouse Use (includes employee commute trips between home and their work place)	1.63
Home Based Work Attractions per Employee for manufacturing Use (includes employee commute trips between home and their work place)	1.67

Step 2 – Average Person Trip Rate to Vehicle Trips Conversion

Before conducting the VMT calculations, person trips need to be converted to vehicle trips. Average mode splits or the City of Carson were obtained from the SCAG model and used to obtain the vehicle trips for the Project.

Warehouse and Manufacturing Employee Trips

For warehouse and manufacturing employees, 86% of total trips were assumed to occur in vehicles occupied by one person and 11% in vehicles occupied by an average of 2.3 people. The remaining 3% of trips would take place using alternative modes such as walking, biking, or transit, and are not included in the VMT calculation.

For option one, assuming 70 employees are working at the warehouse and 54 employees are working at the manufacturing plant. Based on the above trip rates and mode split information the Project is estimated to generate 185 daily vehicle trips for employees' commute trips.

For option two, 124 employees are working at the warehouse. Based on the above trip rates and mode split information the Project is estimated to generate 183 daily vehicle trips for employees' commute trips.

Step 3 – Estimate Trip Length

The trip lengths were estimated using data from the 2016 SCAG model. The travel model has the ability to produce average trip lengths for each TAZ in the City of Carson. For the TAZ where the Project is located, the average trip length for home-based work attractions was 16.3 miles.

Step 4 – VMT Calculation

The final step to calculate VMT is to multiply the number of vehicle trips by the average trip length of those trips.

For option one, total commute VMT of the manufacturing and warehouse employees at the Project is projected to be 3,016. The weighted average of VMT per employee for warehouse and manufacturing employees is 24.3.

For option two, total commute VMT of the warehouse employees at the Project is projected to be 2,983. The warehouse VMT was divided by the 124 employees to obtain a work VMT per employee of 24.1.

These results are presented in Tables 4 & 5 below and are compared against the citywide VMT thresholds.

Table 4: VMT per Employee Calculation

Land Use	Mode Split (SOV)	Mode Split (HOV)	Average Vehicle Occupancy	Trip Length (mi)	Person Trip Rate	VMT per Employee
Warehouse	86%	11%	2.3	16.3	1.63	24.1
Manufacturing					1.67	24.7

For option one, the weighted average of warehouse and manufacturing employees of 24.3 VMT per employee reflects an average of the VMT per employee shown in Table 4 because it includes warehouse and manufacturing uses. For option two, only warehouse land uses are proposed, therefore the average is consistent with the VMT per employee shown for the warehouse land use.

Step 5 – Truck VMT Calculation

The truck trip generation and truck weight class distribution assumptions are consistent with the Project's trip generation estimates presented in Attachment A. Truck trip length for light, medium and heavy-duty trucks are for the specific TAZ related to the Project from the SCAG model. This information is provided for the purposes of greenhouse gas (GHG) and air quality that reflect heavy vehicle types. Neither OPR guidance or the City of Carson have a VMT threshold for truck activity and this information is provided for informational purposes.

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Table 5: Option One- Truck VMT Calculation

Land Use	Size (KSF)	Light	Medium	Heavy	Light	Medium	Heavy	Truck Trips	VMT
Warehouse	165.2	0.06	0.08	0.22	8.3	8.2	18.9	59	874
Manufacturing	127.2	0.28	0.15	0.42	8.3	8.2	18.9	107	1449
Total	292.4	-	-	-	-	-	-	166	2,322

Table 6: Option Two- Truck VMT Calculation

Land Use	Size (KSF)	Light	Medium	Heavy	Light	Medium	Heavy	Truck Trips	VMT
Warehouse	292.4	0.06	0.08	0.22	8.3	8.2	18.9	105	1,546

VMT Impacts

As shown in Table 4 above, both proposed Project options would exceed the Citywide VMT/Employee threshold of 16.7 VMT per employee for the home based work VMT and this is considered to be a significant impact under CEQA.

Mitigation Options

In order to mitigate the VMT/Employee impacts of the warehouse and manufacturing land use, employee VMT would need to be reduced by approximately 36%. In order to achieve this reduction, a range of travel demand management (TDM) measures were considered for the Project. These included the following options:

1. Parking: Off-street parking cost
2. Transit: Providing transit passes to employees

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3. Commute Trip Reduction: Commuter incentives, transit subsidies, parking cashout, commute marketing program, carpool/vanpool incentives
4. Local hire considerations

The effect of combining some of these aforementioned TDM measures would result in a reduction of VMT for the warehouse and manufacturing employees. However, it would not be sufficient to mitigate the VMT impact without inclusion of the last strategy for consideration of incentives, monitoring, and enforcement for the hiring of individuals within a certain distance from the project site. While the details and structure of this approach are to be finalized, the underlying approach would include developing a framework for determining the site's average home-based work VMT per employee. Through a combination of incentives for local hiring and conditions of approval requiring regular monitoring of the site's average home-based work VMT per employee based on employee residential location and commute distance. By monitoring the residential location of residents to understand the length of employee commutes and the proportion of employees residing within certain distances from the project, it is possible to calculate the average employee commute trip length and determine whether it is within the identified employee VMT trip threshold of 16.7 VMT per employee trip.

Fehr & Peers has developed a sample tool in Attachment B that can be used to perform this monitoring. An example of the tool is shown at the end of this memo and provides the framework for entering commute distance bins and the proportion of staff within that bin to determine the home-based work VMT per employee. This tool solely provides the framework for calculating the average and the applicant or Project tenant would be responsible for the accuracy of the information and results.

Summary

This technical memorandum documents the process to determine the potential VMT impacts of the Panattoni Warehouse Project located at 2112 East 223rd Street in the City of Carson. The following summarizes the results of this analysis:

- The Project proposes two potential development options:
  - Warehouse and manufacturing option
    - 165,200 square feet of warehouse
    - 127,200 square feet of manufacturing
  - Warehouse only option: 292,400 square feet of warehouse
- The Project does not meet project size screening criteria or low VMT screening area options provided in the OPR *Technical Advisory*, hence the Project was evaluated using employment VMT methodologies consistent with guidance from that advisory document.

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- Based on the results of the VMT methodologies outlined in this memorandum, the Project will result in a significant impact for the VMT per employee metric for either project option.
- The VMT thresholds and screening criteria applied in this study are based on CEQA guidance and VMT reduction goals provided by the OPR Technical Advisory.
- Based on the study of applicable mitigation measures, the Project was determined to have a significant impact that could be mitigated below a level of significance pending the City's acceptance and review of the mitigation measure described above.

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ATTACHMENT A – PROJECT TRIP GENERATION TABLES

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Table 2
Project Trip Generation for Option A (Warehouse and Manufacturing)

Land Use/Vehicle Type	Source[1]	Trip Generation Rates per TSF[2]						
		AM Peak Hour			PM Peak Hour			Daily
		% In	% Out	Total	% In	% Out	Total	
Warehouse	ITE 150	77%	23%	0.17	27%	73%	0.19	1.74
Percent Cars	[a]	--	--	62.86%	--	--	64.38%	79.57%
Percent Trucks	[a]	--	--	37.14%	--	--	35.62%	20.43%
Car Trips per TSF		0.082	0.025	0.107	0.033	0.089	0.122	1.385
Truck Trips per TSF		0.049	0.015	0.064	0.018	0.049	0.067	0.355
Manufacturing	ITE 130	77%	23%	0.62	31%	69%	0.67	3.93
Percent Cars	[b]	--	--	60.53%	--	--	76.83%	78.60%
Percent Trucks	[b]	--	--	39.47%	--	--	23.17%	21.40%
Car Trips per TSF		0.289	0.086	0.375	0.160	0.355	0.515	3.089
Truck Trips per TSF		0.188	0.056	0.244	0.048	0.107	0.155	0.841

Vehicle Trips Generated									
Land Use/Vehicle Type	Quantity (TSF)[3]	Land use in Buildings	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Warehouse	165.200	1, 2 & 3							
Cars			14	4	18	5	15	20	229
Trucks			8	3	11	3	8	11	59
Manufacturing	127.200	1, 2 & 3							
Cars			37	11	48	20	46	66	393
Trucks			24	7	31	6	14	20	107
TOTAL VEHICLE TRIPS GENERATED			**83**	**25**	**108**	**34**	**83**	**117**	**788**

Passenger Car Equivalent (PCE) Trips Generated									
Land Use/Vehicle Type	Quantity (TSF)	Truck Percent[4]	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Warehouse	165.200								
Cars			14	4	18	5	15	20	229
Trucks	PCE Factor[5]								
2-Axle Trucks	1.5	16.95%	2	1	3	1	2	3	15
3-Axle Trucks	2.0	22.71%	4	1	5	1	4	5	26
4+ Axle Trucks	3.0	60.34%	15	4	19	5	15	20	105
Subtotal Trucks	--		21	6	27	7	21	28	146
Manufacturing	127.200								
Cars			37	11	48	20	46	66	393
Trucks	PCE Factor[4]								
2-Axle Trucks	1.5	32.70%	12	3	15	3	7	10	53
3-Axle Trucks	2.0	17.90%	9	2	11	2	5	7	38
4+ Axle Trucks	3.0	49.40%	35	11	46	9	20	29	159
Subtotal Trucks	--		56	16	72	14	32	46	250
Subtotal Cars			51	15	66	25	61	86	622
Subtotal Trucks			77	22	99	21	53	74	396
TOTAL PCE TRIPS GENERATED			**128**	**37**	**165**	**46**	**114**	**160**	**1,018**

Notes:

(1) Source: Institute of Transportation Engineers, Trip Generation Manual, 10th Edition, 2017, Land Use Code ###.

[a] City of Fontana, Truck Trip Generation Study, August 2003. Heavy warehouse values used for car to truck and truck by axle percentages.

[b] City of Fontana, Truck Trip Generation Study, August 2003. Light industrial values used for car to truck and truck by axle percentages.

(2) TSF = Thousand Square Feet

(3) Source: Site Plan A1.1; dated November 19, 2019

(4) Truck by axle percentages obtained from City of Fontana, Truck Trip Generation Study, August 2003.

(5) Passenger Car Equivalent (PCE) factors have been obtained from the County of San Bernardino Congestion Management Program. PCE factor of 1.0 is used for passenger cars (such as employee vehicles); light duty trucks use a PCE factor of 1.5; medium duty trucks with 3 axles use a PCE factor of 2.0; and heavy duty trucks with 4 or more axles use a PCE factor of 3.0.

Table 3
Project Trip Generation for Option B (Warehouse Only)

Land Use/Vehicle Type	Source[1]	Trip Generation Rates per TSF[2]						
		AM Peak Hour			PM Peak Hour			Daily
		% In	% Out	Total	% In	% Out	Total	
Warehouse	ITE 150	77%	23%	0.17	27%	73%	0.19	1.74
Percent Cars	[a]	--	--	62.86%	--	--	64.38%	79.57%
Percent Trucks	[a]	--	--	37.14%	--	--	35.62%	20.43%
Car Trips per TSF		0.082	0.025	0.107	0.033	0.089	0.122	1.385
Truck Trips per TSF		0.049	0.015	0.064	0.018	0.049	0.067	0.355

Vehicle Trips Generated									
Land Use/Vehicle Type	Quantity (TSF)[3]	Land use in Building	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Warehouse	292.400	1, 2 & 3							
Cars			24	7	31	10	26	36	405
Trucks			14	5	19	5	15	20	104
TOTAL VEHICLE TRIPS GENERATED			**38**	**12**	**50**	**15**	**41**	**56**	**509**

Passenger Car Equivalent (PCE) Trips Generated									
Land Use/Vehicle Type	Quantity (TSF)	Truck Percent[4]	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Warehouse	292.400								
Cars			24	7	31	10	26	36	405
Trucks	PCE Factor[5]								
2-Axle Trucks	1.5	16.95%	4	1	5	1	4	5	27
3-Axle Trucks	2.0	22.71%	7	1	8	2	7	9	48
4+ Axle Trucks	3.0	60.34%	26	8	34	10	25	35	189
Subtotal Trucks	--		37	10	47	13	36	49	264
Subtotal Cars			24	7	31	10	26	36	405
Subtotal Trucks			37	10	47	13	36	49	264
TOTAL PCE TRIPS GENERATED			**61**	**17**	**78**	**23**	**62**	**85**	**669**

Notes:

(1) Source: Institute of Transportation Engineers, Trip Generation Manual, 10th Edition, 2017, Land Use Code ###.

[a] City of Fontana, Truck Trip Generation Study, August 2003. Heavy warehouse values used for car to truck and truck by axle percentages.

(2) TSF = Thousand Square Feet

(3) Source: Site Plan A1.1; dated November 19, 2019, and Project Description for Option 2 warehouse only.

(4) Truck by axle percentages obtained from City of Fontana, Truck Trip Generation Study, August 2003.

(5) Passenger Car Equivalent (PCE) factors have been obtained from the County of San Bernardino Congestion Management Program. PCE factor of 1.0 is used for passenger cars (such as employee vehicles); light duty trucks use a PCE factor of 1.5; medium duty trucks with 3 axles use a PCE factor of 2.0; and heavy duty trucks with 4 or more axles use a PCE factor of 3.0.

ATTACHMENT B – SAMPLE VMT MONITORING TABLE

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SAMPLE EMPLOYEE VMT MONITORING TABLE

Legend:

user input
calculation
City thresold

Average Commute Distance Calculation =	**13.3**	miles
Carson work VMT/emp threshold =	***16.7***	*miles*

Total (must = 100%)

100%

Percent of Employees within each bin	**Commute Distance Bins (miles)**	
	At least	**At most**
10%	0	1
14%	1	2
24%	2	5
14%	5	10
10%	10	15
9%	15	20
8%	20	25
6%	25	50
5%	80	90

Notes: For each row, average distance is the average of the bin ranges.
The average commute distance will be calculated based on the user input regarding commute distance and percentage of employees at that distance.
The Carson work VMT/emp threshold is not an input and should not be changed.