

TRAFFIC IMPACT ANALYSIS

Southern California Logistics Airport Lots 2 & 19

*Prepared for: Stirling Development
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1 EXECUTIVE SUMMARY

This study analyzes the forecast traffic conditions associated with the proposed development of Lot 2 and Lot 19 within the Southern California Logistics Airport (SCLA) Specific Plan Area in the City of Victorville.

Lot 2 proposes to construct an 845,820 square foot (SF) warehouse on 39.61 acres and is located at the southeast quadrant of Phantom West and Innovation Way. Lot 19 proposes to construct a 974,540 square foot (SF) warehouse on 44.77 acres and is located at the southwest quadrant of Phantom West and Nevada Avenue.

Lots 2 is forecast to generate approximately 4,407 passenger car equivalent trips per day with approximately 397 trips occurring during PM peak hour. Lot 19 is forecast to generate approximately 5,077 passenger car equivalent trips per day with approximately 455 occurring during the PM peak hour. Combined, the proposed projects are forecast to generate an approximate total of 9,484 daily trips with 852 PM peak hour trips. These trips are reported as passenger car equivalents (PCE's). See [Section 4.1](#) for further discussion on trip generation.

This study evaluates traffic conditions that include PM peak hour intersection level of service analysis, applicable signal warrant analysis, driveway sight distance analysis, and PM peak hour queuing analysis for the following scenarios:

- Existing;
- Existing With Project;
- Forecast Project Opening Year 2019 Without Project;
- Forecast Project Opening Year 2019 With Project;
- Forecast SCLA Specific Plan With Phase 1 (Year 2021);
- Forecast SCLA Specific Plan Buildout Without the High Desert Corridor; and
- Forecast SCLA Specific Plan Buildout With the High Desert Corridor

The results of the Existing analysis show that all intersections are forecast to operate at acceptable levels of service (LOS D or better). Therefore, no significant impacts were identified and no mitigation measures are required for this scenario.

The results of the intersection analysis under Existing With Project analysis show that all study intersections are forecast to operate at acceptable levels of service (LOS D or better) with the addition of project-related traffic volumes. Therefore, no significant impacts were identified and no mitigation measures are required for this scenario.

The results of the intersection analysis under Forecast Project Opening Year 2019 Without Project analysis show that all intersections are forecast to operate at acceptable levels of service (LOS D or better). Therefore, no significant impacts were identified and no mitigation measures are required for this scenario.

The results of the intersection analysis under Forecast Year 2019 With Project analysis show that all study intersections are forecast to operate at acceptable levels of service (LOS D or better) with the addition of project-related traffic volumes. Therefore, no significant impacts were identified and no mitigation measures are required for this scenario.

The results of the intersection analysis under Forecast SCLA Specific Plan Phase 1 development conditions show that all study intersections are forecast to operate at acceptable levels of service (LOS D or better) with the addition of project-related traffic volumes with the exception of the following intersections:

2. Phantom West at Innovation Drive/McCoy Circle (LOS F)

The following mitigation measure has been identified to achieve acceptable LOS and fully mitigate project forecast significant impacts at the study intersection for Forecast SCLA Specific Plan Phase 1 conditions:

- **Required Improvement #1** - Int. 2 – Phantom West at Innovation Drive/McCoy Circle
 - Signalize Intersection
 - Extend westbound approach lanes 300' east of limit line

With the implementation of the identified improvement, the impacted study intersection is expected to operate at acceptable levels of service.

A future Caltrans freeway facility, the "High Desert Corridor" (HDC), is proposed to be constructed within the project study area. This study takes this proposed freeway into consideration as a possible future circulation system scenario and analyzes two buildout scenarios: without and with the HDC.

Buildout intersection lane geometries have been identified that will provide PM peak hour operations at LOS D or better. It is anticipated that SCLA Specific Plan TDM measures will be developed that will reduce development trips made during the critical peak hours. Additionally, while the long-range analysis assumes that a large portion of the SCLA Specific Plan will develop as 35% manufacturing and 65% warehouse, programmatic limitations on manufacturing development would result in significant reductions in peak hour traffic generation.

In addition to the required improvements identified above, a clear line of sight is required at all project driveways according to AASHTO guidelines as follows:

- Lot 2:
 - Driveways #1 & #2 = 775 feet for vehicles turning right onto Phantom West
 - Driveway #3 = 695 feet for vehicles turning right onto Innovation Way
 - Driveway #4 = 765 feet for vehicles turning left onto Innovation Way
- Lot 19:
 - Driveway #1 = 850 feet for vehicles turning left onto Phantom West
 - Driveway #2 through #5 = 765 feet for vehicles turning left onto Nevada Avenue

A signal warrant analysis has been prepared for Existing and Existing With Project conditions for all unsignalized study intersections based on guidelines set for by the California Manual of Uniform Traffic Control Devices (CA MUTCD). The signal warrant analysis evaluates the need for a traffic signal for the following CA MUTCD Warrants:

- Warrant 1: Eight-Hour Vehicular Volume
- Warrant 2: Four-Hour Vehicular Volume
- Warrant 3: Peak Hour

2 INTRODUCTION

This study analyzes the forecast traffic conditions associated with the proposed development of Lot 2 and Lot 19 within the Southern California Logistics Airport (SCLA) Specific Plan Area in the City of Victorville.

Exhibit 1 shows the regional location of the project site. **Exhibit 2** shows the draft SCLA Specific Plan Area.

Exhibit 3 shows the proposed site plan for Lot 2 and **Exhibit 4** shows the proposed site plan for Lot 19.

Lot 2 proposes to construct an 845,820 square foot (SF) warehouse on 39.61 acres and is located at the southeast quadrant of Phantom West and Innovation Way. Lot 19 proposes to construct a 974,540 square foot (SF) warehouse on 44.77 acres and is located at the southwest quadrant of Phantom West and Nevada Avenue. The proposed projects are anticipated to be open in 2019.

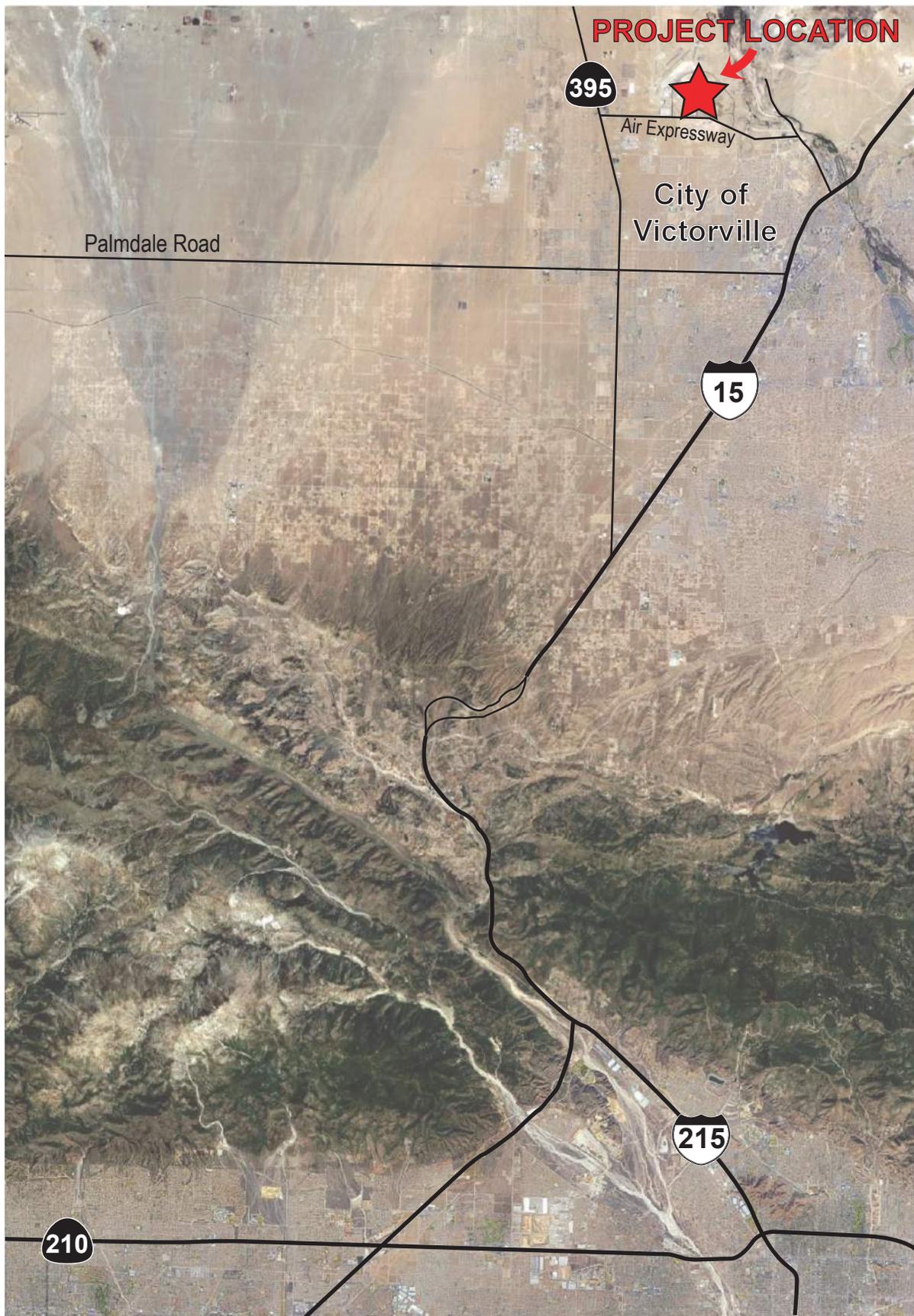
Lot 2 is forecast to generate approximately 4,407 passenger car equivalent trips each per day with approximately 370 trips occurring during the AM peak hour and approximately 397 trips occurring during the PM peak hour. Lot 19 is forecast to generate approximately 5,077 passenger car equivalent trips per day with approximately 429 trips occurring during the AM peak hour and approximately 455 trips occurring during the PM peak hour. Combined, the proposed projects are forecast to generate an approximate total of 9,484 daily trips with 799 AM peak hour trips and 852 PM peak hour trips. These trips are reported as passenger car equivalents (PCE's).

As required by San Bernardino County, this traffic impact study has been prepared in accordance with the *County of San Bernardino Traffic Impact Study Guidelines* (Revised April 9, 2014) and the *Guidelines for CMP Traffic Impact Analysis Reports in San Bernardino County*. The scope of this traffic study was coordinated with the City of Victorville.

Based on existing traffic conditions, the PM peak hour experiences higher volumes than the AM peak hour. In addition, the trip generation for the proposed projects are higher during the PM peak than the AM peak. Therefore, this study evaluates traffic conditions that include PM peak hour intersection level of service analysis, applicable signal warrant analysis, driveway sight distance analysis, and PM peak hour queuing analysis.

A signal warrant analysis was conducted for each unsignalized intersection that was found to be operating at deficient levels of service. The analysis is based on guidelines set forth in the California Manual on Traffic Control Devices (CA MUTCD) and evaluates the following traffic signal warrants:

- Warrant 1: Eight-Hour Vehicular Volume;
- Warrant 2: Four-Hour Vehicular Volume;
- Warrant 3: Peak Hour

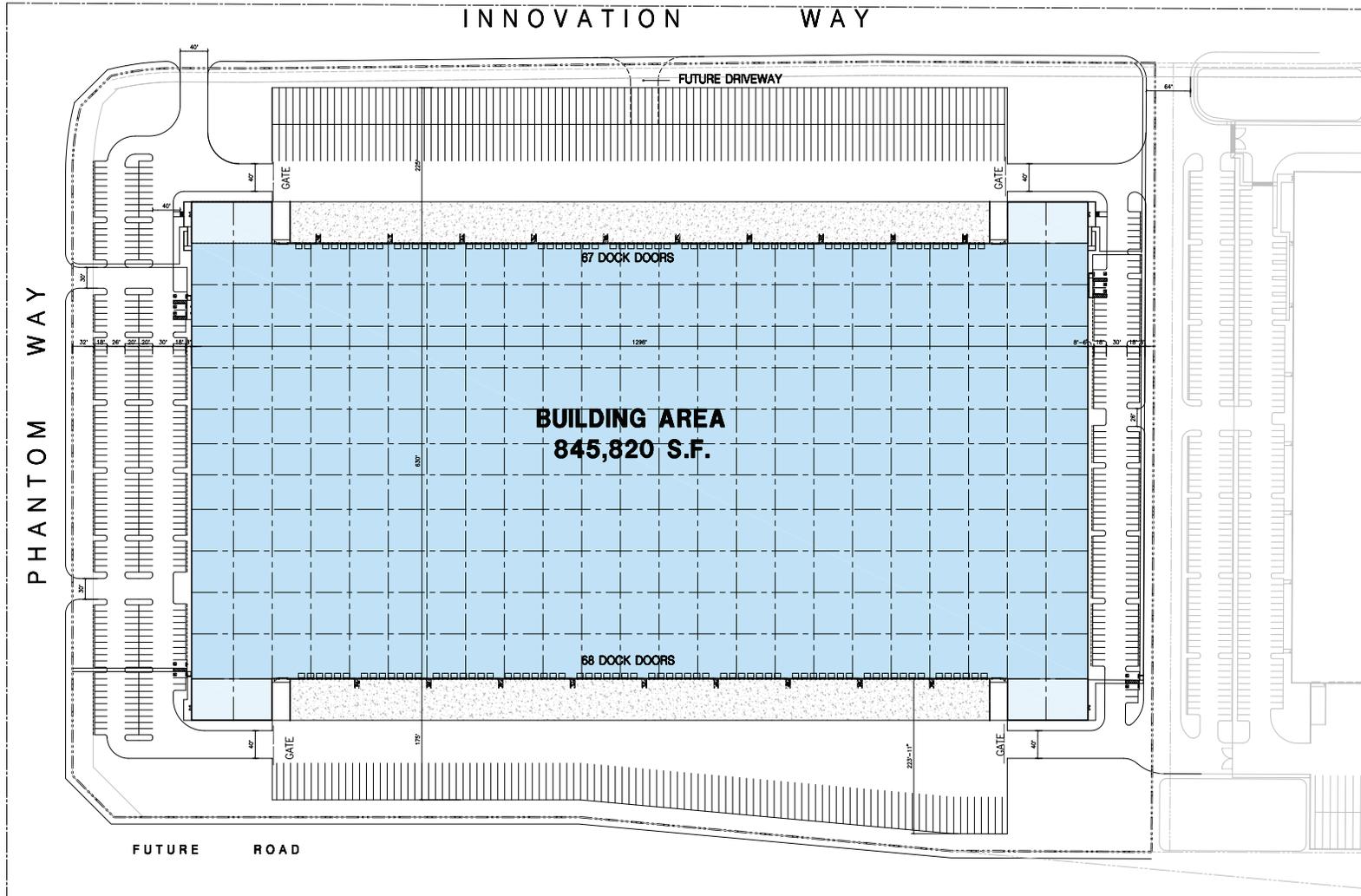


Not to Scale



Source: Stirling
Draft Layout for Information Purposes Only

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Note: This is a conceptual plan. It is based on preliminary information which is not fully verified and may be incomplete. It is meant as a comparative aid in examining alternate development strategies and any quantities indicated are subject to revision as more reliable information becomes available.



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Conceptual Site Plan

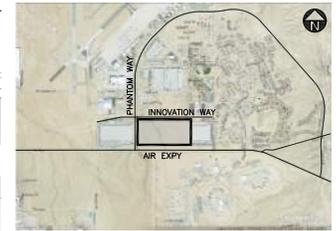
Innovation Way & Phantom West

Victorville, CA

Legend

- POTENTIAL OFFICE
- WAREHOUSE
- DRIVE THRU DOOR

Aerial Map



Tabulation

SITE AREA	
In s.f.	1,725,280 s.f.
In acres	39.61 ac
BUILDING AREA	
Office	10,000 s.f.
Warehouse	835,820 s.f.
TOTAL	845,820 s.f.
COVERAGE	
	49.0%
AUTO PARKING REQUIRED	
Office: 1/300 s.f.	33 stalls
Whse: 1st 40K @ 1/1,000 sf	40 stalls
above 40K @ 1/4,000 sf	199 stalls
TOTAL	272 stalls
AUTO PARKING PROVIDED	
Standard (9' x 20')	435 stalls
TRAILER PARKING PROVIDED	
Trailer (10' x 53')	317 stalls
ZONING ORDINANCE FOR CITY	
Zoning Designation - Southern California	
California Logistic Airport SP (SP1-920	
- Business Park (BP_	
- Airport & Support Facilities (ASF)	
MAXIMUM BUILDING HEIGHT ALLOWED	
Height - 45'	
MAXIMUM LOT COVERAGE	
Coverage - 50%	
LANDSCAPE REQUIREMENT	
Percentage - 3% of the parking surface area	
parking surface area:	246,310 s.f.
3%	7,389 s.f.
LANDSCAPE PROVIDED	228,966 s.f.
SETBACKS	
Innovation Way - 20'	
Phantom West - 30'	
Side / Rear - 0'	



June 21, 2017 / Job #17148

Scheme 6

2.1 STUDY AREA

The study evaluates the following 12 intersections during the PM peak hour in the vicinity of the project site as shown in **Exhibit 5**:

1. Air Expressway / Phantom West
2. Phantom West / Innovation Drive
3. Phantom West / George Boulevard
4. Phantom West / Nevada Avenue
5. Phantom West / McCoy Circle (Innovation Way)
6. Air Expressway / Nevada Avenue
7. Air Expressway / Phantom East
8. Innovation Drive / Lot 2 Driveway #4
9. Phantom West / Lot 19 Driveway #1
10. Nevada Avenue / Lot 19 Driveway #2
11. Nevada Avenue / Lot 19 Driveway #5
12. Phantom West / HDC Westbound Ramps
13. Phantom West / HDC Eastbound Ramps
14. Phantom East / HDC Westbound Ramps
15. Phantom East / HDC Eastbound Ramps

These study locations will be analyzed in the following study scenarios:

- Existing;
- Existing With Project;
- Forecast Project Opening Year 2019 Without Project;
- Forecast Project Opening Year 2019 With Project;
- Forecast SCLA Specific Plan With Phase 1 (Year 2021);
- Forecast SCLA Specific Plan Buildout Without the High Desert Corridor; and
- Forecast SCLA Specific Plan Buildout With the High Desert Corridor

2.2 ANALYSIS METHODOLOGY

Level of Service (LOS) is commonly used as a qualitative description of intersection operation and is based on the capacity of the intersection and the volume of traffic using the intersection. The Highway Capacity Manual (HCM) 2010 analysis methodology is utilized to determine the operation LOS of the study intersections. The HCM analysis methodology describes the operation of an intersection using a range of level of service from LOS A (free-flow conditions) to LOS F (severely congested conditions), based on the corresponding stopped delay experienced per vehicle for study intersections as shown in **Table 1**.

TABLE 1 - LEVEL OF SERVICE & DELAY RANGE

Control Delay (seconds/vehicle)		Level of Service
Signalized Int.	Unsignalized Int.	
Delay ≤ 10.0	Delay ≤ 10.0	A
10.1 - 20.0	10.0 < Delay ≤ 15.0	B
21.1-35.0	15.0 < Delay ≤ 25.0	C
35.1-55.0	25.0 < Delay ≤ 35.0	D
55-1-80.0	35.0 < Delay ≤ 50.0	E
Delay > 80.0	Delay > 50.0	F

SOURCE: HCM 2010

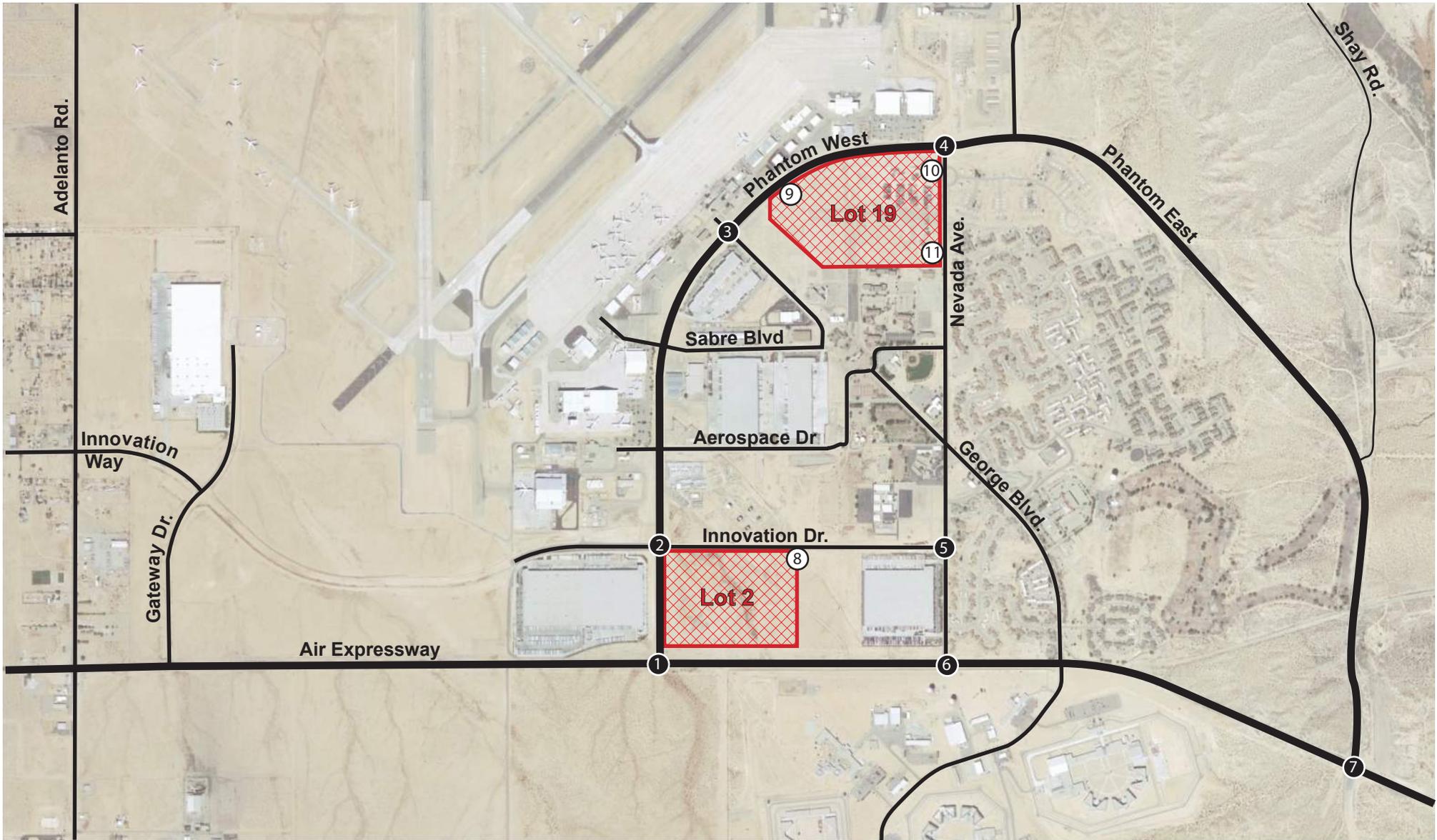
Level of service is based on the average stopped delay per vehicle for all movements of signalized intersections and all-way stop-controlled intersections; for one-way or two-way stop-controlled intersections, LOS is based on the worst stop-controlled approach.

A computer software program called *Synchro* v. 9.2 is a direct application of HCM methodology and was used to analyze the study intersections.

2.3 THRESHOLDS OF SIGNIFICANCE

The City of Victorville has adopted level of service “D” or better as acceptable operating conditions for intersections during the peak hour. In accordance with the City’s guidelines, the following types of traffic impacts are considered to be significant under California Environmental Quality Act (CEQA):

- *If a development project would worsen an intersection peak hour LOS to E or worse, it is considered a significant impact that must be mitigated.*
- *If a development project would worsen an already deficient intersection by two percent or more, it is considered a significant impact that must be mitigated.*



Legend:

- ⊕ = Study Intersection
- ⊕ = Study Driveway
- ▨ = Project Site



Not to Scale

3 EXISTING CONDITIONS

3.1 SURROUNDING ROADWAY NETWORK

The characteristics of the roadway system in the vicinity of the project site are described below:

Air Expressway is a four-lane undivided roadway trending in the east-west direction. Air Expressway is functionally classified as a Major Arterial per the City of Victorville General Plan Circulation Element. The posted speed limit is 60 miles per hour.

Phantom West is a four-lane divided roadway with a painted median trending in the north-south direction that transitions to Phantom East and loops back to Air Expressway. Phantom West is functionally classified as an Eight Lane Divided roadway between Air Expressway and Innovation Drive and as a Super Arterial between Innovation Drive and Nevada Avenue per the City of Victorville General Plan Circulation Element. The posted speed limit is 50 miles per hour. On-street parking is prohibited.

Nevada Avenue is a two-lane undivided roadway trending in the north-south direction and is functionally classified as a Major Arterial per the City of Victorville General Plan Circulation Element I. There is no posted speed limit and on-street parking is prohibited.

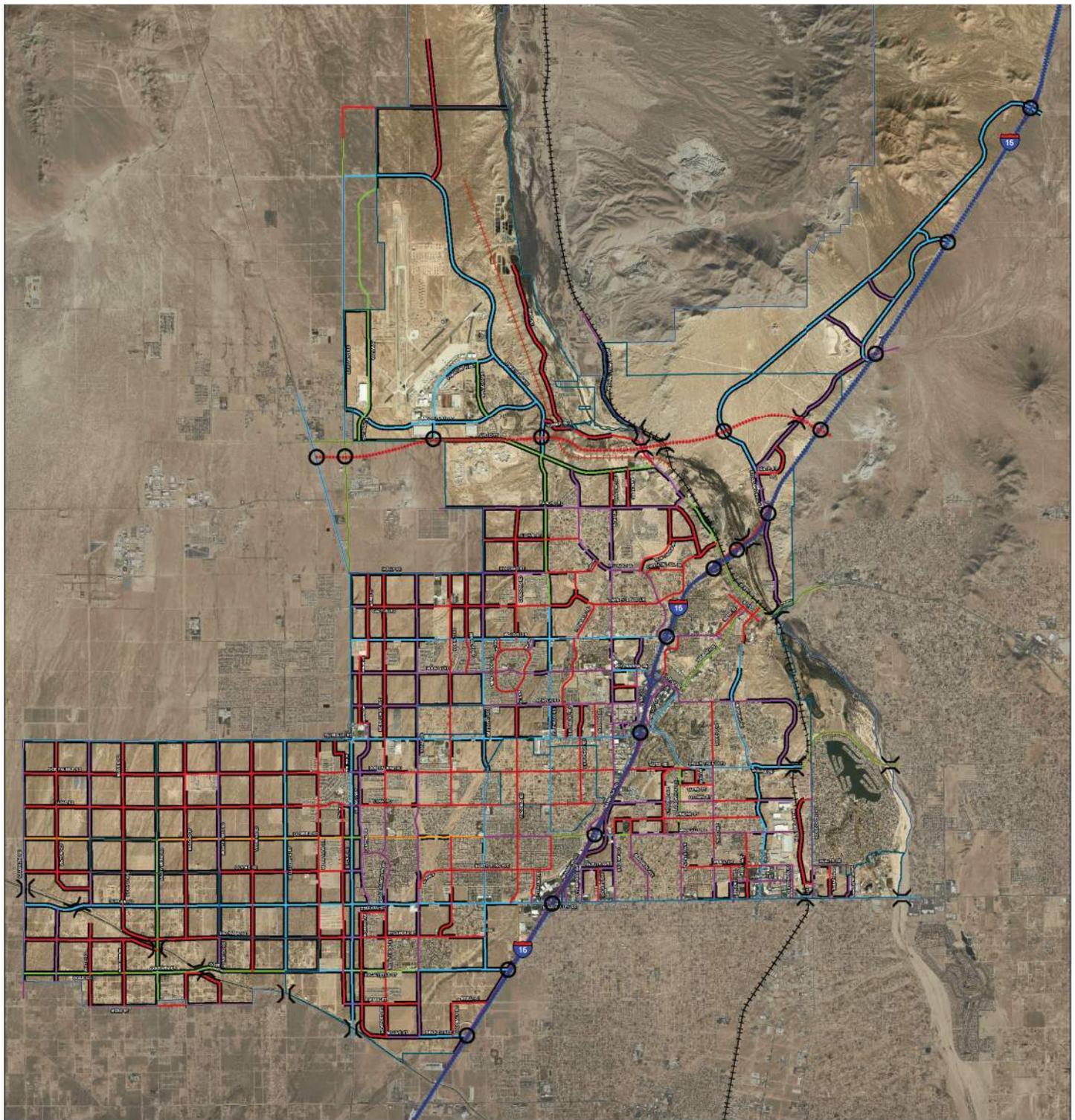
Innovation Way is a two-lane extension of Bartlett Avenue trending in the east-west direction between Adelanto Road and Gateway Drive. Innovation Way is functionally classified as a Super Arterial per the City of Victorville General Plan Circulation Element.

Innovation Drive is a two-lane undivided roadway trending in the east-west direction between Phantom West and Nevada Avenue and a partially constructed four-lane roadway west of Phantom West. Future improvements would connect Innovation Drive and Innovation Way and extend from Adelanto Road and Phantom East. Innovation Drive is functionally classified as a Super Arterial per the City of Victorville General Plan Circulation Element.

3.2 EXISTING CITY OF VICTORVILLE CIRCULATION PLAN

Exhibit 6 shows the proposed City of Victorville General Plan Circulation Element Roadway System. This shows the classification and configuration of arterial highways planned to serve the ultimate development defined by the land use element of the General Plan.

Exhibit 7a through **Exhibit 7e** shows the proposed City of Victorville General Plan Circulation Element Roadway Classification Standards.



- Victorville City Boundary
- Victorville Sphere of Influence
- High Desert Corridor Freeway
- Interchange
- I-15
- BNSF Rail
- City Rail
- } Bridge

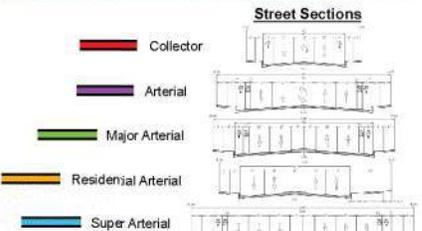
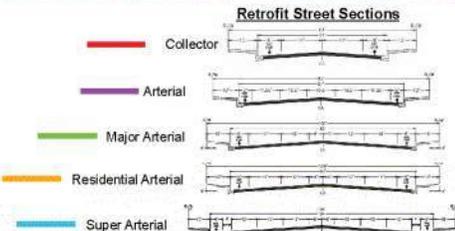
0 0.5 1 2 3 4 Miles



City of Victorville - Circulation Map
 City of Victorville
 Printed: February 13, 2018
 Contact: Matthew Pugh - Technology Div.



Disclaimer: This map is to be used for visual reference only. Sources are available upon request.



*When indicated, roadway improvements shall be completed to include both one direction and two direction street sections.

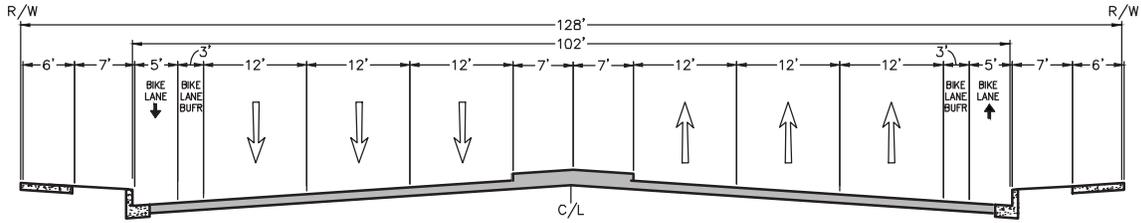
Source:
 City of Victorville - Draft Proposed

City of Victorville Circulation Element Roadway System

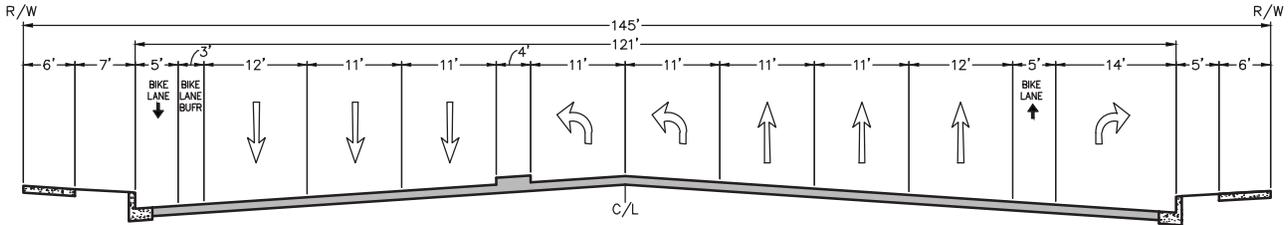


Exhibit 6

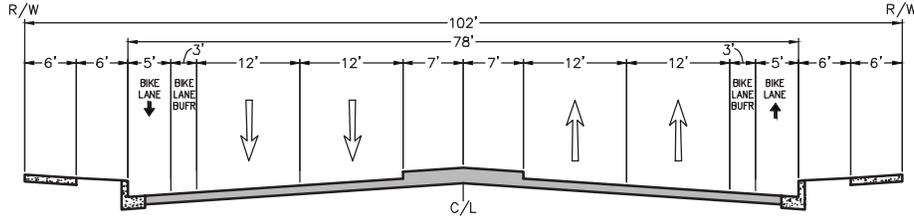
SUPER ARTERIAL



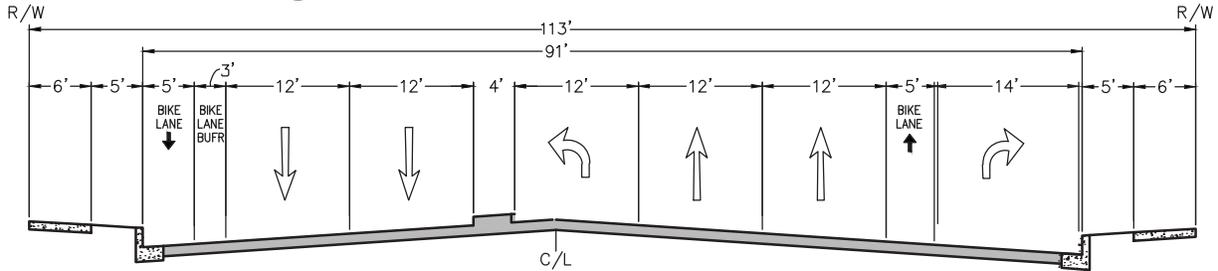
**SUPER ARTERIAL
@ MASTER PLANNED INTERSECTIONS**



MAJOR ARTERIAL



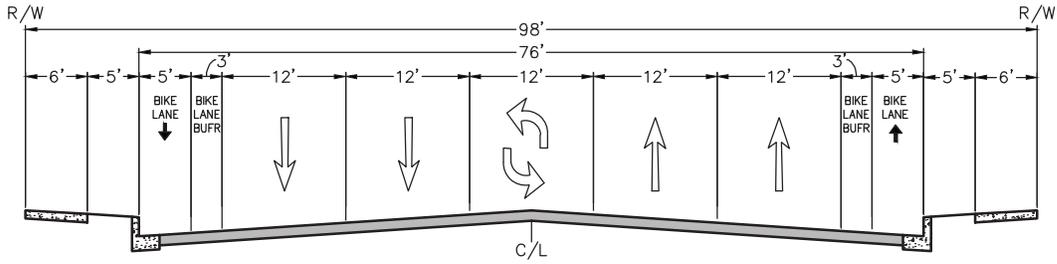
**MAJOR ARTERIAL
@ MASTER PLANNED INTERSECTIONS**



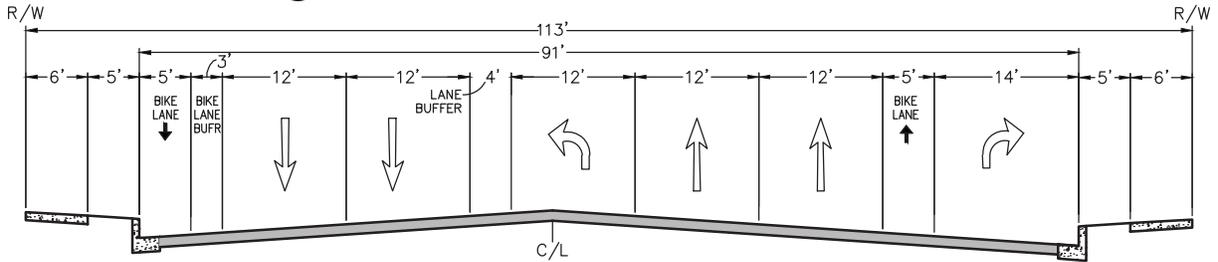
Source:
City of Victorville Draft Proposed

**City of Victorville Circulation Element
Roadway Classification Standards**

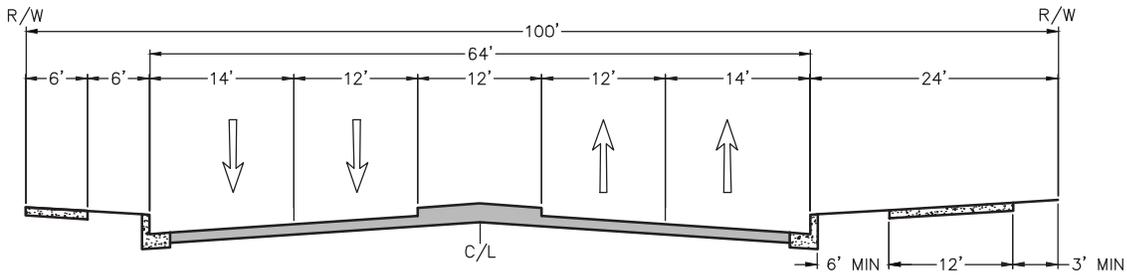
ARTERIAL



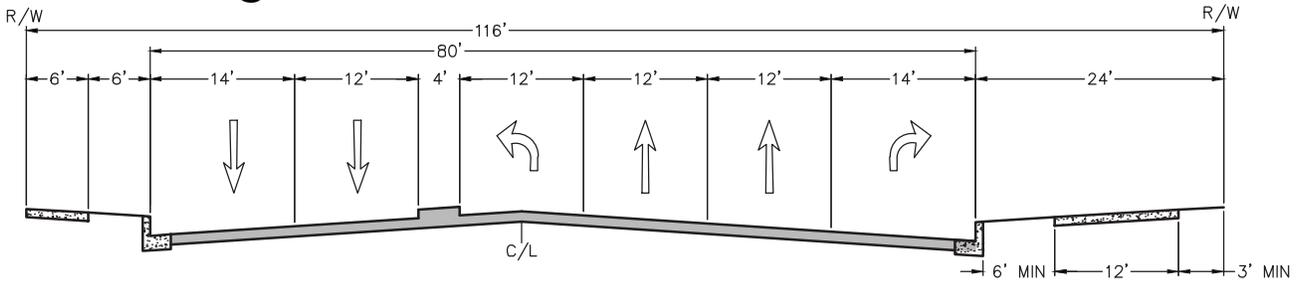
ARTERIAL @ MASTER PLANNED INTERSECTIONS



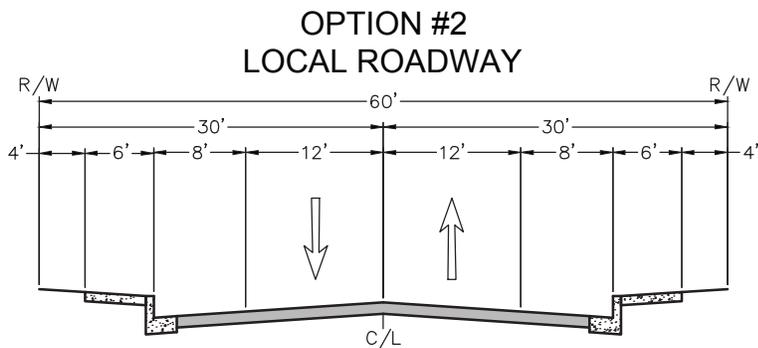
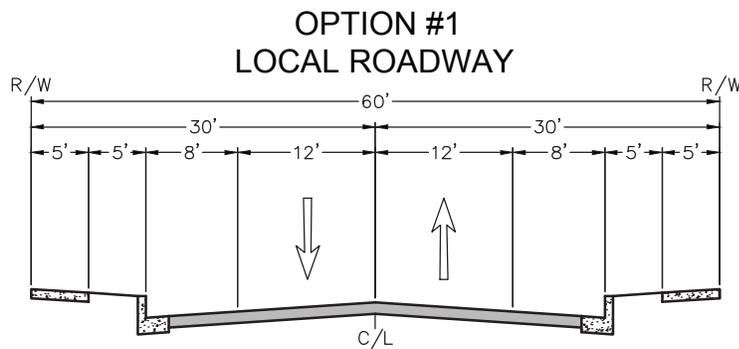
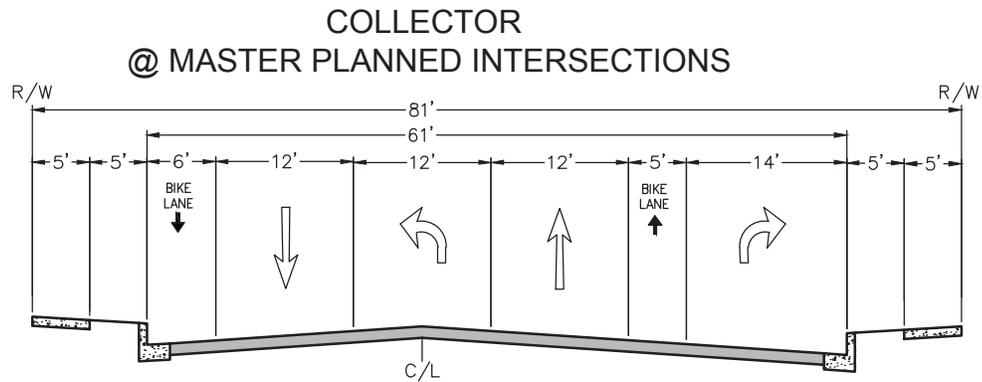
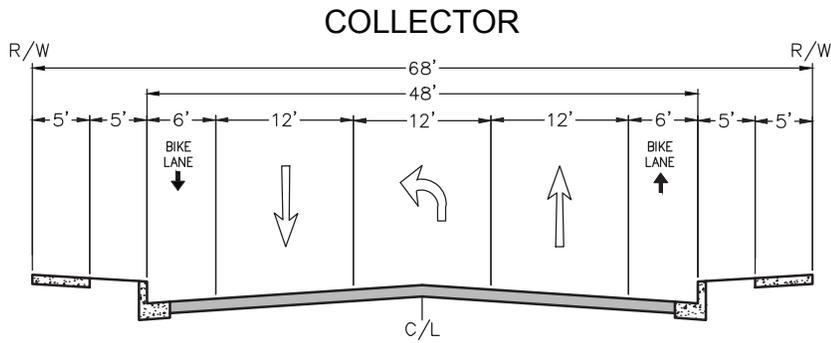
RESIDENTIAL ARTERIAL



RESIDENTIAL ARTERIAL @ MASTER PLANNED INTERSECTIONS



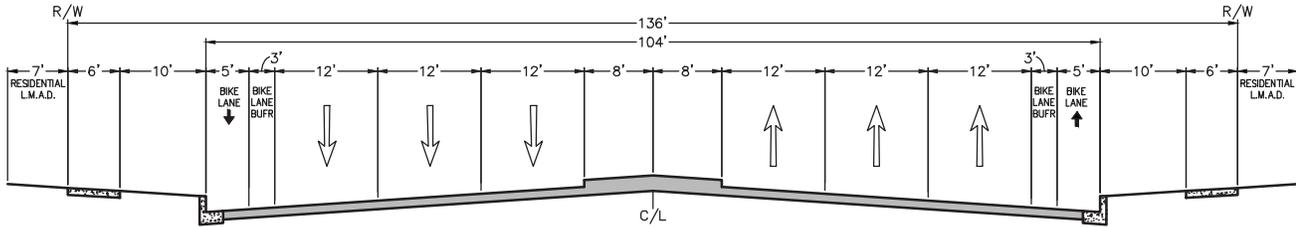
Source:
City of Victorville General Plan Circulation Element (Figure Circ-3b)



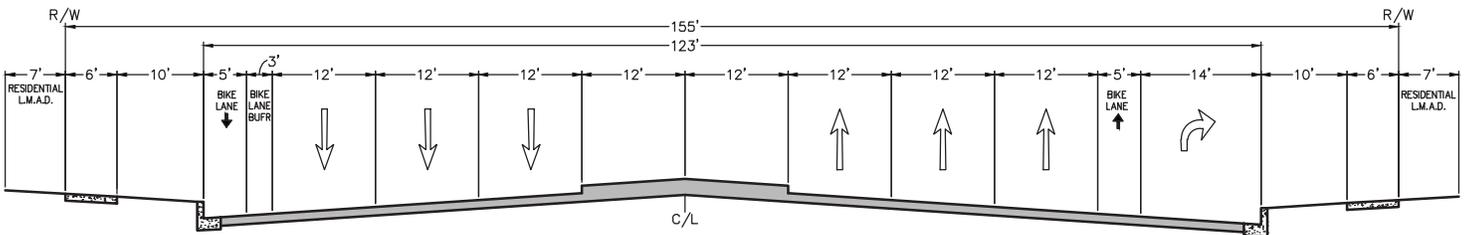
Source:
City of Victorville General Plan Circulation Element (Figure Circ-3c)

City of Victorville Circulation Element Roadway Classification Standards (ctd)

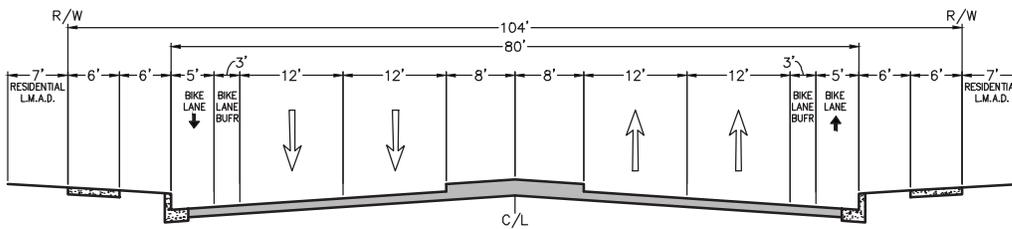
SUPER ARTERIAL w/ RESIDENTIAL L.M.A.D.



SUPER ARTERIAL w/ RESIDENTIAL L.M.A.D.
@ MASTER PLANNED INTERSECTIONS



MAJOR ARTERIAL w/ RESIDENTIAL L.M.A.D.



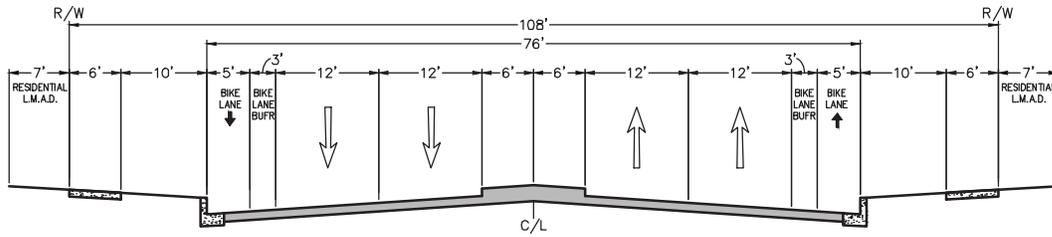
Not to Scale

Michael Baker
INTERNATIONAL

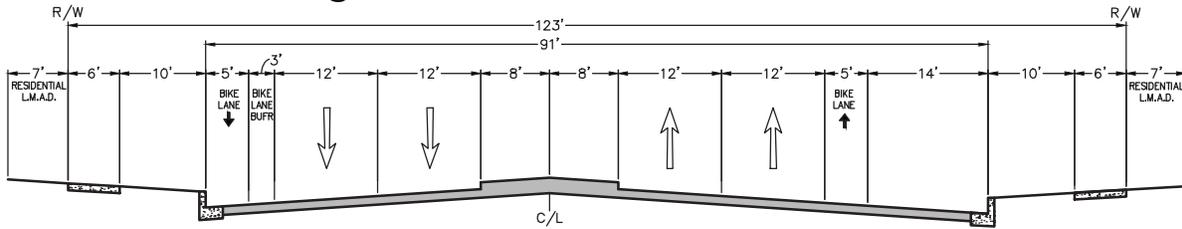
City of Victorville Circulation Element Roadway Classification Standards (ctd)

Exhibit 7d

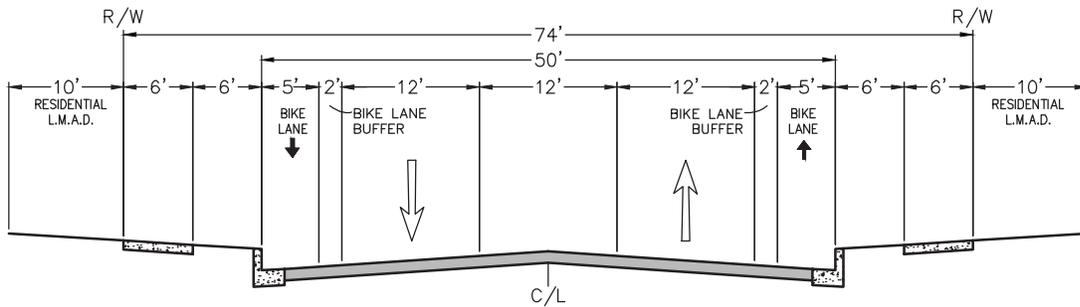
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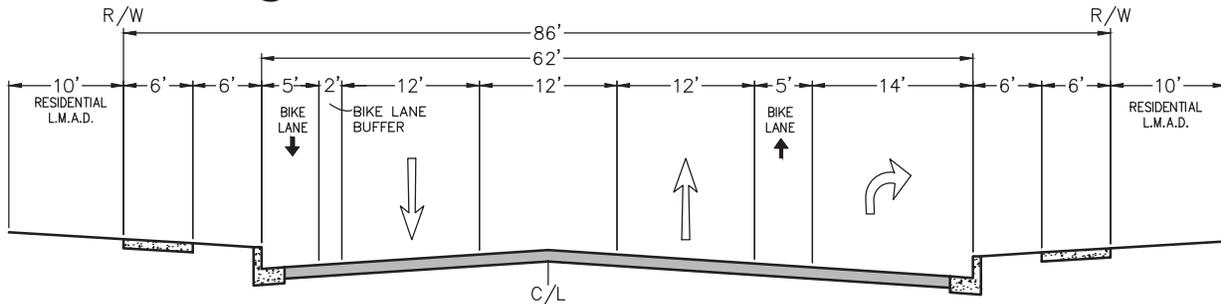
RESIDENTIAL ARTERIAL w/ RESIDENTIAL L.M.A.D.
@ MASTER PLANNED INTERSECTIONS



COLLECTOR w/ RESIDENTIAL L.M.A.D.



COLLECTOR w/ RESIDENTIAL L.M.A.D.
@ MASTER PLANNED INTERSECTIONS



Not to Scale

Michael Baker
INTERNATIONAL

**City of Victorville Circulation Element
Roadway Classification Standards (ctd)**

Exhibit 7e

3.3 EXISTING TRAFFIC VOLUMES

To determine the existing operations of the study intersections, PM peak hour intersection movement counts were collected in December 2017. PM peak period counts were collected from 3:00 PM to 6:00 PM. The counts used in this analysis were taken from the highest hour within the peak period counted (typically 4:00 PM to 5:00 PM). These counts were axle specific and identified passenger cars, 2-axle trucks, 3-axle trucks, and 4+ axle trucks.

In order to account for truck traffic in the area, these raw volumes were converted to passenger car equivalents (PCE) in accordance with the *Guidelines for CMP Traffic Impact Analysis Reports in San Bernardino County*. The following factors were used to convert truck trips to PCE's:

- 2-axle trucks = 1.5 PCE
- 3-axle trucks = 2.0 PCE
- 4+ axle trucks = 3.0 PCE

Detailed count data is contained in **Appendix A**.

Exhibit 8 shows the Existing study intersection lane geometry. **Exhibit 9** shows the PM peak hour volumes at the study intersections.

3.4 EXISTING PEAK HOUR STUDY INTERSECTION LOS

Table 2 summarizes existing conditions PM peak hour level of service for all study intersections. Detailed analysis sheets are contained in **Appendix B**.

TABLE 2, EXISTING PM PEAK HOUR INTERSECTION LOS

Study Intersection	Traffic Control	Existing Conditions
		PM Delay ¹ - LOS
1 - Phantom West & Air Expressway	Signal	18.8 - B
2 - Phantom West & Innovation Dr/McCoy Cir	TWSC	9.2 - A
3 - Phantom West & George Blvd	TWSC	9.0 - A
4 - Phantom West/East & Nevada Ave	TWSC	9.3 - A
5 - Nevada Ave & McCoy Cir	OWSC	8.5 - A
6 - Nevada Ave & Air Expressway	Signal	21.1 - C
7 - Phantom East & Air Expressway	Signal	27.6 - C

Note: Deficient intersection operation indicated in **bold**.

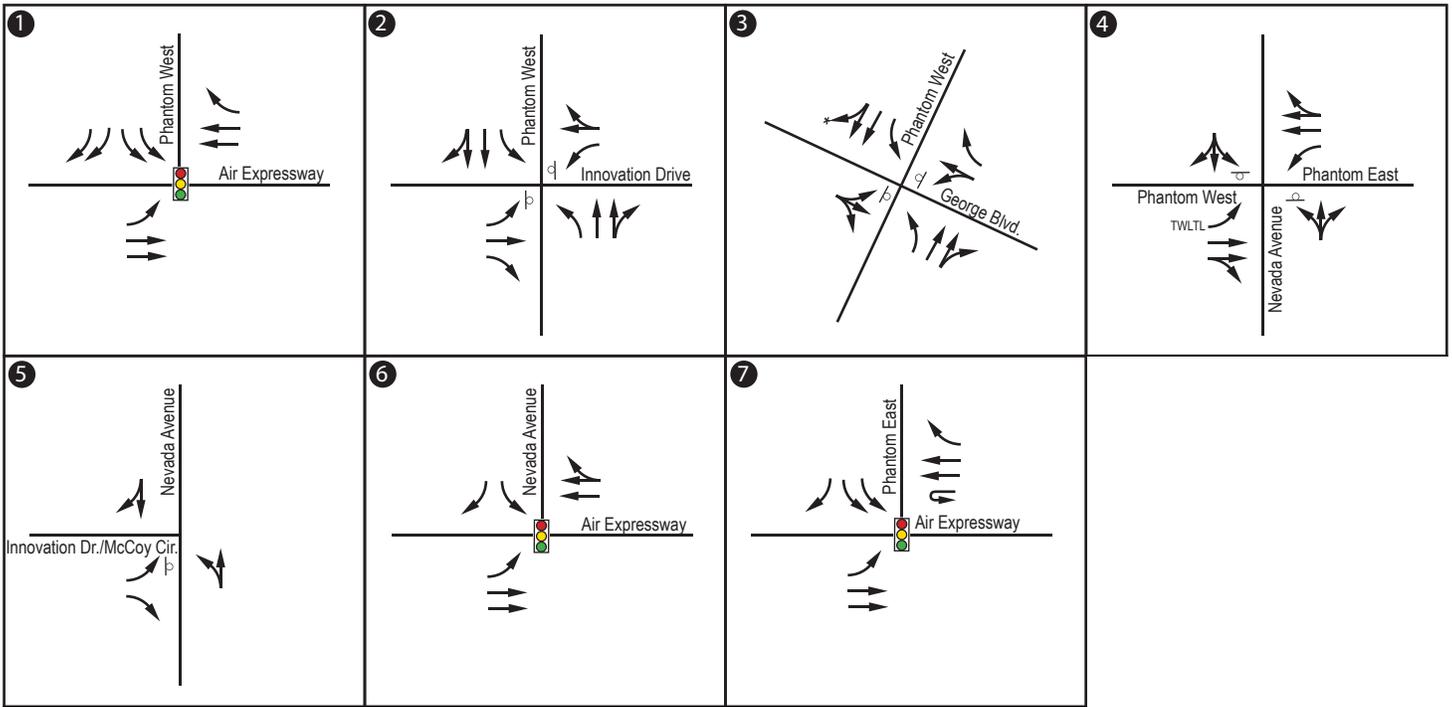
¹ Average seconds of delay per vehicle.

TWSC = Two-Way Stop Control

LOS = level of service.

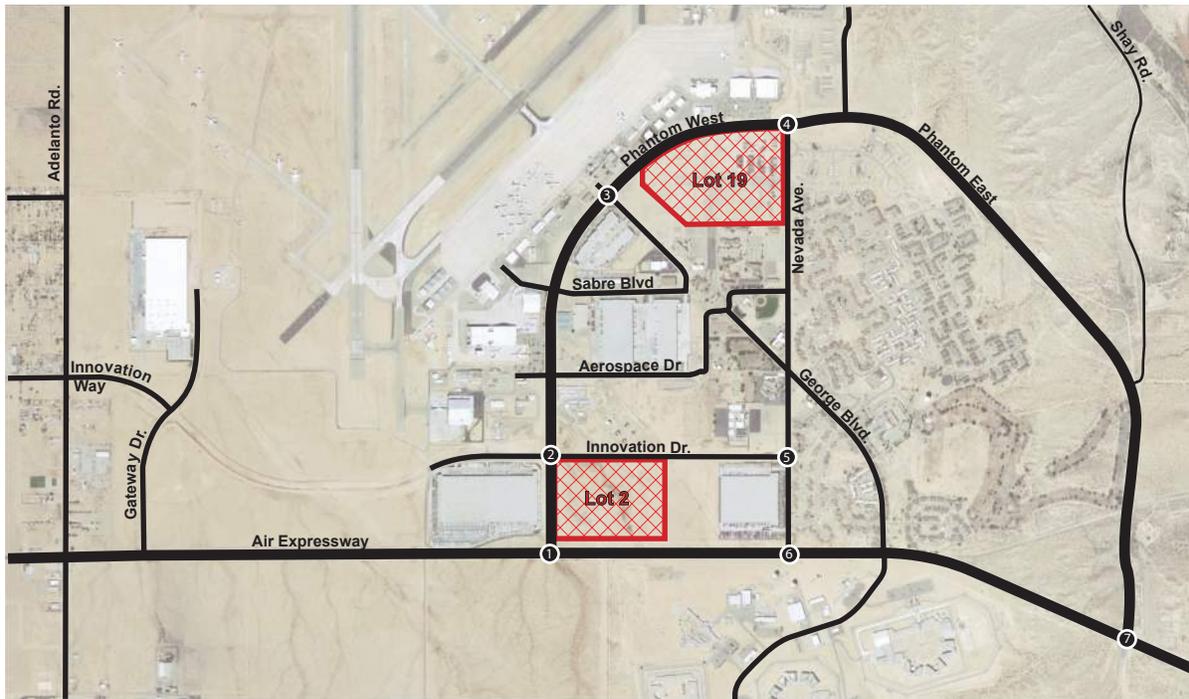
OWSC = One-Way Stop Control

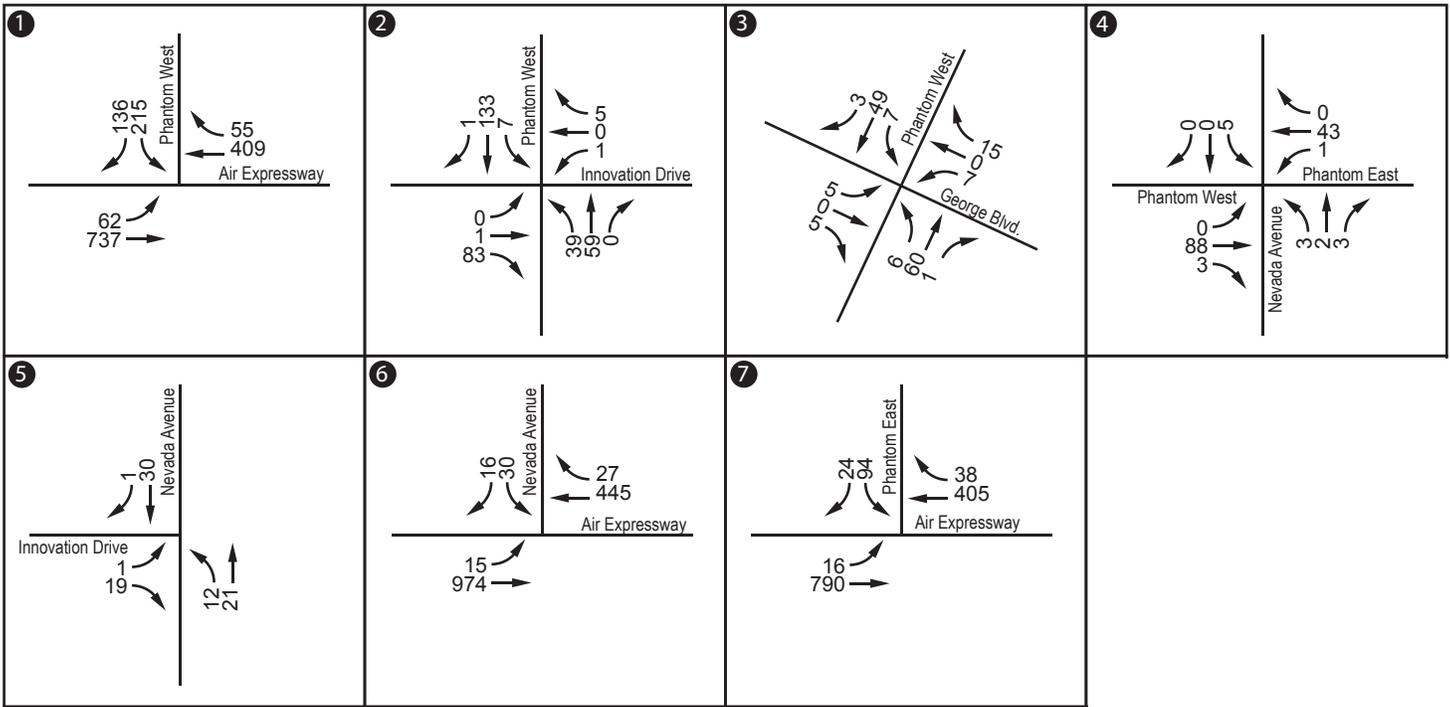
As shown in **Table 2**, all study intersections are currently operating at an acceptable level of service (LOS D or better) for Existing conditions.



Legend

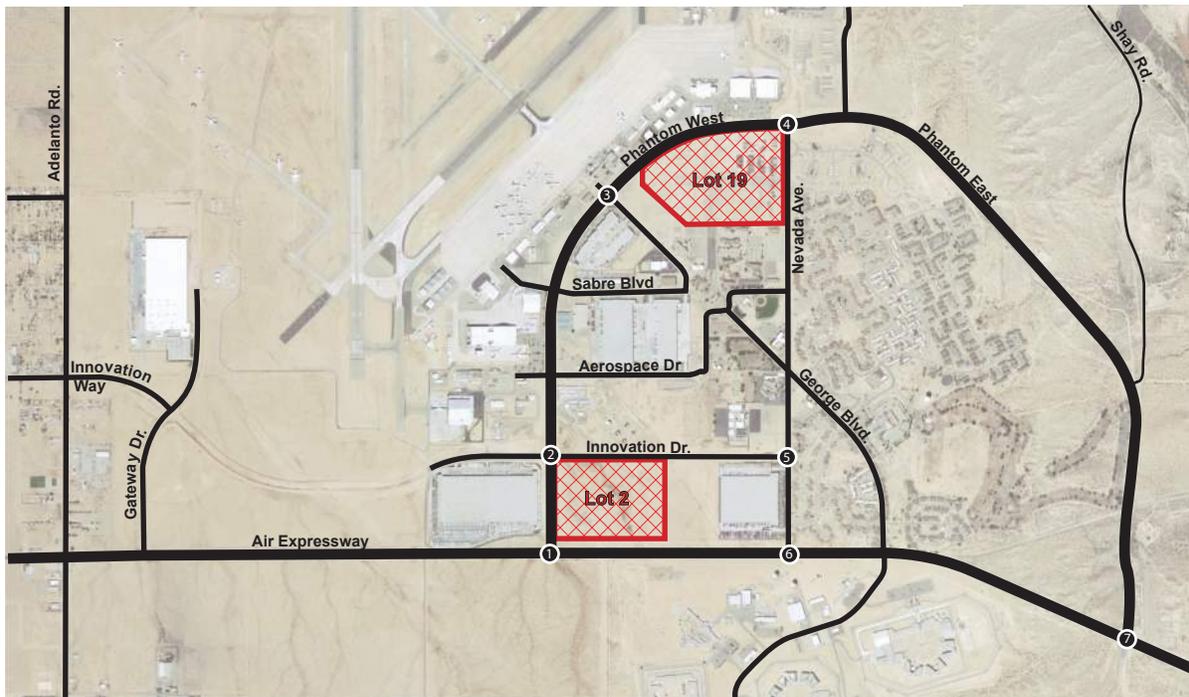
-  = Signalized Intersection
-  = Stop Control Intersection
- TWLTL = Two-Way-Left-Turn-Lane





Legend

= PM Peak Hour Volume



4 PROPOSED PROJECT

Lot 2 proposes to construct an 845,820 square foot (SF) warehouse on 39.61 acres and is located at the southeast quadrant of Phantom West and Innovation Way. Lot 2 will have a total of 5 points of vehicular access. Lot 19 proposes to construct a 974,540 square foot (SF) warehouse on 44.77 acres and is located at the southwest quadrant of Phantom West and Nevada Avenue. Project Opening Day is expected to be Year 2019.

Exhibit 3 shows the proposed site plan for Lot 2 and **Exhibit 4** shows the proposed site plan for Lot 19.

4.1 PROJECT FORECAST TRIP GENERATION

In order to calculate vehicle trips forecast to be generated by the proposed projects, the *Institute of Transportation Engineers (ITE) 9th Edition Trip Generation Manual* trip generation rates were utilized.

Table 3 summarizes the ITE trip generation rates used.

TABLE 3, ITE TRIP GENERATION RATES

Land Use	ITE Code	Daily Trip Rate	PM Peak Hour ²	
			Rate	In : Out
Manufacturing	140	3.82 / KSF	0.73	36% : 64%
Light Warehouse	150	3.56 / KSF	0.32	25% : 75%

Notes:

KSF= Thousand Square Feet

Table 4 shows the vehicular trip generation forecast to be generated for Lot 2 and **Table 5** shows the vehicular trip generation forecast to be generated for Lot 19 utilizing the ITE trip generation rates shown in **Table 3**. As shown, the trip generation was broken down by vehicle type (passenger cars, 2-axle trucks, 3-axle trucks, and 4+ axle trucks) based on percentages from the *South Coast Air Quality Management District*.

Table 6 and **Table 7** shows the conversion of vehicle trips to passenger car equivalents (PCE's) for Lot 2 and Lot 19 respectively after the following factors were applied to account for truck activity:

- 2-axle = 1.5 PCE
- 3-axle = 2.0 PCE
- 4+ axle = 3.0 PCE

Table 8 shows the trip generation summary for Lot 2 and Lot 19.

TABLE 4, PROPOSED PROJECT TRIP GENERATION IN VEHICLES— LOT 2

Light Warehouse		Intensity	Daily Trips	PM Peak Hour		
Vehicle Type Breakdown ¹				Volume	Inbound	Outbound
Passenger Car	69.0%	845.82 KSF	2,078	187	47	140
2 Axle Truck	6.8%		205	18	5	14
3 Axle Truck	5.5%		166	15	4	11
4+ Axle Truck	18.7%		563	51	13	38
Total Trucks	31.0%		934	84	21	63
Total Vehicles - Lot 2	100.0%		3,012	271	68	203

TABLE 5, PROPOSED PROJECT TRIP GENERATION IN VEHICLES— LOT 19

Light Warehouse		Intensity	Daily Trips	PM Peak Hour		
Vehicle Type Breakdown ¹				Volume	Inbound	Outbound
Passenger Car	69.0%	974.54 KSF	2,394	215	54	161
2 Axle Truck	6.8%		236	21	5	16
3 Axle Truck	5.5%		191	17	4	13
4+ Axle Truck	18.7%		649	58	15	44
Total Trucks	31.0%		1,076	96	24	72
Total Vehicles - Lot 19	100.0%		3,470	311	78	233

¹ Source: South Coast Air Quality Management District

TABLE 6, PROPOSED PROJECT TRIP GENERATION IN PCE'S – LOT 2

Light Warehouse			Daily Trips	PM Peak Hour		
Vehicle Type Breakdown ¹		PCE ²		Volume	Inbound	Outbound
Passenger Car	69.0%	1.0	2,078	187	47	140
2 Axle Truck	6.8%	1.5	308	27	7	20
3 Axle Truck	5.5%	2.0	332	30	8	23
4+ Axle Truck	18.7%	3.0	1,689	153	38	115
Total Trucks	31.0%		2,329	210	53	158
Total PCE's - Lot 2	100.0%		4,407	397	100	298

¹ Source: South Coast Air Quality Management District

² PCE = Passenger Car Equivalent- Source: San Bernardino Association of Governments (SANBAG)

TABLE 7, PROPOSED PROJECT TRIP GENERATION IN PCE'S – LOT 19

Light Warehouse			Daily Trips	PM Peak Hour		
Vehicle Type Breakdown ¹		PCE ²		Volume	Inbound	Outbound
Passenger Car	69.0%	1.0	2,394	215	54	161
2 Axle Truck	6.8%	1.5	354	32	8	24
3 Axle Truck	5.5%	2.0	382	34	9	26
4+ Axle Truck	18.7%	3.0	1,947	174	44	131
Total Trucks	31.0%		2,683	240	60	180
Total PCE's - Lot 19	100.0%		5,077	455	114	341

¹ Source: South Coast Air Quality Management District

² PCE = Passenger Car Equivalent- Source: San Bernardino Association of Governments (SANBAG)

TABLE 8, PROPOSED PROJECT TRIP SUMMARY

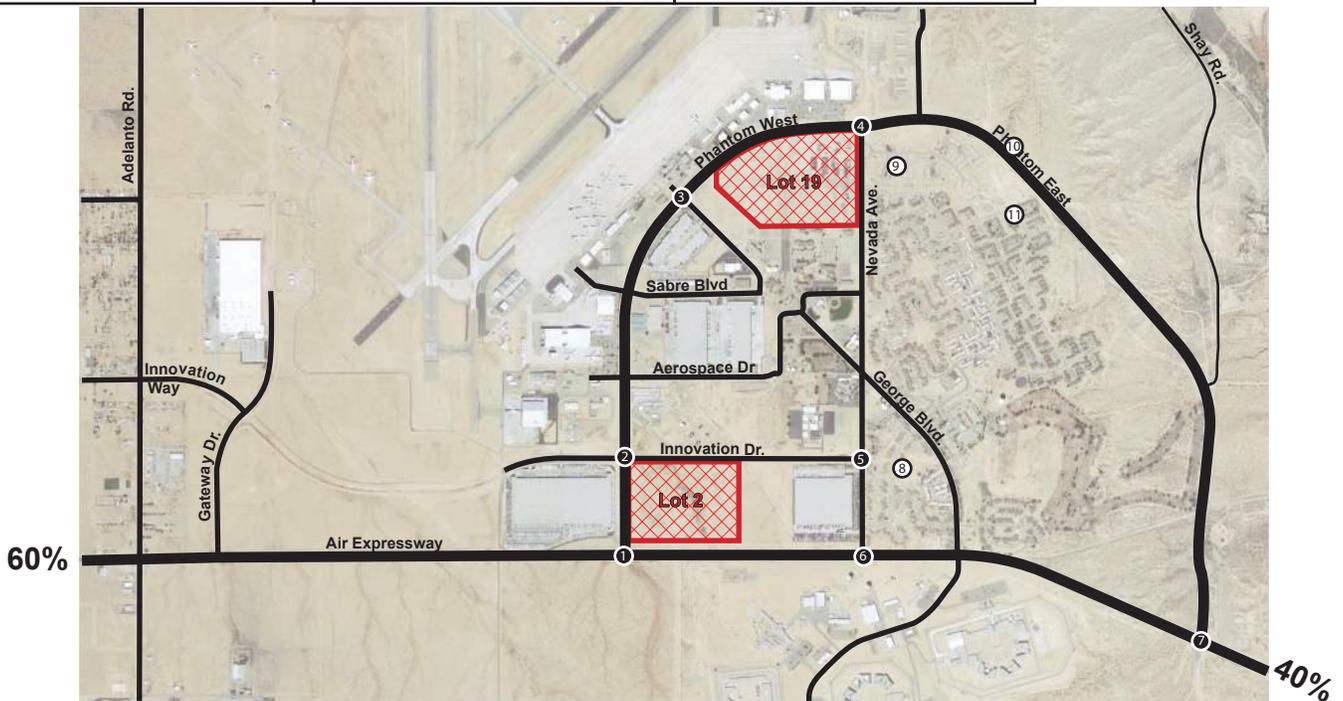
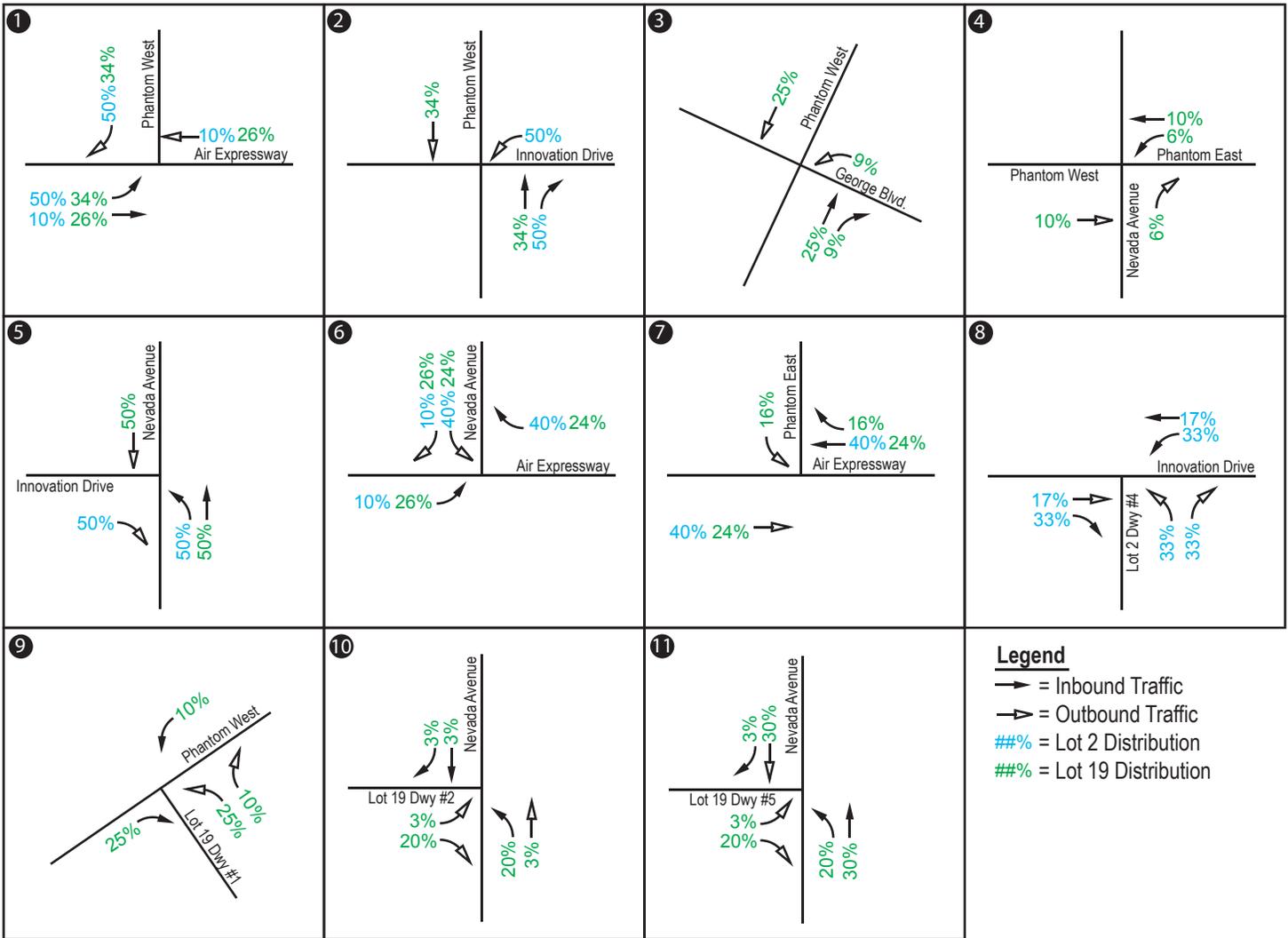
Lot	Type	Daily Trips	PM Peak Hour		
			Volume	Inbound	Outbound
2	Vehicles	3,012	271	68	203
	PCE's	4,407	397	100	297
19	Vehicles	3,470	311	78	233
	PCE's	5,077	455	114	341
Total	Vehicles	6,482	582	146	437
	PCE's	9,484	852	214	638

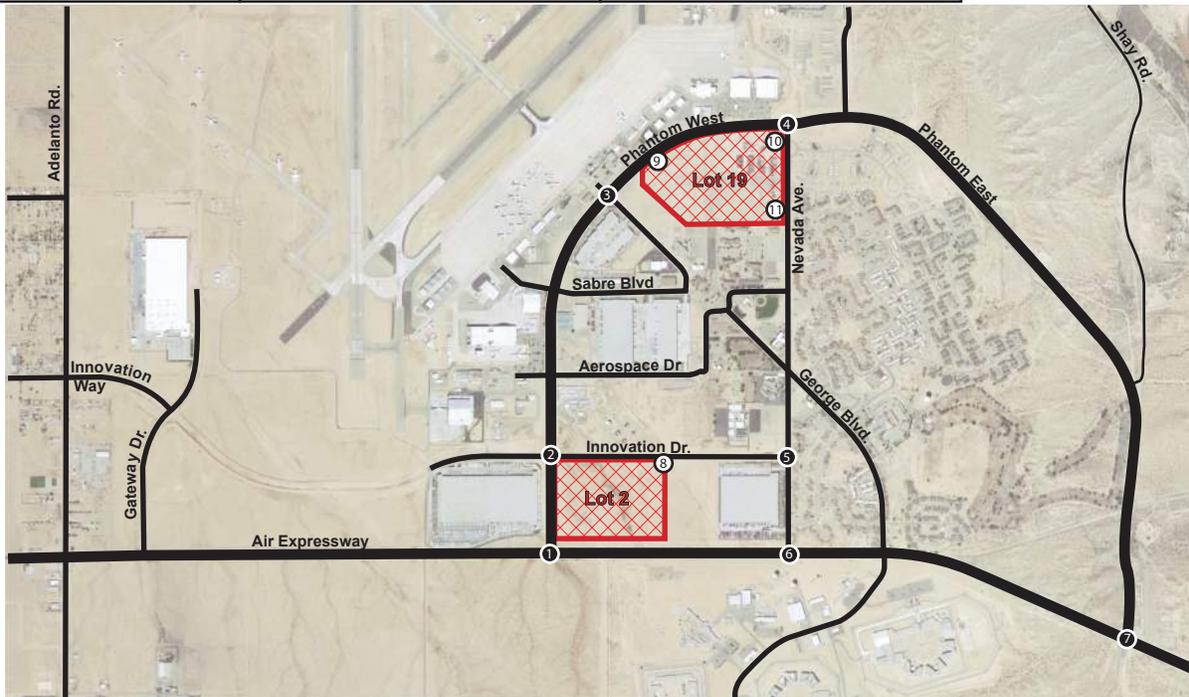
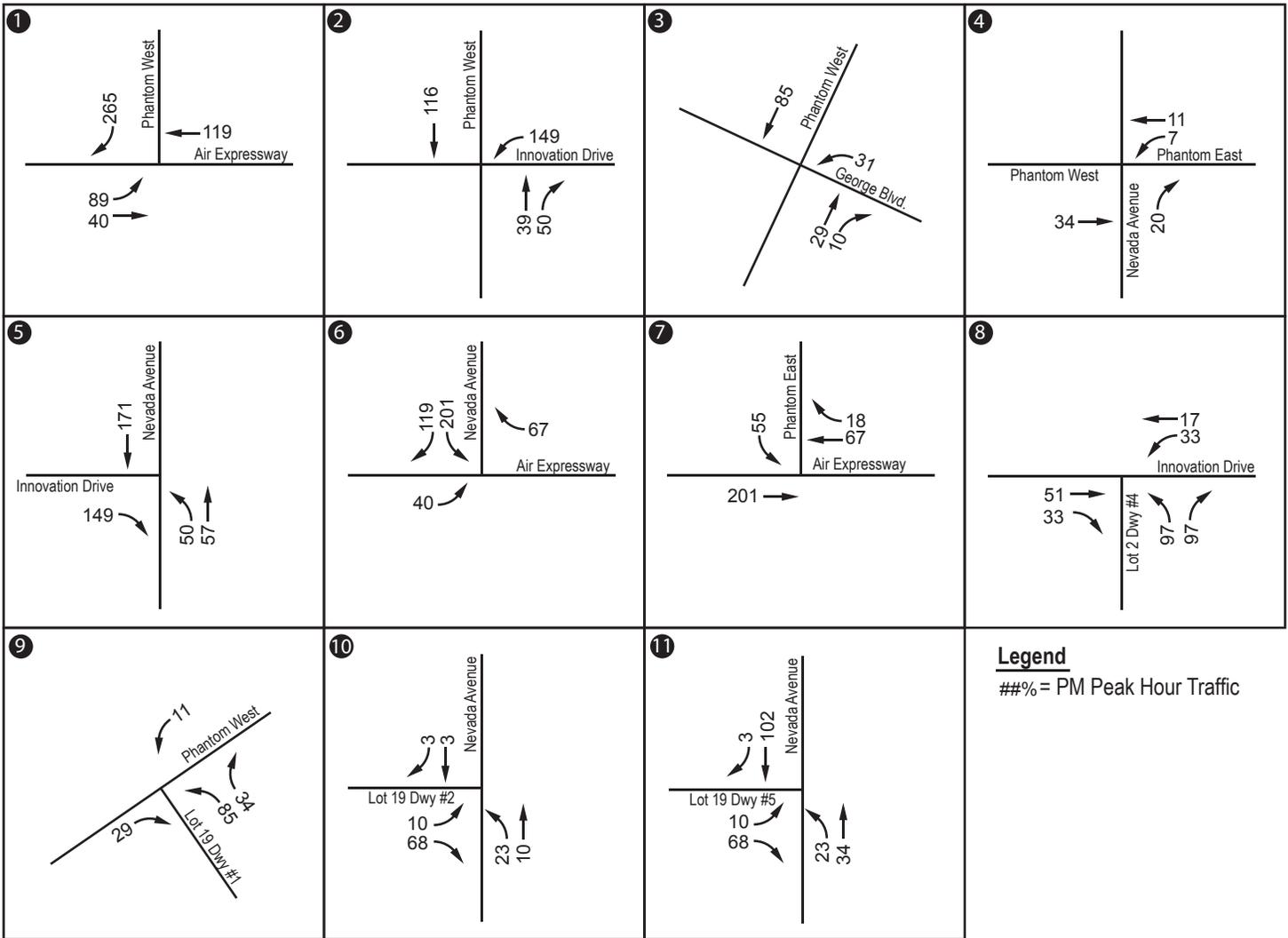
As shown in **Table 8**, Lot 2 is forecast to generate 4,407 daily PCE trips with 397 PCE trips occurring during the PM peak hour (100 in / 297 out); Lot 19 is forecast to generate 5,077 daily PCE trips with 455 PCE trips occurring during the PM peak hour (114 in / 341 out); together the proposed projects are forecast to generate a combined total of 9,484 daily PCE trips with 852 PCE trips occurring during the PM peak hour (214 in / 639 out).

4.2 TRIP DISTRIBUTION AND TRIP ASSIGNMENT OF PROPOSED PROJECT

Exhibit 10 shows the forecast trip percent distribution of the proposed project within the study area. In order to estimate trips within the SCLA Specific Plan area, distribution was developed for Lot 2 and Lot 19 separately. At a macroscopic level, 40% of the total proposed traffic travels east and 60% travels west towards the regional highways and freeways.

Exhibit 11 shows the corresponding forecast assignment of PM peak hour project-generated trips assuming the trip percent distribution shown in **Exhibit 10**. All trips are shown as PCE's.





5 EXISTING WITH PROJECT

5.1 EXISTING WITH PROJECT TRAFFIC VOLUMES

Existing With Project traffic volumes are derived by adding trips forecast to be generated by the proposed project to existing traffic volumes.

Exhibit 12 shows the forecast Existing With Project PM peak hour volumes at study intersections.

5.2 EXISTING WITH PROJECT PEAK HOUR STUDY INTERSECTION LOS

Table 9 summarizes Existing With Project PM peak hour level of service for all study intersections. Detailed analysis sheets are contained in **Appendix C**.

TABLE 9, EXISTING WITH PROJECT PM PEAK HOUR INTERSECTION LOS

Study Intersection	Existing Conditions	Existing With Project Conditions	Change in Delay (sec.)	Significant Impact?
	PM Delay ¹ - LOS	PM Delay ¹ - LOS	PM	PM
	1 - Phantom West & Air Expressway	18.8 - B	20.5 - C	1.7
2 - Phantom West & Innovation Dr/McCoy Cir	9.2 - A	17.4 - C	8.2	No
3 - Phantom West & George Blvd	9.0 - A	9.9 - A	0.9	No
4 - Phantom West/East & Nevada Ave	9.3 - A	9.7 - A	0.4 ²	No
5 - Nevada Ave & McCoy Cir	8.5 - A	11.0 - B	2.5	No
6 - Nevada Ave & Air Expressway	21.1 - C	31.6 - C	10.5	No
7 - Phantom East & Air Expressway	27.6 - C	27.7 - B	0.1	No
9 - McCoy Cir & Lot 2, Dwy #4	DNE	10.4 - B	10.4	No
10 - Phantom West & Lot 19, Dwy #1	DNE	10.1 - B	10.1	No
11 - Nevada Ave & Lot 19, Dwy #2	DNE	8.7 - A	8.7	No
12 - Nevada Ave & Lot 19, Dwy #5	DNE	9.4 - A	9.4	No

Note: Deficient intersection operation indicated in **bold**.

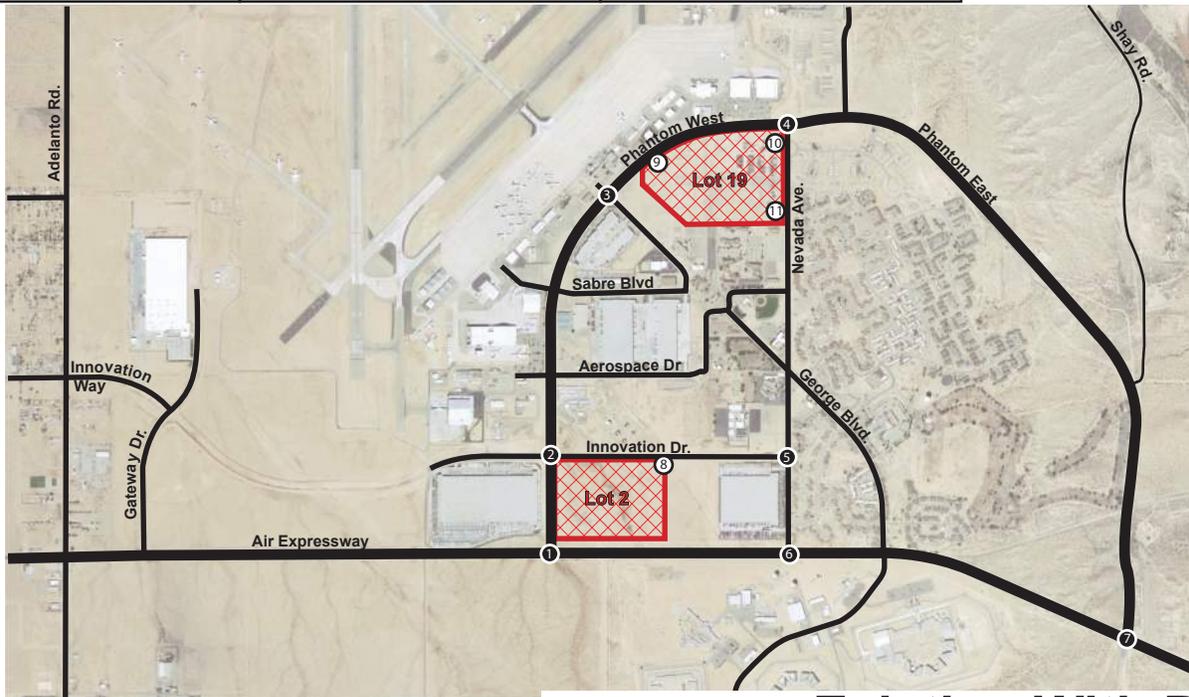
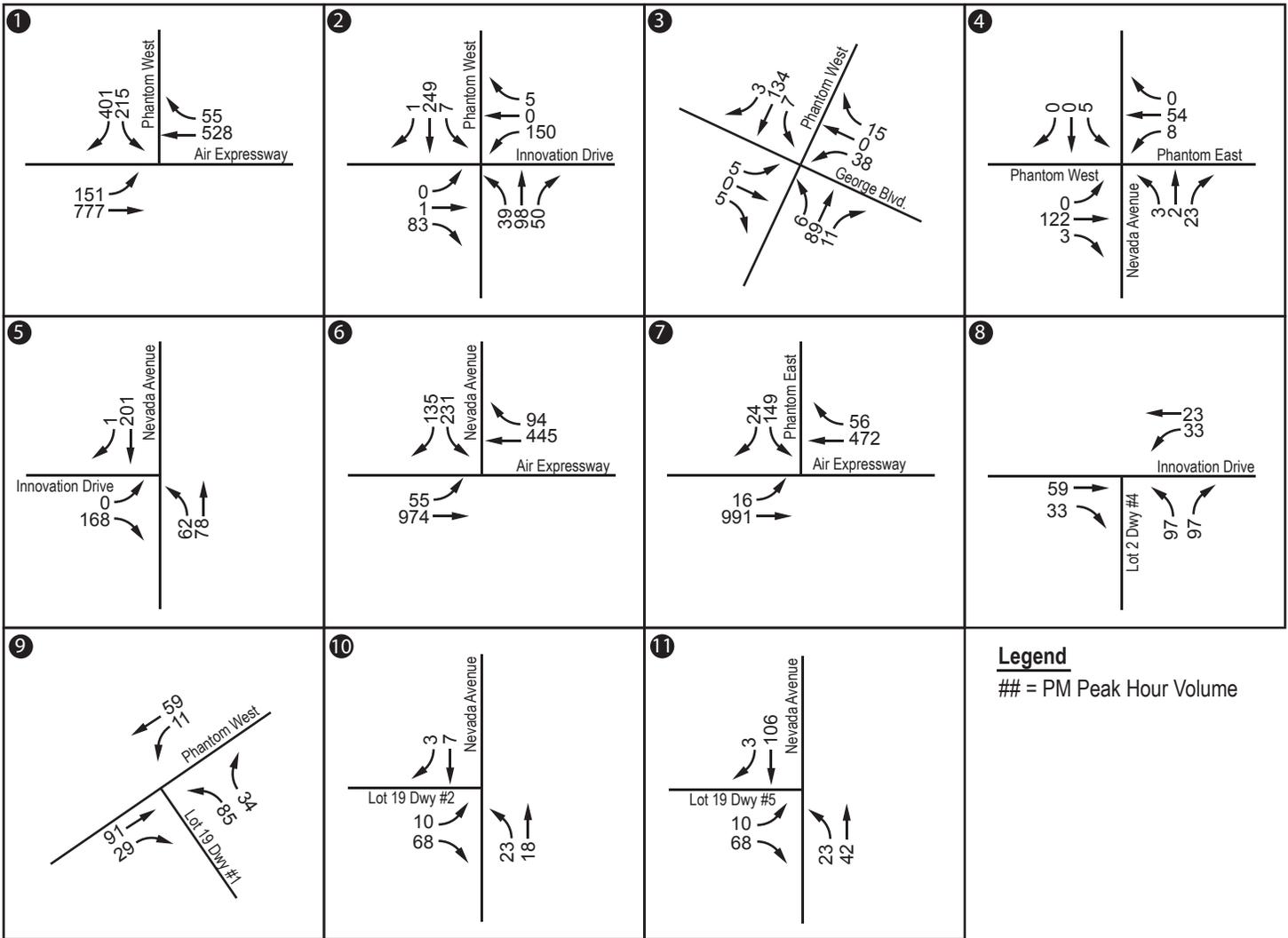
DNE = Does Not Exist

¹ Seconds of delay per vehicle.

² Includes improvements to northbound approach adjacent to Lot 19

LOS = level of service.

As shown in **Table 9**, all study intersections are forecast to operate at an acceptable level of service (LOS D or better) during the peak hour with the addition of project-related traffic to existing traffic volumes. Therefore no mitigation measures are necessary or required.



Existing With Project PM Peak Hour Trip Assignment

6 FORECAST PROJECT OPENING YEAR 2019 WITHOUT PROJECT

6.1 FORECAST PROJECT OPENING YEAR 2019 WITHOUT PROJECT TRAFFIC VOLUMES

Forecast Project Opening Year 2019 Without Project traffic volumes are derived by applying a 5% per year ambient growth rate to eastbound and westbound through movements only along Air Expressway. Traffic growth within the SCLA Specific Plan area is anticipated to be attributed to development within the specific plan area only and no other growth has been applied to existing traffic volumes.

Exhibit 13 shows the Forecast Project Opening Year 2019 Without Project PM peak hour volumes at study intersections.

6.2 FORECAST PROJECT OPENING YEAR 2019 WITHOUT PROJECT PEAK HOUR STUDY INTERSECTION LOS

Table 10 summarizes Forecast Project Opening Year 2019 Without Project PM peak hour level of service for all study intersections. Detailed analysis sheets are contained in **Appendix D**.

TABLE 10, FORECAST PROJECT OPENING YEAR 2019 WITHOUT PROJECT PM PEAK HOUR INTERSECTION LOS

Study Intersection	Traffic Control	Forecast Year 2019 Conditions
		PM Delay ¹ - LOS
1 - Phantom West & Air Expressway	Signal	25.3 - C
2 - Phantom West & Innovation Dr/McCoy Cir	TWSC	9.2 - A
3 - Phantom West & George Blvd	TWSC	9.0 - A
4 - Phantom West/East & Nevada Ave	TWSC	9.3 - A
5 - Nevada Ave & McCoy Cir	OWSC	8.5 - A
6 - Nevada Ave & Air Expressway	Signal	21.6 - C
7 - Phantom East & Air Expressway	Signal	31.6 - C

Note: Deficient intersection operation indicated in **bold**.

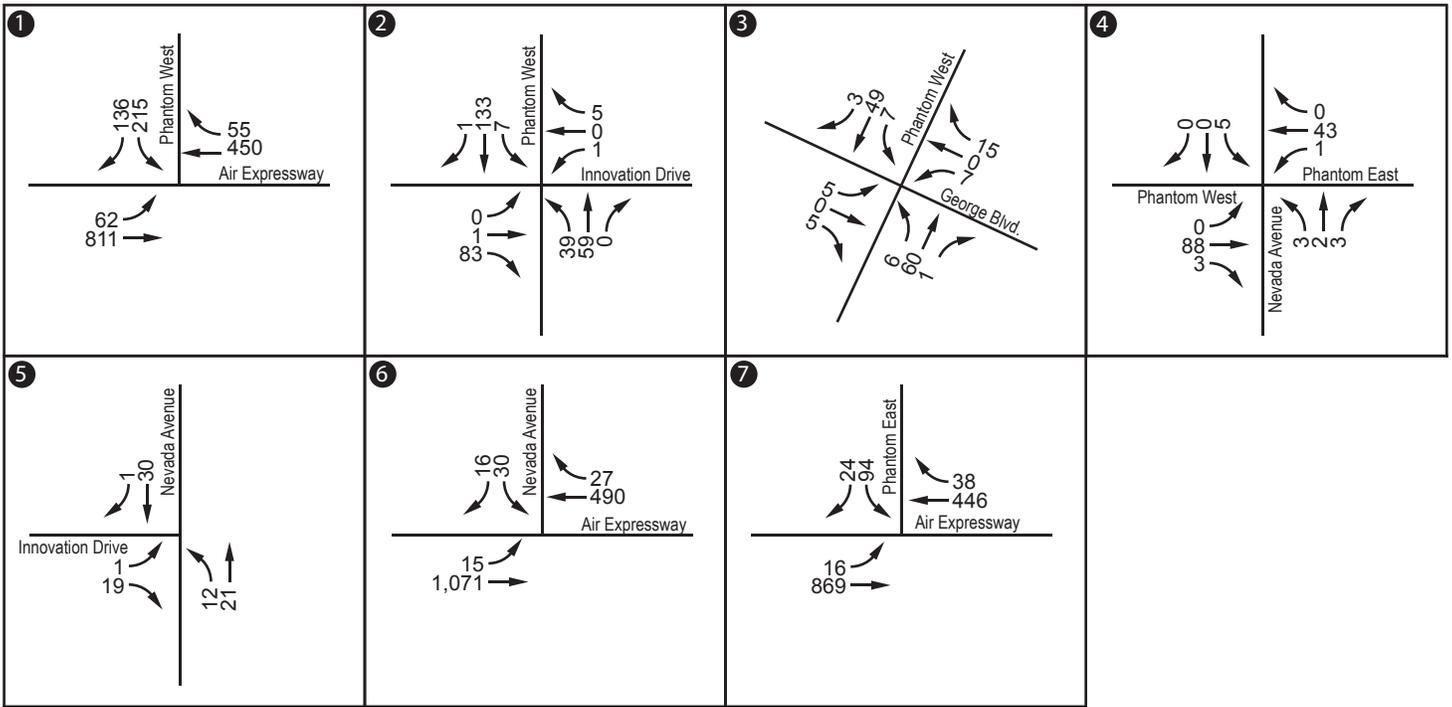
¹ Average seconds of delay per vehicle.

LOS = level of service.

TWSC = Two-Way Stop Control

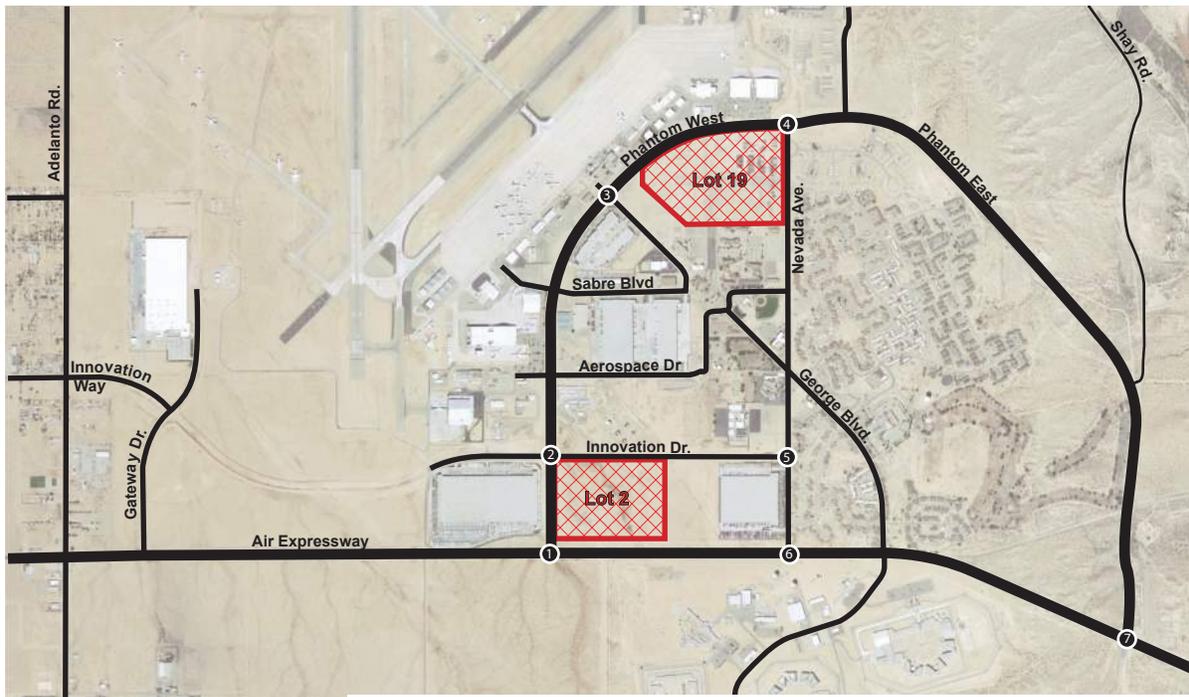
OWSC = One-Way Stop Control

As shown in **Table 10**, all study intersections are currently operating at an acceptable level of service (LOS D or better) for Forecast Project Opening Year 2019 Without Project conditions.



Legend

= PM Peak Hour Volume



**Forecast Project Opening Year 2019
 Without Project PM Peak Hour Volumes**

7 FORECAST PROJECT OPENING YEAR 2019 WITH PROJECT

7.1 FORECAST PROJECT OPENING YEAR 2019 WITH PROJECT TRAFFIC VOLUMES

Forecast Project Opening Year 2019 With Project traffic volumes are derived by adding trips forecast to be generated by the proposed project to existing traffic volumes.

Exhibit 14 shows the Forecast Project Opening Year 2019 With Project PM peak hour volumes at study intersections.

7.2 FORECAST PROJECT OPENING YEAR 2019 WITH PROJECT PEAK HOUR STUDY INTERSECTION LOS

Table 11 summarizes Forecast Project Opening Year 2019 With Project PM peak hour level of service for all study intersections. Detailed analysis sheets are contained in **Appendix E**.

TABLE 11, FORECAST PROJECT OPENING YEAR 2019 WITH PROJECT PM PEAK HOUR INTERSECTION LOS

Study Intersection	Forecast Year 2019 Conditions	Forecast Year 2019 With Project Conditions	Change in Delay (sec.)	Significant Impact?
	PM Delay ¹ - LOS	PM Delay ¹ - LOS	PM	PM
	1 - Phantom West & Air Expressway	25.3 - C	28.7 - B	3.4
2 - Phantom West & Innovation Dr/McCoy Cir	9.2 - A	9.2 - C	0.0	No
3 - Phantom West & George Blvd	9.0 - A	9.0 - A	0.0	No
4 - Phantom West/East & Nevada Ave	9.3 - A	9.2 - A	-0.1 ²	No
5 - Nevada Ave & McCoy Cir	8.5 - A	8.5 - A	0.0	No
6 - Nevada Ave & Air Expressway	21.6 - C	21.6 - B	0.0	No
9 - McCoy Cir & Lot 2, Dwy #4	DNE	10.4 - B	10.4	No
10 - Phantom West & Lot 19, Dwy #1	DNE	10.1 - B	10.1	No
11 - Nevada Ave & Lot 19, Dwy #2	DNE	8.7 - A	8.7	No
12 - Nevada Ave & Lot 19, Dwy #5	DNE	9.4 - A	9.4	No

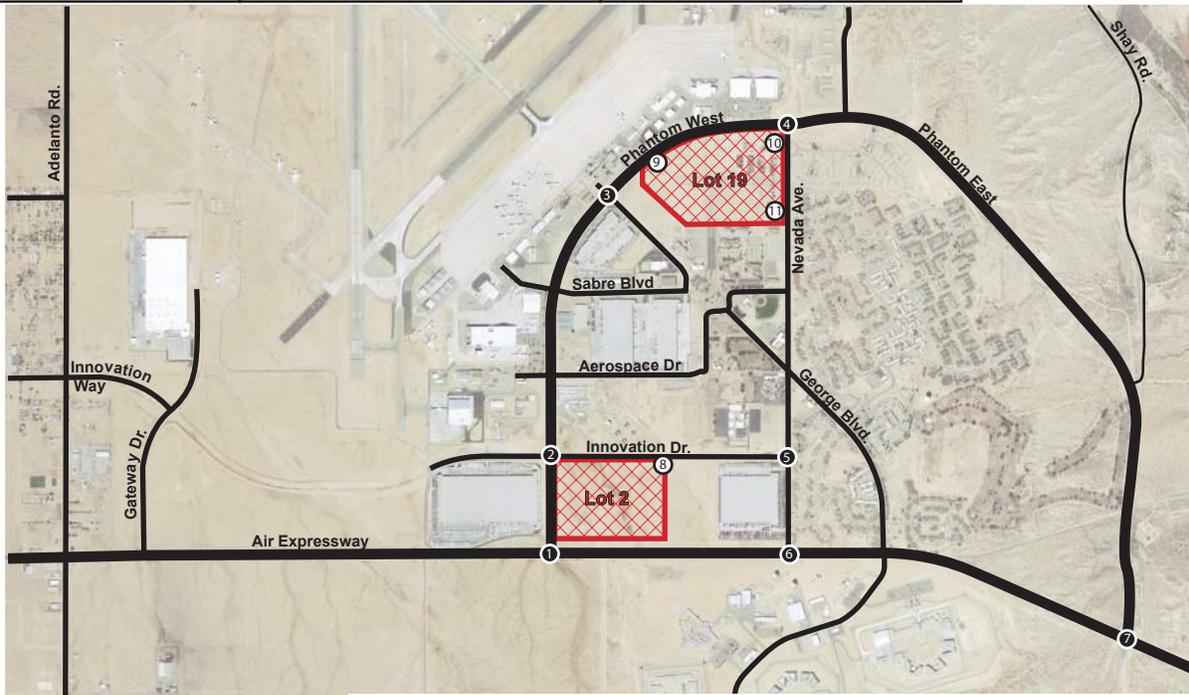
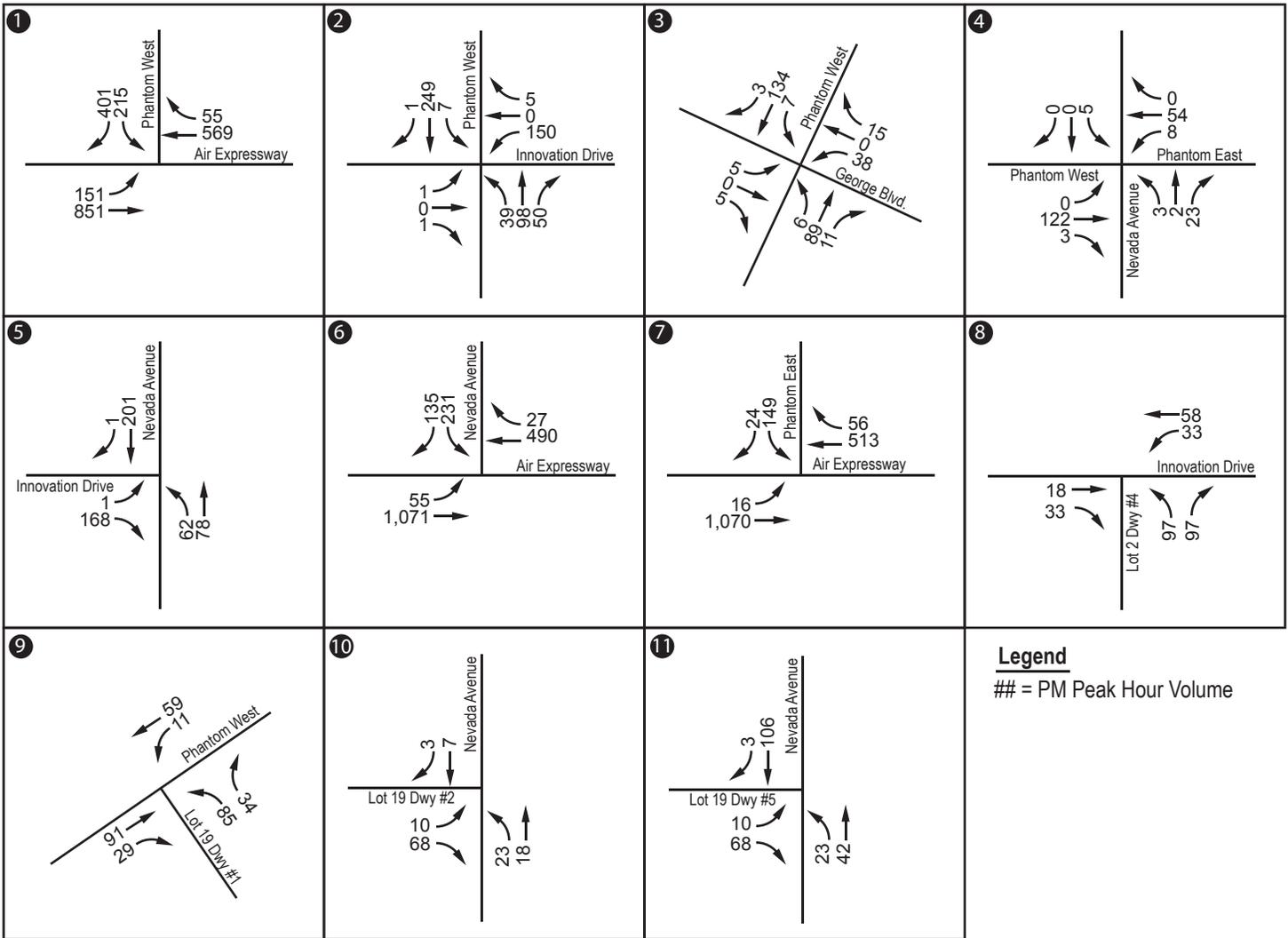
Note: Deficient intersection operation indicated in **bold**.

¹ Seconds of delay per vehicle.

² Includes improvements to northbound approach adjacent to Lot 19

LOS = level of service.

As shown in **Table 11**, all study intersections are forecast to operate at an acceptable level of service (LOS D or better) during the peak hour with the addition of project-related traffic to forecast project opening year 2019 without project traffic volumes. Therefore, no mitigation measures are necessary or required.



Forecast Project Opening Year 2019 With Project PM Peak Hour Volumes

8 FORECAST YEAR 2021 SCLA SPECIFIC PLAN PHASE 1

8.1 FORECAST YEAR 2021 SCLA SPECIFIC PLAN PHASE 1 TRAFFIC VOLUMES

Forecast Year 2021 SCLA Specific Plan Phase 1 traffic volumes are derived by estimating the number of trips forecast to be generated by the development of the SCLA Specific Plan area by the end of Phase 1 and adding them to existing volumes. Phase 1 of the SCLA Specific Plan include Lot 2 and Lot 19. It should also be noted that a 5% per year ambient growth rate was applied to eastbound and westbound through movements only along Air Expressway. For the purposes of this analysis, Phase 1 is estimated to be completed by 2021.

As shown in **Table 12**, Phase 1 is forecast to generate a total of 23,882 daily PCE trips with 3,158 PCE trips occurring during the PM peak hour (1,005 in / 2,154 out). This includes the trips forecast to be generated by the proposed Lot 2 and Lot 19.

TABLE 12, SCLA SPECIFIC PLAN PHASE 1 TRIP GENERATION

Sub Area	Lot	Phase	Land Use	Intensity	ADT	PM Peak Hour Trips		
						Total	Inbound	Outbound
W3	46A-D	1	Fast Food w/o Drive Thru	2.7 KSF	1,933	71	36	35
			High Turnover/Sit Down Rest	6.0 KSF	763	59	35	24
			Serv.Station w/ Conven.Mkt	20 Fuel Position	3,256	270	135	135
			Manufacturing	46.4 KSF	259	48	17	30
			Light Warehouse	86.2 KSF	449	41	11	30
			Light Industrial	22.5 KSF	230	31	4	26
			Reductions ¹					-3,464
Subtotal Lot 46A-D					3,425	279	115	163
W2	NA	1	Airport Support Facility	700 Emp	2,730	700	245	455
			Subtotal Sub Area W2					2,730
C1	NA	1	Airport Support Facility	208 Emp	810	208	73	135
			Subtotal Sub Area C1					810
C2	NA	NA	Airport Support Facility	385 Emp	1,503	385	135	250
			Subtotal Sub Area C2					1,503
C3	NA	1	Airport Support Facility	140 Emp	546	140	49	91
			PowerPlant	830 MW	Negligible			
			Manufacturing	38.5 KSF	216	41	15	26
			Light Warehouse	521.5 KSF	2,715	243	61	182
			Subtotal Sub Area C3					3,477
C5	19	1	Light Warehouse	974.5 KSF	5,077	455	114	341
			Subtotal Lot 19					5,077

TABLE 12 CONTINUED, SCLA SPECIFIC PLAN PHASE 1 TRIP GENERATION

Sub Area	Lot	Phase	Land Use	Intensity	ADT	PM Peak Hour Trips		
						Total	Inbound	Outbound
C7	2	1	Light Warehouse	845.8 KSF	4,407	397	100	298
			Subtotal Lot 2		4,407	397	100	298
	3B	1	Manufacturing	160.7 KSF	899	171	62	109
			Light Warehouse	298.4 KSF	1,554	139	36	104
			Subtotal Lot 3B		2,453	310	98	213
Phase 1 Sub Total					23,882	3,158	1,005	2,154

Note: All Trips shown are Passenger Car Equivalents (PCE)

¹ Reductions include pass-by trips and internal trips and have been applied to commercial uses only (i.e. restaurant 50%, retail=35%, gas station=60%)

Source: SCLA Specific Plan Roadway System Planning Study

Exhibit 15 shows the PM peak hour trips associated with Phase 1 of the SCLA Specific Plan at study intersections. **Exhibit 16** shows the Forecast Year 2021 SCLA Specific Plan Phase 1 PM peak hour volumes at study intersections.

8.2 FORECAST YEAR 2021 SCLA SPECIFIC PLAN PHASE 1 PEAK HOUR STUDY INTERSECTION LOS

Table 13 summarizes Forecast SCLA Specific Plan Phase conditions PM peak hour level of service for all study intersections. Detailed analysis sheets are contained in **Appendix F**.

TABLE 13, FORECAST YEAR 2021 SCLA SPECIFIC PLAN PHASE 1 PM PEAK HOUR INTERSECTION LOS

Study Intersection	Traffic Control	Phase 1 Conditions
		PM Delay ¹ - LOS
1 - Phantom West & Air Expressway	Signal	46.0 - D
2 - Phantom West & Innovation Dr/McCoy Cir	TWSC	>80.0 - F
3 - Phantom West & George Blvd	TWSC	24.5 - D
4 - Phantom West/East & Nevada Ave	TWSC	22.7 - D
5 - Nevada Ave & McCoy Cir	OWSC	15.4 - C
6 - Nevada Ave & Air Expressway	Signal	54.8 - D
7 - Phantom East & Air Expressway	Signal	36.5 - D
8 - McCoy Cir & Lot 2, Dwy #4	OWSC	11.5 - B
9 - Phantom West & Lot 19, Dwy #1	OWSC	12.9 - B
10 - Nevada Ave & Lot 19, Dwy #2	OWSC	10.6 - B
11 - Nevada Ave & Lot 19, Dwy #5	OWSC	10.0 - B

Note: Deficient intersection operation indicated in **bold**.

¹ Average seconds of delay per vehicle.

TWSC = Two-Way Stop Control

LOS = level of service.

OWSC = One-Way Stop Control

As shown in **Table 13**, all study intersections are forecast to operate at an acceptable level of service (LOS D or better) during the peak hour with the addition of project-related traffic to Forecast SCLA Specific Plan Phase 1 traffic volumes with the exception of the following intersection:

Int. #2. Phantom West at Innovation Drive/McCoy Circle (LOS F)

Based on thresholds of significance, the addition of project related traffic to the intersection of Phantom West and Innovation Drive/McCoy Circle results in a significant impact and requires improvements for Forecast SCLA Specific Plan Phase 1.

8.3 FORECAST YEAR 2021 SCLA SPECIFIC PLAN PHASE 1 STUDY INTERSECTION IMPROVEMENT REQUIREMENTS

The following improvements have been identified to reduce the traffic impacts identified above to less than significant for Forecast Year 2021 Specific Plan Phase 1 conditions.

- **Required Improvements #1** - Int. 2 – Phantom West at Innovation Drive/McCoy Circle
 - Signalize Intersection
 - Extend westbound approach lanes 300' east of limit line

Table 14 summarizes Forecast SCLA Specific Plan Phase 1 conditions of the significantly impact intersections assuming implementation of the identified improvements. Detailed intersection analysis sheets are contained in **Appendix F**.

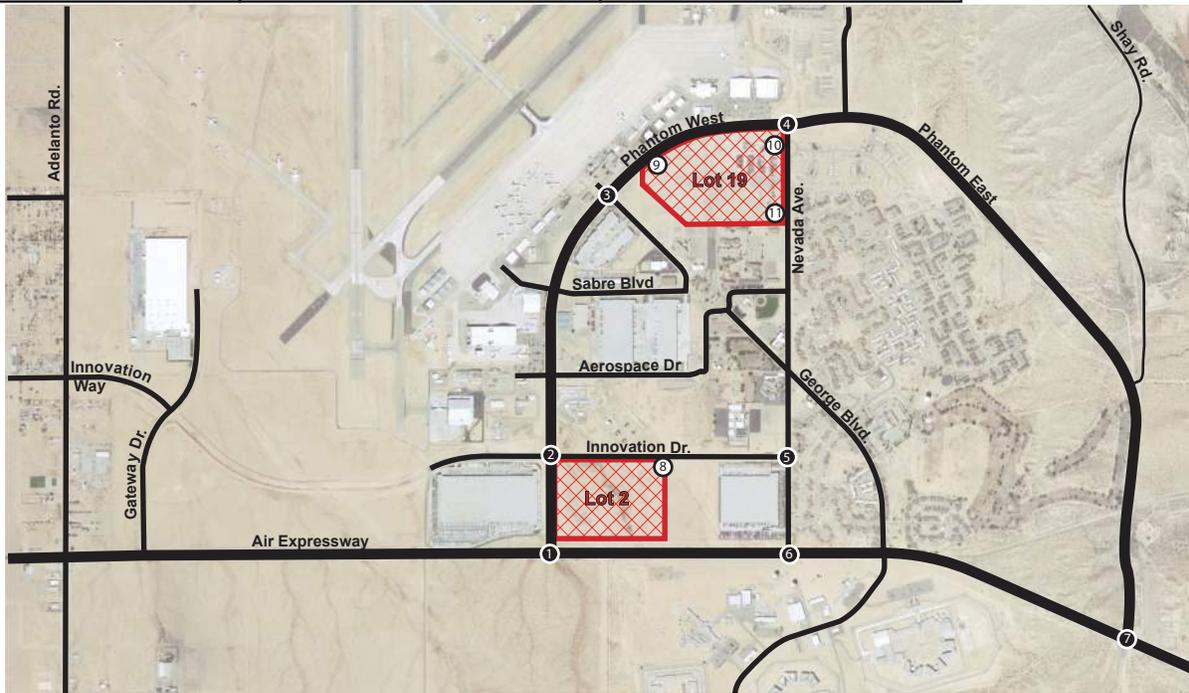
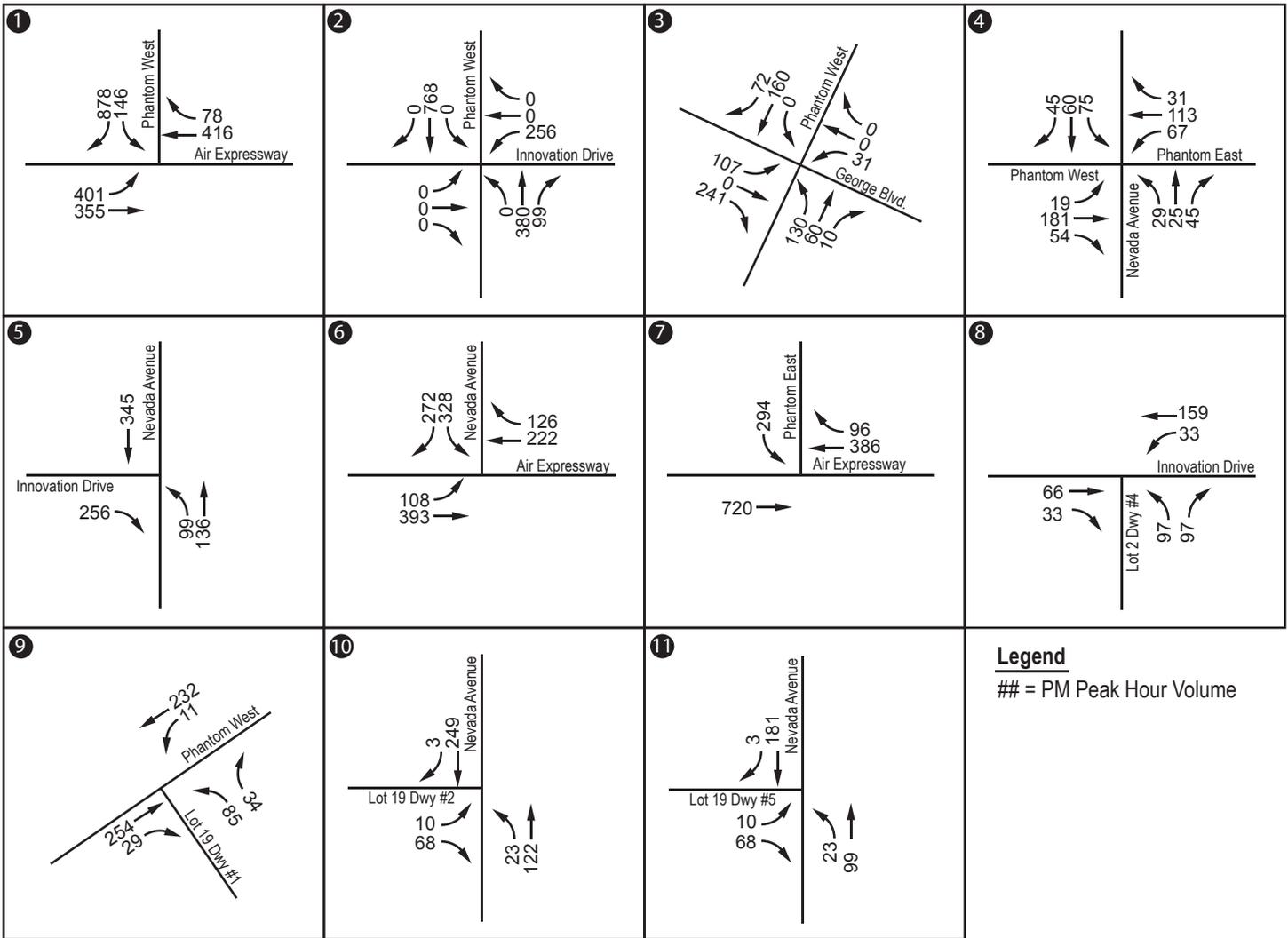
TABLE 14, FORECAST YEAR 2021 SCLA SPECIFIC PLAN PHASE 1 WITH IMPROVEMENTS PM PEAK HOUR INTERSECTION LOS

Study Intersection	Traffic Control	Phase 1
		PM Delay ¹ - LOS
2 - Phantom West & Innovation Dr/McCoy Cir	Signal	8.5 - A

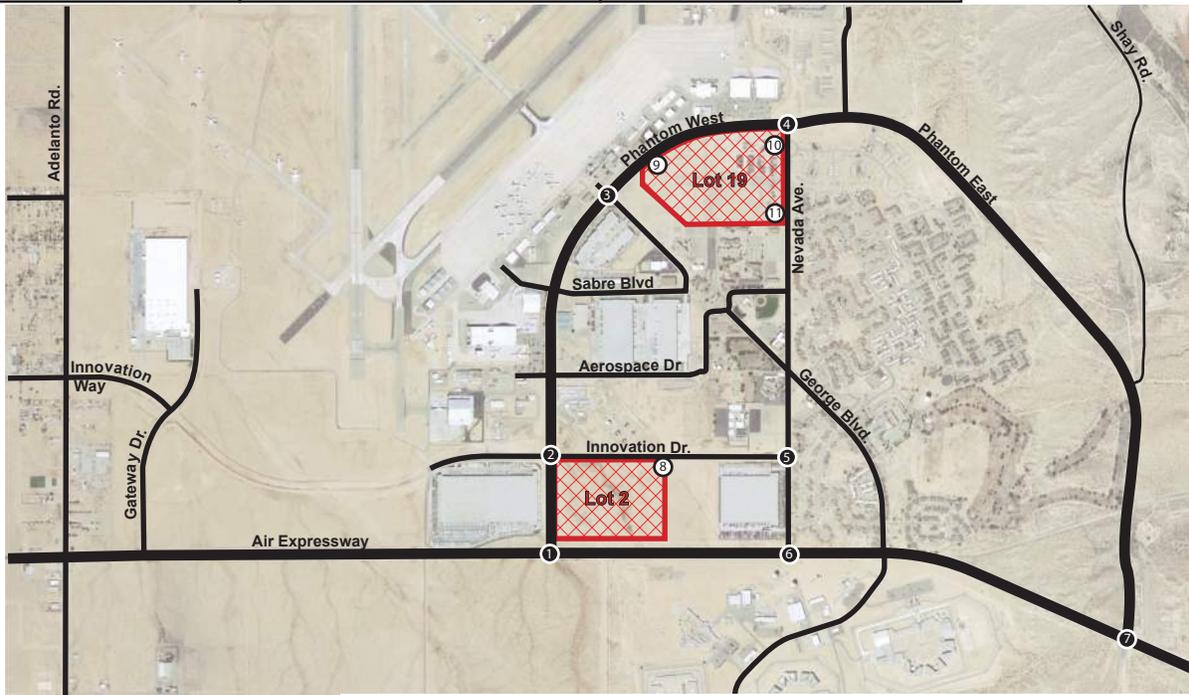
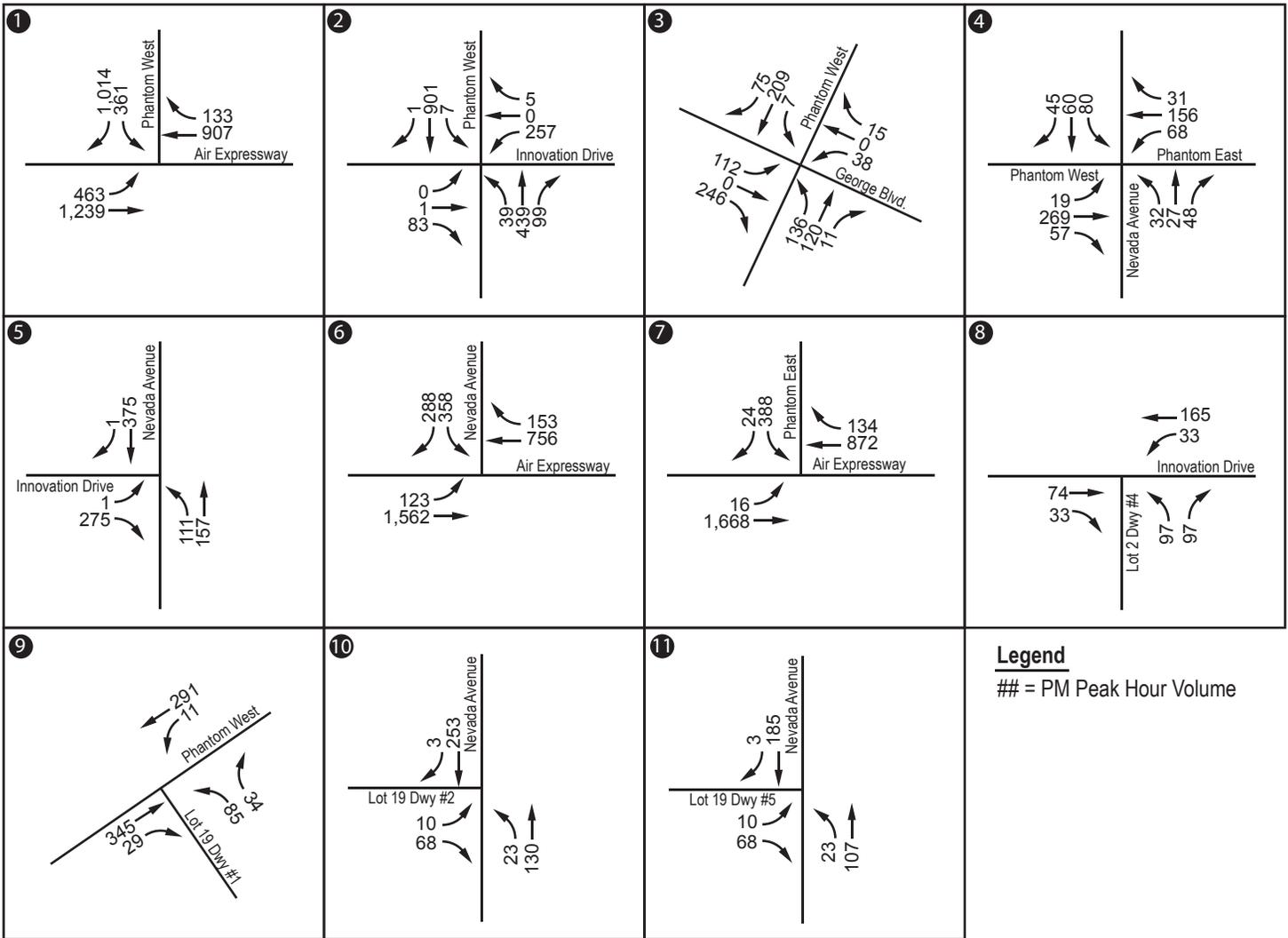
¹ Average seconds of delay per vehicle.

LOS = level of service.

As shown in **Table 14**, assuming implementation of the identified improvements, the traffic impact at the significantly impacted study intersection is forecast to be reduced to a level considered less than significant for Forecast SCLA Specific Plan Phase 1 conditions.



SCLA Specific Plan Phase 1 Only PM Peak Hour Volumes



Forecast Year 2021 SCLA Specific Plan With Phase 1 PM Peak Hour Volumes

9 FORECAST SCLA SPECIFIC PLAN BUILDOUT WITHOUT HIGH DESERT CORRIDOR

This section analyzes the potential intersection lane requirements for forecast SCLA Specific Plan Buildout Without High Desert Corridor (HDC). For the purposes of the analysis, the forecast year for buildout is Year 2040.

Forecast SCLA Specific Plan Buildout Without HDC conditions assumes the following baseline modifications to the roadway circulation system within the study area:

- Extension of Innovation Way from Gateway Drive to Phantom West (2-lanes)
- Extension of Innovation Drive from Nevada Avenue to Phantom East (2-lanes)
- Extension of Sabre Boulevard from George Blvd to Phantom East (2-lanes)
- Widening of Nevada Avenue from Air Expressway to Innovation Drive (6-lanes)
- Widening of Air Expressway from Adelanto to Phantom East (6 to 8 lanes)
- Elimination of George Boulevard from Air Expressway to Sabre Boulevard

9.1 FORECAST SCLA SPECIFIC PLAN BUILDOUT WITHOUT HDC TRAFFIC VOLUMES

Forecast SCLA Specific Plan Buildout Without HDC traffic volumes are derived by estimating the number of trips forecast to be generated by the development of the entire SCLA Specific Plan Area and adding them to Existing volumes. For the purposes of this analysis, the forecast year for buildout is Year 2040.

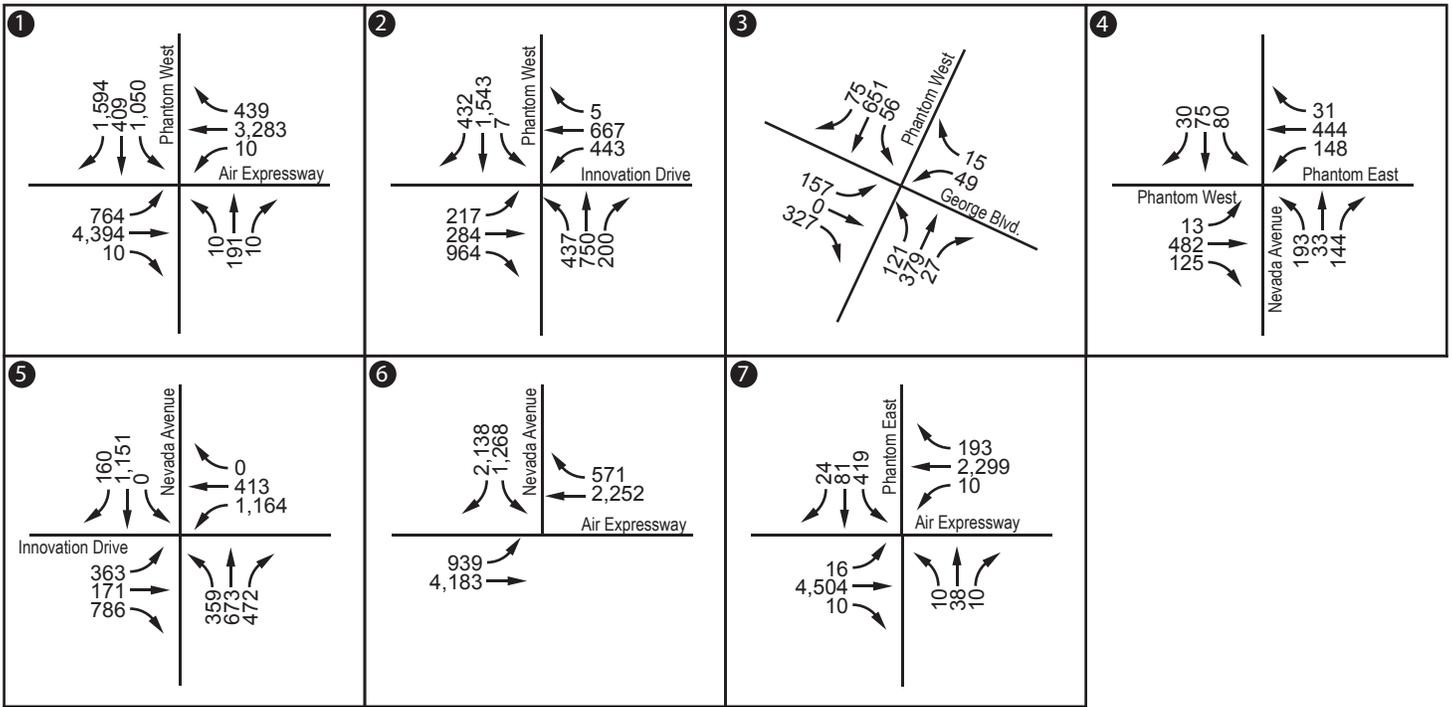
As shown in **Table 16**, the development of the Specific Plan area is forecast to generate a total of 133,508 daily PCE trips with 16,817 PCE trips occurring during the PM peak hour (5,541 in / 11,275 out). Detailed trip generation tables for the SCLA Specific Plan Area Phases 1-5 are contained in **Appendix G**.

TABLE 15, SCLA SPECIFIC PLAN BUILDOUT TRIP GENERATION

Phase	ADT	PM Peak Hour Trips		
		Total	Inbound	Outbound
Phase 1 Sub Total	23,882	3,158	1,005	2,154
Phase 2 Sub Total	23,727	2,773	996	1,776
Phase 3 Sub Total	23,522	2,984	1,020	1,964
Phase 4 Sub Total	23,667	3,040	909	2,131
Phase 5 Sub Total	38,711	4,862	1,611	3,250
SCLA Net New Trips	133,508	16,817	5,541	11,275

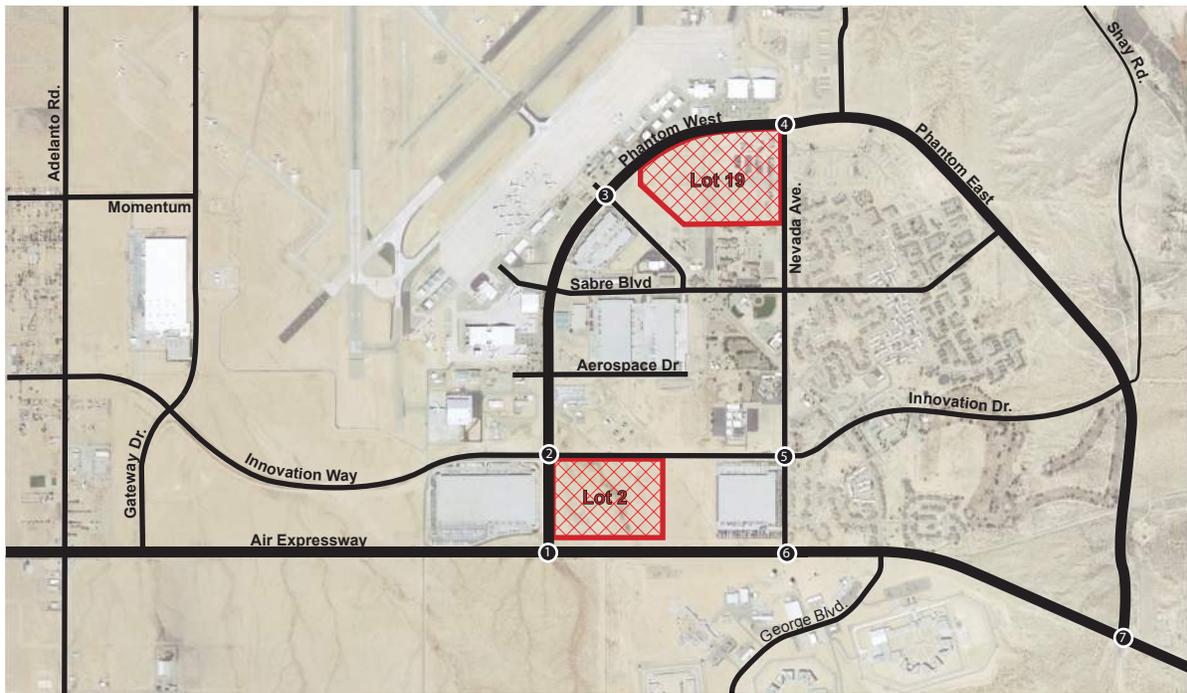
Note: All Trips shown are Passenger Car Equivalents (PCE)

Exhibit 17 shows the Forecast SCLA Specific Plan Buildout Without HDC PM peak hour volumes at study intersections.



Legend

= PM Peak Hour Volume



**Forecast SCLA Specific Plan Buildout
Without HDC PM Peak Hour Volumes**

9.2 FORECAST SCLA SPECIFIC PLAN BUILDOUT WITHOUT HDC PEAK HOUR STUDY INTERSECTION LOS

Table 17 summarizes Forecast SCLA Specific Plan Buildout Without HDC PM peak hour level of service for all study intersections. Detailed analysis sheets are contained in **Appendix H**.

TABLE 16, FORECAST SCLA SPECIFIC PLAN BUILDOUT WITHOUT HDC PM PEAK HOUR INTERSECTION LOS

Study Intersection	Traffic Control	Buildout Without High Desert Corridor
		PM Delay ¹ - LOS
1 - Phantom West & Air Expressway	Signal	50.4 - D
2 - Phantom West & Innovation Dr/McCoy Cir	Signal	51.6 - D
3 - Phantom West & George Blvd	Signal	36.5 - D
4 - Phantom West/East & Nevada Ave	Signal	11.4 - B
5 - Nevada Ave & McCoy Cir	Signal	47.6 D
6 - Nevada Ave & Air Expressway	Signal	50.3 - D
7 - Phantom East & Air Expressway	Signal	47.7 - D

Note: Deficient intersection operation indicated in **bold**.

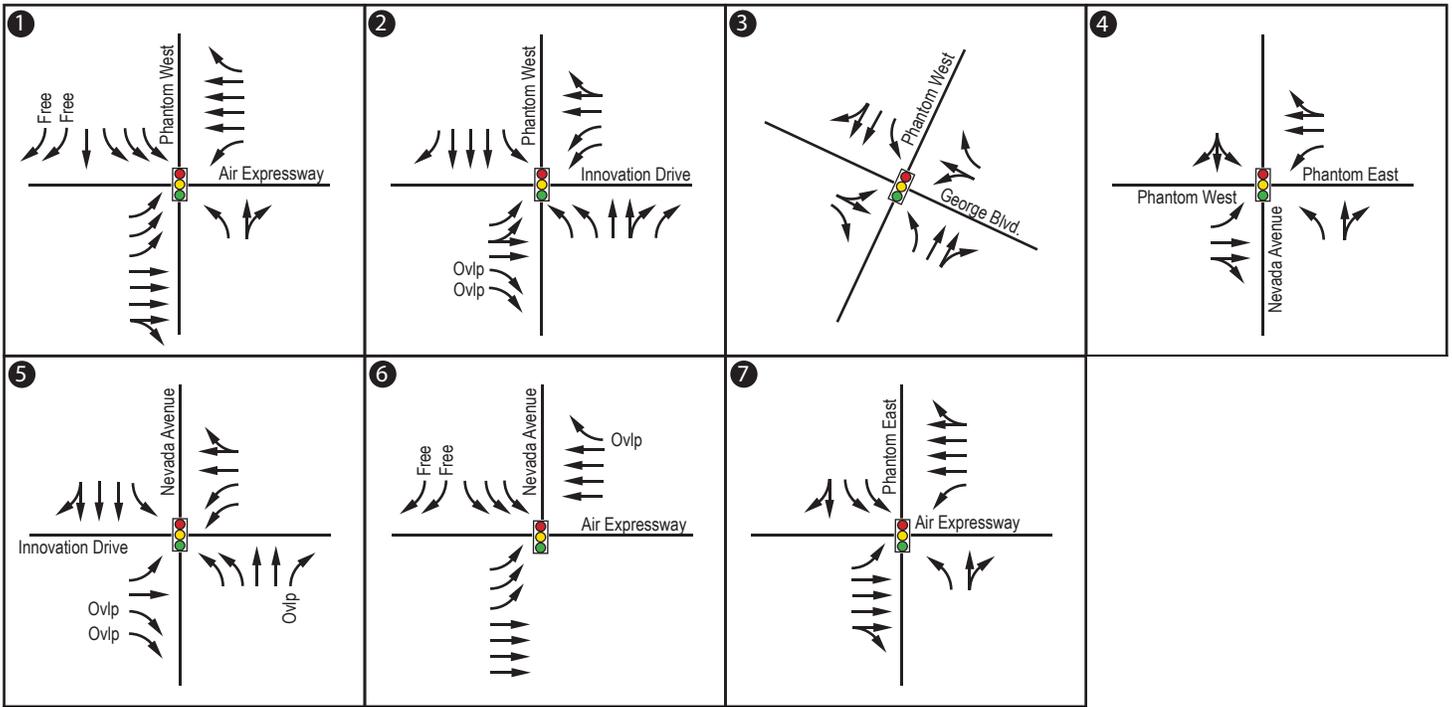
¹ Average seconds of delay per vehicle.

LOS = level of service.

Exhibit 18 shows the buildout roadway intersection lane requirements without the HDC that are needed to meet the level of service operations shown in **Table 17**. As shown, all study intersections are forecast to operate at LOS D or better during the peak hour for Forecast SCLA Specific Plan Buildout Without HDC assuming the intersection geometry shown in **Exhibit 18**.

Projected roadway network intersection lane requirements have been estimated to establish the ultimate right of way needs along the frontage of Lot 2 and Lot 19. These right of way needs at the study intersections and adjacent roadway segments are provided for in the proposed development of Lot 2 and Lot 19 for buildout without HDC.

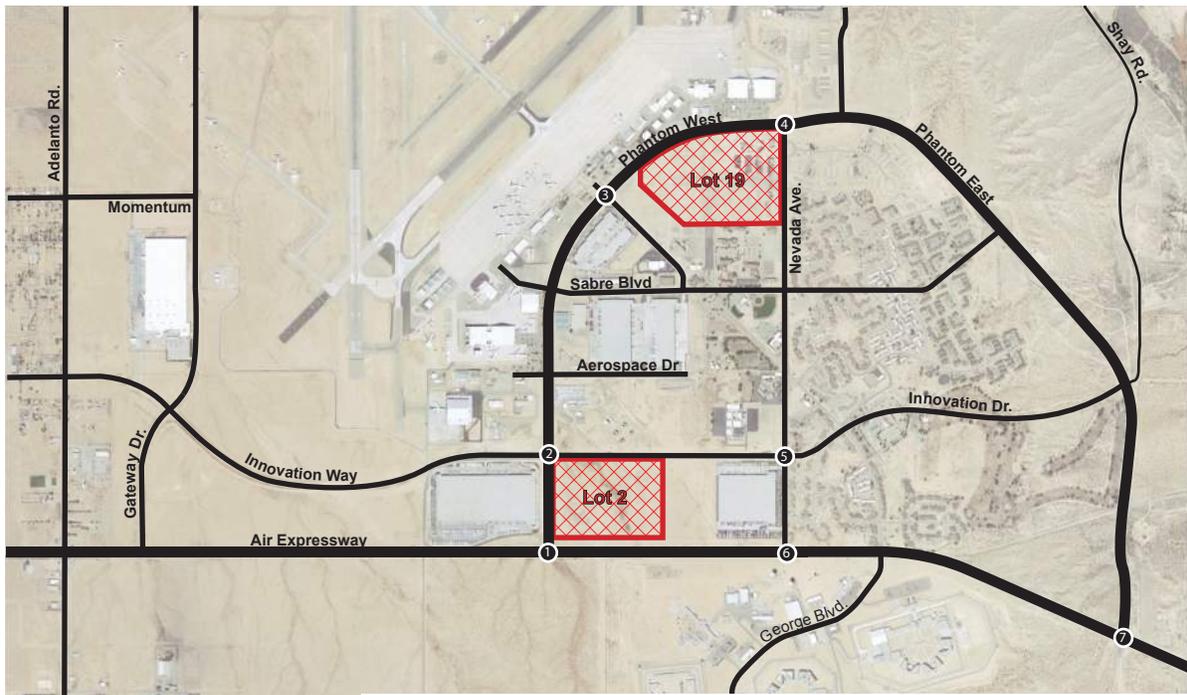
It should be noted that TDM measures will most likely be developed that will reduce development trips made during the critical peak hours. Additionally, while the long-range analysis assumes that a large portion of the SCLA Specific Plan will develop as 35% manufacturing and 65% warehouse, programmatic limitations on manufacturing development would result in significant reductions in peak hour traffic generation.



Legend

= Signalized Intersection

Ovlp = Right-turn Overlap Phasing



**Forecast SCLA Specific Plan Buildout
Without HDC Intersection Lane Configuration**

10 FORECAST SCLA SPECIFIC PLAN BUILDOUT WITH HIGH DESERT CORRIDOR

This section analyzes the potential impacts for forecast SCLA Specific Plan Buildout With High Desert Corridor (HDC). For the purposes of the analysis, the forecast year for buildout is Year 2040.

The High Desert Corridor is a multi-modal link between SR-14 in Los Angeles and SR-18 in San Bernardino County. The proposed freeway would be approximately 63 miles long. Within the study area, the HDC would replace Air Expressway as the major east-west corridor.

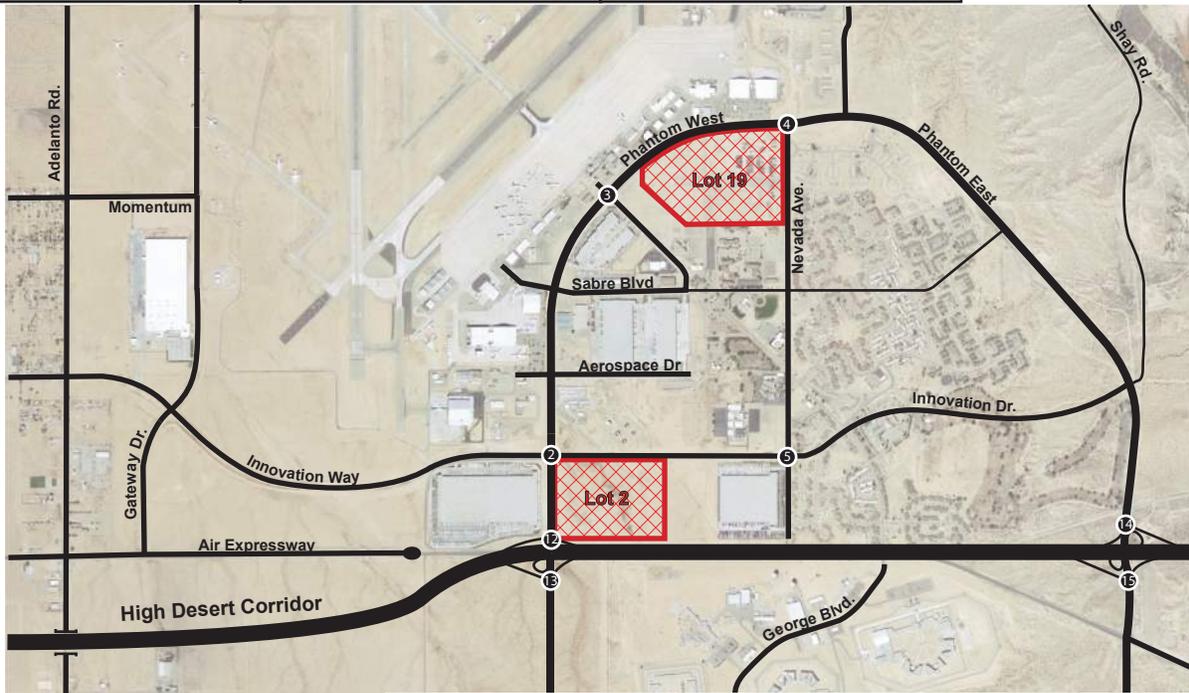
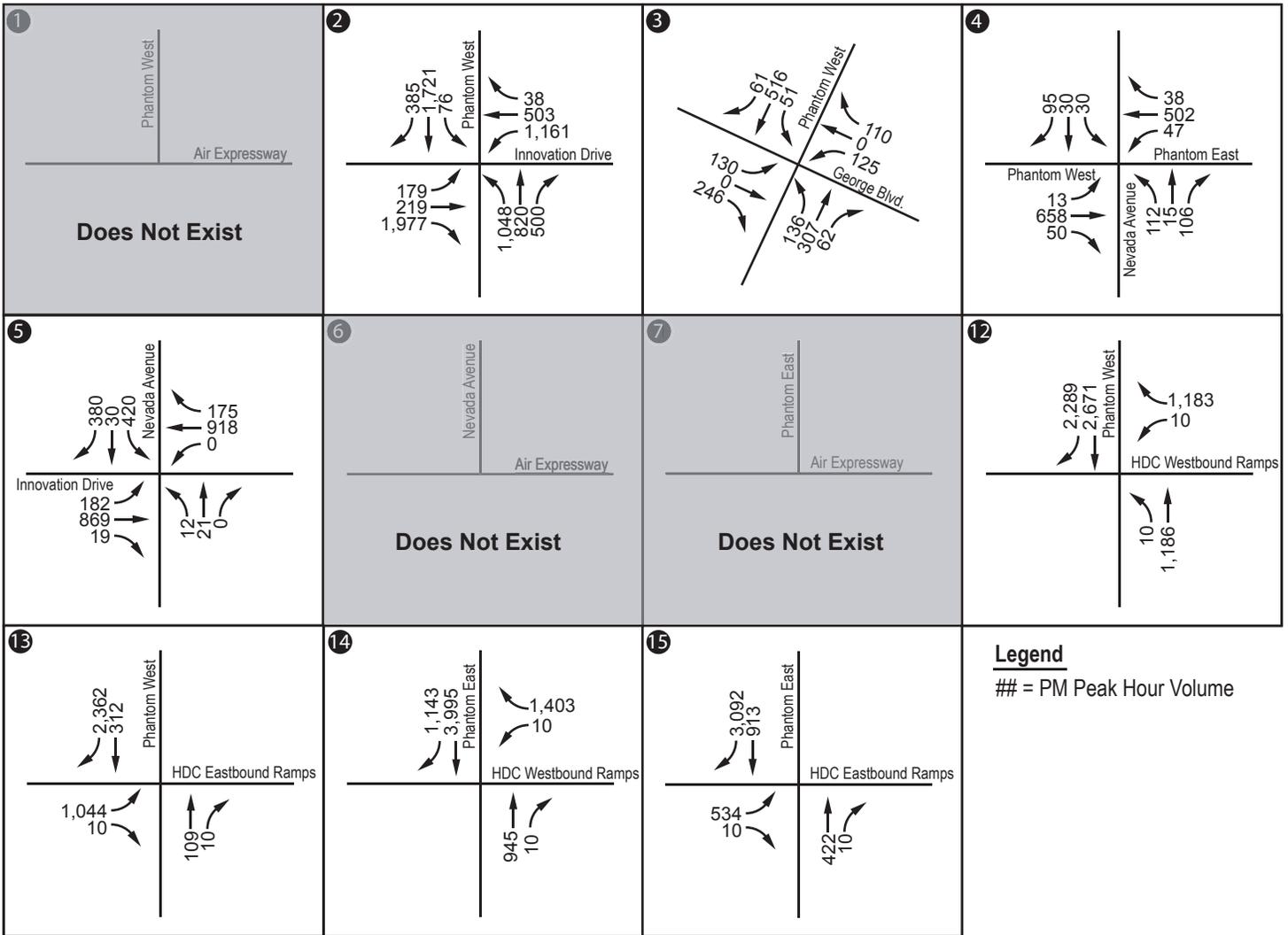
Forecast SCLA Specific Plan Buildout With HDC conditions assumes the following modifications to the roadway circulation system within the study area:

- Construction of the High Desert Corridor
 - Construction of westbound ramps at Phantom West
 - Construction of eastbound ramps at Phantom West
- Extension of Innovation Way from Gateway Drive to Phantom West (4-lanes)
- Extension of Innovation Drive from Nevada Avenue to Phantom East (2-4 lanes)
- Extension of Sabre Boulevard from George Blvd to Phantom East (2-lanes)
- Widening of Innovation Drive from Phantom West to Nevada Avenue (4-lanes)
- Widening of Phantom West from Innovation Way to the HDC Westbound Ramps (8-lanes)
- Elimination of George Boulevard from Air Expressway to Sabre Boulevard
- Elimination of Air Expressway approximately $\frac{3}{4}$ mile east of Gateway
 - Elimination of intersection of Air Expressway and Nevada Avenue

It should be noted for this analysis, the intersections of Air Expressway at Phantom West (Intersection 1) and Phantom East (Intersection 7) has been replaced by the HDC westbound and eastbound ramps (Intersection's 12-15) and the intersection of Air Expressway and Nevada Avenue (Intersection 6) has been removed consistent with the modifications discussed above.

10.1 FORECAST SCLA SPECIFIC PLAN BUILD WITHOUT HDC TRAFFIC VOLUMES

Forecast SCLA Specific Plan Buildout With HDC traffic volumes are derived by estimating the number of trips forecast to be generated by the development of the entire SCLA Specific Plan Area and adding them to Existing volumes assuming the construction of the High Desert Corridor. For the purposes of this analysis, the forecast year for buildout is Year 2040. **Exhibit 19** shows the PM peak hour trips at study intersections assuming the construction of the High Desert Corridor.



Forecast SCLA Specific Plan Buildout With HDC PM Peak Hour Volumes

10.2 FORECAST SCLA SPECIFIC PLAN BUILDOUT WITH HDC PEAK HOUR STUDY INTERSECTION LOS

Table 18 summarizes Forecast SCLA Specific Plan Buildout With HDC PM peak hour level of service for all study intersections. Detailed analysis sheets are contained in **Appendix I**.

TABLE 17, FORECAST SCLA SPECIFIC PLAN BUILDOUT WITH HDC PM PEAK HOUR INTERSECTION LOS

Study Intersection	Traffic Control	Buildout With High Desert Corridor
		PM Delay ¹ - LOS
1 - Phantom West & Air Expressway		DNE
2 - Phantom West & Innovation Dr/McCoy Cir	Signal	54.3 - D
3 - Phantom West & George Blvd	Signal	43.9 - D
4 - Phantom West/East & Nevada Ave	Signal	15.3 - B
5 - Nevada Ave & McCoy Cir	Signal	36.5 D
6 - Nevada Ave & Air Expressway		DNE
12 - High Desert Corridor WB Ramps & Phantom West	Signal	48.0 - D
13 - High Desert Corridor EB Ramps & Phantom West	Signal	20.1 - C
14 - High Desert Corridor WB Ramps & Phantom East	Signal	37.1 - D
15 - High Desert Corridor EB Ramps & Phantom East	Signal	44.7 - D

Note: Deficient intersection operation indicated in **bold**.

¹ Average seconds of delay per vehicle.

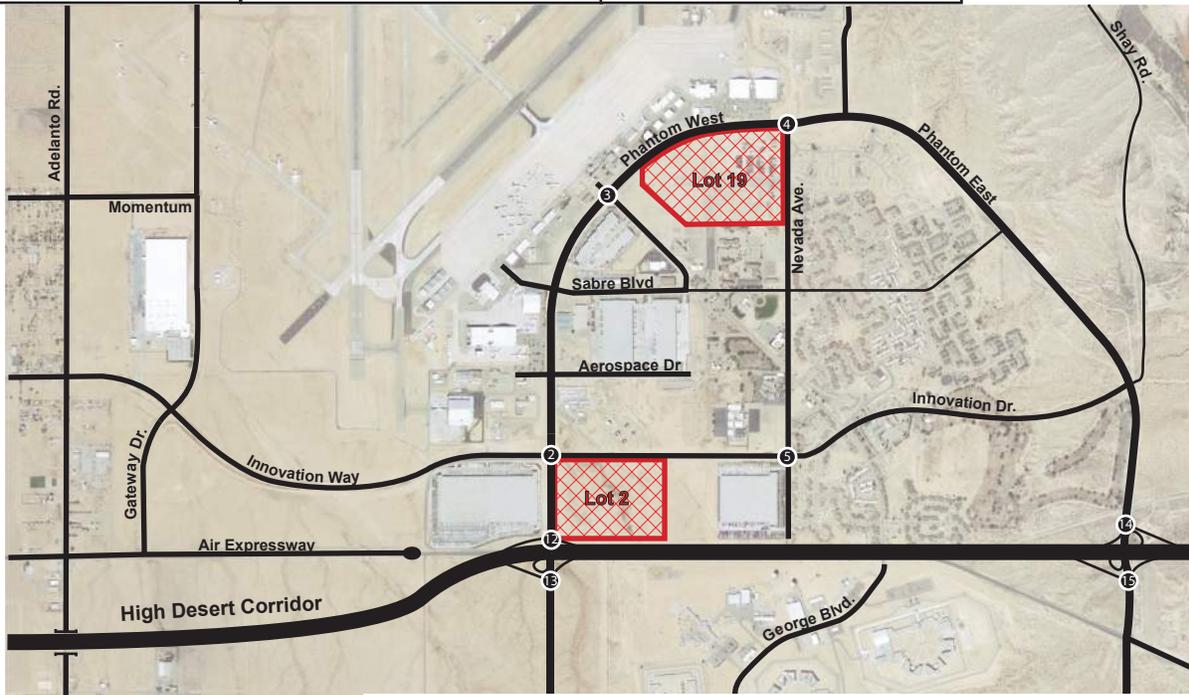
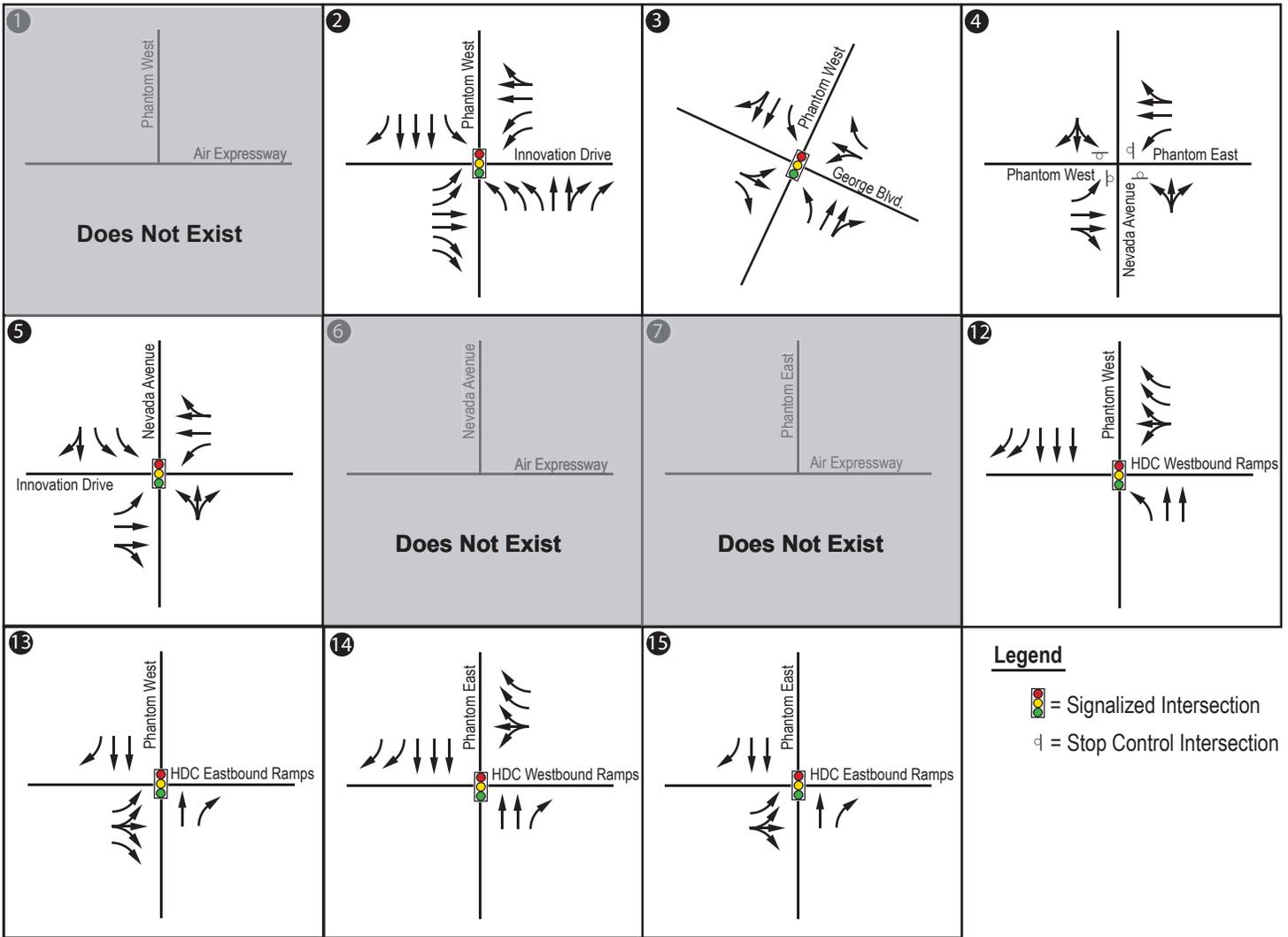
LOS = level of service.

DNE = Does Not Exist

Exhibit 20 shows the buildout roadway network intersection lane requirements (assuming the construction of the High Desert Corridor) that are needed to meet the level of service operations that are shown in **Table 18**. As shown, all study intersections are forecast to operate at LOS D or better during the peak hour for Forecast SCLA Specific Plan Buildout With HDC assuming the geometry shown in **Exhibit 20**.

Projected roadway network intersection lane requirements have been estimated to establish the ultimate right of way needs along the frontage of Lot 2 and Lot 19. These right of way needs at the study intersections and adjacent roadway segments are provided for in the proposed development of Lot 2 and Lot 19 for buildout with HDC.

It should be noted that TDM measures will most likely be developed that will reduce development trips made during the critical peak hours. Additionally, while the long-range analysis assumes that a large portion of the SCLA Specific Plan will develop as 35% manufacturing and 65% warehouse, programmatic limitations on manufacturing development would result in significant reductions in peak hour traffic generation.



Forecast SCLA Specific Plan Buildout With HDC Intersection Geometry

11 SITE ACCESS

11.1 LOT 2 ACCESS

The main access for the proposed Lot 2 site is provided via Innovation Drive (Lot 2 Driveway #4).

Two access points will be taken via a shared driveway with a future neighboring development (SCLA SP Lot 3). This shared driveway will be constructed with the development of Lot 2. These two access points will serve both passenger cars and trucks.

There are two additional driveways located off Phantom West that provide right-in/right-out access only for passenger cars (Lot 2 Driveway #1 & #2). A third minor driveway is located on Innovation way and will provide right-in/right-out access for both passenger cars and trucks (Lot 2 Driveway #3).

The proposed site allows for a future optional access driveway off Innovation Way if requested by a future user. In the event this driveway is constructed, the proposed trailer stalls will be removed and a new driveway will be constructed.

Exhibit 3 shows the proposed site plan for Lot 2.

11.2 LOT 19 ACCESS

The main access for the proposed Lot 19 site is provided via a full access driveway on Phantom West (Lot 19 Driveway #1).

Four additional full access driveways are located off Nevada Avenue (Lot 19 Driveways #2, #3, #4, & #5). The north and south driveways will be utilized by both passenger cars and trucks and allow gated access to the dock doors of the warehouse building. The two central driveways (Lot 19 Driveways #3 & #4) on Nevada Avenue will be used by passenger cars only.

An additional gated access point will connect to the private driveway of the neighboring Building 18 at the south side of the proposed project site and will be constructed with the development of Lot 19.

The proposed site allows for a future optional full access driveway off Phantom West if requested by a future user. In the event this driveway is constructed, the proposed trailer stalls will be removed and a new driveway will be constructed. The future design of this optional driveway should include provisions for required sight distance on Phantom West.

Exhibit 4 shows the proposed site plan for Lot 19.

12 QUEUING ANALYSIS

This section evaluates the queuing analysis for left turn movements at the following signalized locations for Existing and Existing With Project conditions:

1. Air Expressway / Phantom West
6. Air Expressway / Nevada Avenue
7. Air Expressway / Phantom East

12.1 EXISTING QUEUEING ANALYSIS

Utilizing the PCE adjusted volumes at the signalized study intersections, a queuing analysis was conducted. **Table 19** shows the existing queuing analysis.

TABLE 18, EXISTING QUEUING ANALYSIS

Existing Queuing Analysis							
Movement	No. Lanes	Storage Length Per Lane (ft)	Volume	50% Queue (ft)	Adequate Capacity?	95% Queue (ft)	Adequate Capacity?
Int. 1 Phantom West & Air Expressway							
NBL	NA		NA		NA		
SBL	2	440	253	37	Yes	77	Yes
EBL	1	750	69	16	Yes	153	Yes
WBL	NA		NA		NA		
Int. 6 Nevada Avenue & Air Expressway							
NBL	NA		NA		NA		
SBL	1	200	35	10	Yes	27	Yes
EBL	1	250	16	5	Yes	18	Yes
WBL	NA		NA		NA		
Int. 7 Phantom East & Air Expressway							
NBL	NA		NA		NA		
SBL	2	250	111	12	Yes	33	Yes
EBL	1	240	19	4	Yes	27	Yes
WBL	NA		NA		NA		

As shown in **Table 19**, the queuing needs are currently being met by the existing storage capacities for all left turn movements at the signalized locations for the 50th percentile queue as well as the 95th percentile queue lengths.

12.2 EXISTING WITH PROJECT QUEUEING ANALYSIS

Utilizing the PCE adjusted peak hour volumes at the signalized study intersections, a queuing analysis was conducted for Existing With Project conditions. **Table 20** shows the queuing analysis for Existing With Project conditions.

TABLE 19, EXISTING WITH PROJECT QUEUEING ANALYSIS

Existing With Project Queueing Analysis							
Movement	No. Lanes	Storage Length Per Lane (ft)	Volume	50% Queue (ft)	Adequate Capacity?	95% Queue (ft)	Adequate Capacity?
Int. 1	Phantom West & Air Expressway						
NBL	NA		NA		NA		
SBL	2	440	253	51	Yes	84	Yes
EBL	1	750	168	46	Yes	281	Yes
WBL	NA		NA		NA		
Int. 6	Nevada Avenue & Air Expressway						
NBL	NA		NA		NA		
SBL	1	200	272	84	Yes	163	Yes
EBL	1	250	60	19	Yes	80	Yes
WBL	NA		NA		NA		
Int. 7	Phantom East & Air Expressway						
NBL	NA		NA		NA		
SBL	2	250	175	13	Yes	54	Yes
EBL	1	240	19	2	Yes	27	Yes
WBL	NA		NA		NA		

As shown in **Table 20** the queuing needs are currently being met by the existing storage capacities for all left turn movements at the signalized locations for the 50th percentile queue length as well as the 95th percentile queue lengths.

13 SITE ACCESS SIGHT DISTANCE ANALYSIS

This section evaluates the minimum driveway sight distance requirements at the proposed driveways for Lot 2 and Lot 19. As discussed previously, Lot 2 will have primary access on Innovation Way with restricted access points on Phantom West. Lot 19 will have primary access on Phantom Way and Nevada Avenue.

This site distance analysis is based on the *American Association of State Highway and Transportation Officials (AASHTO)* intersection sight distance methodology which utilizes sight triangles to show areas that should be clear of obstructions that might block a driver's view of potentially conflicting vehicles. The sight triangles are based on the roadway design speed and the time gap for minor road (driveways) vehicles to enter the major road. This methodology provides sufficient sight distance for a stopped driver on a minor road approach to depart the intersection and enter the major road. Likewise, this methodology also provides enough time for drivers of vehicles on the major road to slow or stop if vehicles on the minor road approach are departing.

The driver of a vehicle approaching an intersection should have an unobstructed view of the entire intersection, including any traffic control devices, and sufficient lengths along the intersecting roadway to permit the driver to anticipate and avoid potential collisions. The sight distance needed under various assumptions of physical conditions and driver behavior is directly related to vehicle speeds and to the resultant distances traversed during perception-reaction time and braking.

Specific areas along intersection approach legs and across their included corners should be cleared of obstructions that may block a driver's view of potentially conflicting vehicles. These specified areas are known as clear sight triangles.

Based on AASHTO guidelines, the distance from the edge of the major-road travel way to the vertex of the clear sight distance ranges from a minimum of 14.5 feet up to 18.0 feet. For the purposes of this analysis, 18.0 feet was used for Phantom West and Innovation Drive. The posted speed limit on Phantom West is 50 MPH and the speed limit for Innovation Way and Nevada Avenue was assumed to be 45 MPH. A time gap of 10.5 seconds for combination truck right-turn movements and 11.5 seconds for combination truck left-turn movements was used per AASHTO guidelines. The required sight distance for the project driveways that need to be kept free of visual obstructions (i.e. monuments, signage, landscaping, berms, etc.) are shown in **Table 21**.

TABLE 20, REQUIRED SIGHT DISTANCE AT PROJECT DRIVEWAYS

	Major Road / Minor Road	Access	V (MPH)	t _g (sec)	D (ft)
Lot 2	Phantom West / Driveway #1	RI/RO	50	10.5	775
	Phantom West / Driveway #2	RI/RO	50	10.5	775
	Innovation Drive / Driveway #3	RI/RO	45	10.5	695
	Innovation Drive / Driveway #4	Full	45	11.5	765
Lot 19	Phantom West / Driveway #1	Full	50	11.5	850
	Nevada Avenue / Driveway #2	Full	45	11.5	765
	Nevada Avenue / Driveway #3	Full	45	11.5	765
	Nevada Avenue / Driveway #4	Full	45	11.5	765
	Nevada Avenue / Driveway #5	Full	45	11.5	765

NOTES:

RI/RO = Right-In / Right-Out

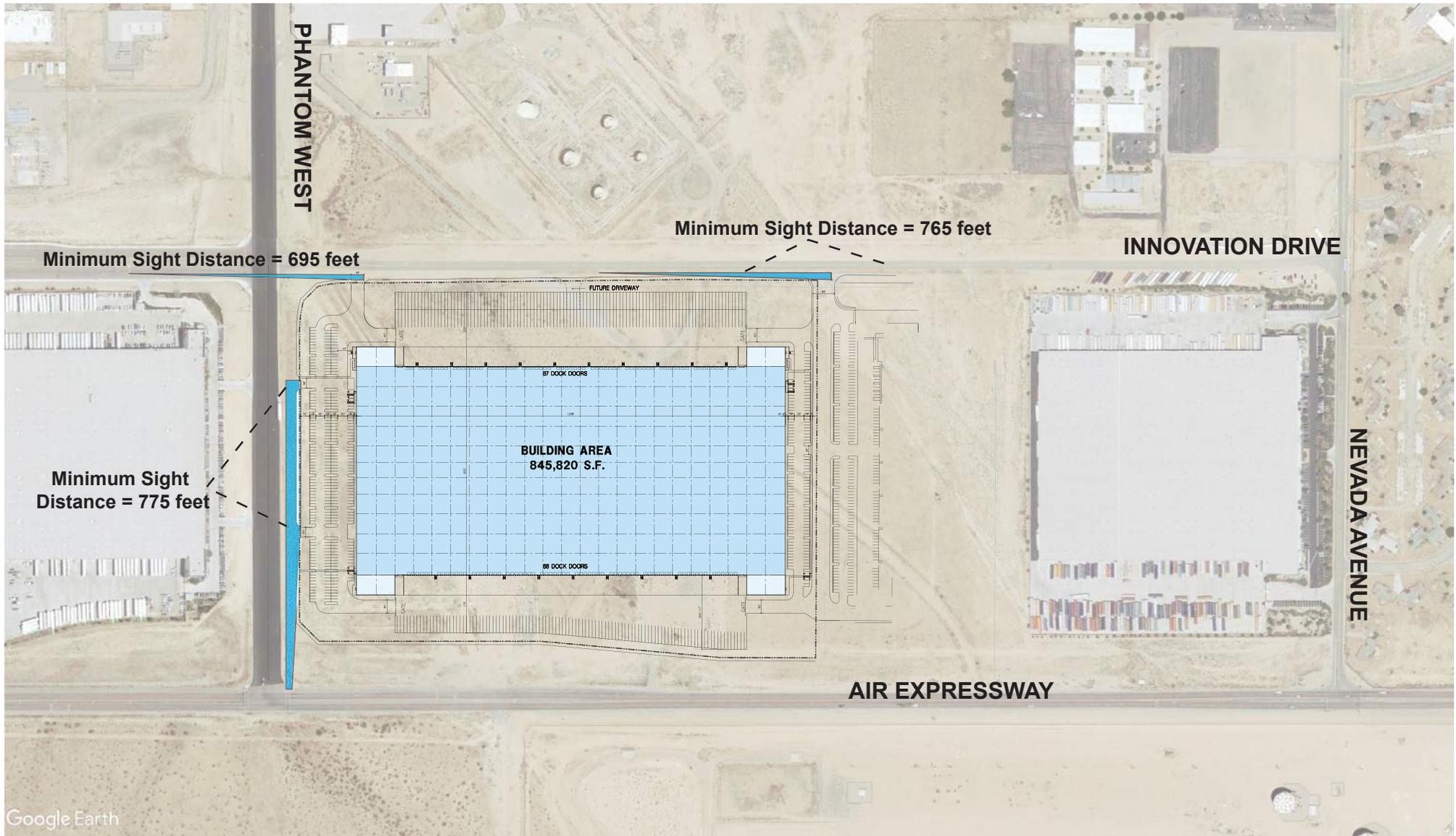
t_g = time gap (per AASHTO) (seconds)

V = vehicle speed (MPH) of major road

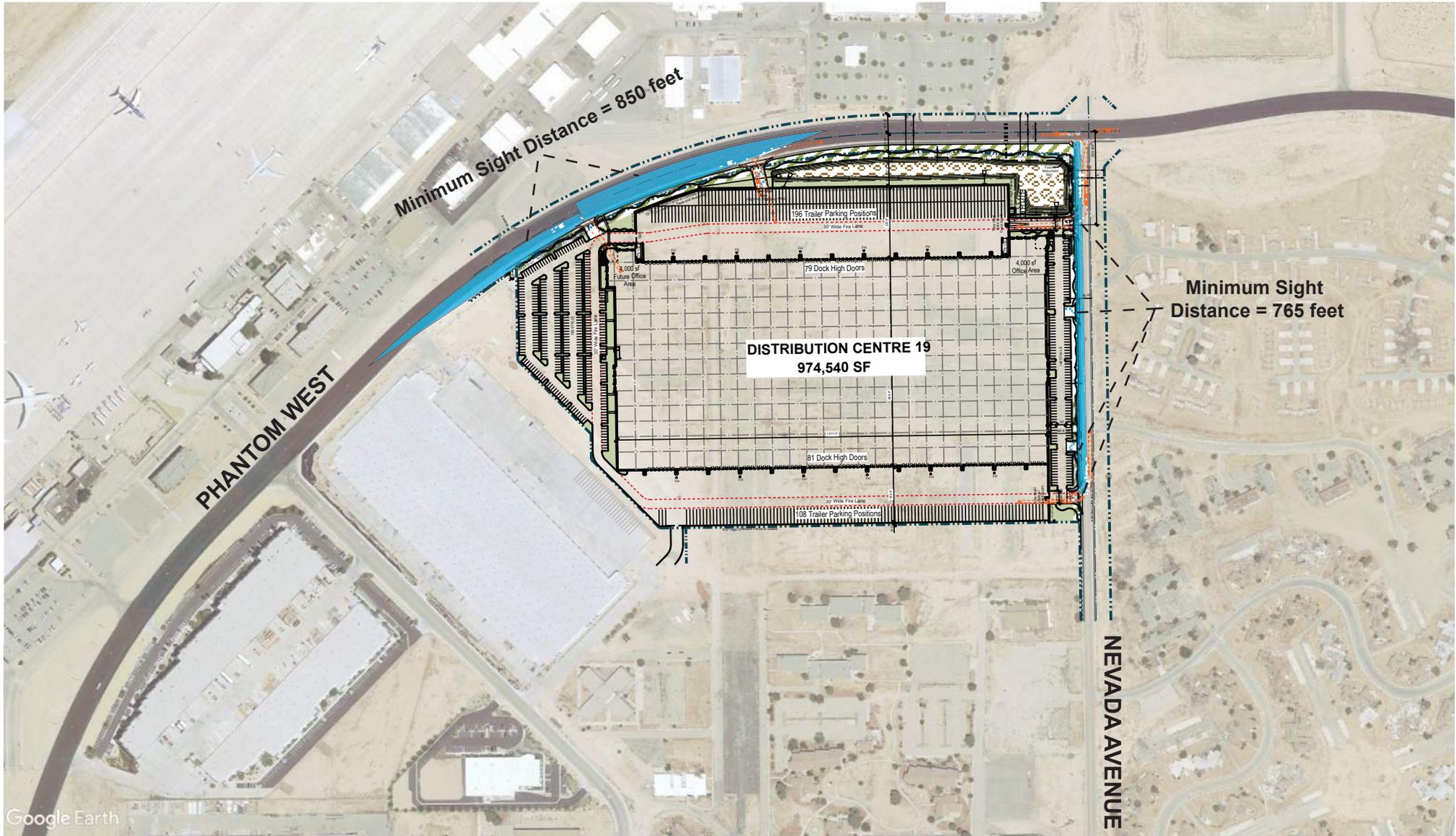
D = Stopping Sight Distance (feet)

As shown in **Table 21**, the sight distance required at Lot 2 is 775 feet for vehicles turning right on Phantom West for Driveways #1 & #2, 695 feet for vehicles turning right at Driveway #3, and 765 feet for vehicles turning left onto Innovation Drive at Driveway #4. For Lot 19, the sight distance required for vehicles turning left at Driveway #1 is 850 feet, and 765 feet for vehicles turning left on Nevada Avenue for Driveways #2 through #5. Due to the nature of the closely spaced driveways for Lot 19 on Nevada Avenue, it is recommended that a clear line of sight be provided from Driveway #5 to Phantom West. In addition, due to the close proximity of Driveway #1 and Driveway #2 for Lot 2, it is recommended that a clear line of sight be provided from Driveway #2 to Air Expressway.

Exhibit 21 shows the sight distance triangles for the proposed driveways at Lot 2 and **Exhibit 22** shows the sight distance triangles at the proposed driveways at Lot 19 assuming the required distances shown in **Table 21**.



Not to Scale



Not to Scale

14 TRAFFIC SIGNAL ANALYSIS

This section provides an overview of the California Manual on Uniform Traffic Control Devices (CA MUTCD) signal warrant analysis methodology. A traffic signal warrant analysis provides a procedure to determine whether installation of a traffic control signal is justified at a particular location. The following warrants have been evaluated for Existing and Existing With Project Conditions as part of this report:

- Warrant 1: Eight-Hour Vehicular Volume;
- Warrant 2: Four-Hour Vehicular Volume;
- Warrant 3: Peak Hour

14.1 TRAFFIC SIGNAL WARRANT METHODOLOGY

14.1.1 Warrant 1: Eight-Hour Vehicular Volume

In accordance with the CA MUTCD guidelines, the need for a traffic control signal shall be considered under Warrant 1 if an engineering study finds that one of the following conditions exist for any eight hours of an average day:

- A. *Minimum Vehicular Volume*: The vehicles per hour given in both of the 100% columns of Condition A in Table 4C-1 (see [Appendix J](#)) exist on the major street and the higher-volume approach minor street approaches, respectively, to the intersection; **or**
- B. *Interruption of Continuous Traffic*: The vehicles per hour given in both of the 100% columns of Condition B in Table 4C-1 exist on the major street and the higher-volume minor street approaches, respectively, to the intersection.

For Warrant 1, Condition A is intended for applications at locations where a large volume of intersecting traffic is the principal to consider installing a traffic control signal. Condition B is intended for application at locations where Condition A is not satisfied and where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or conflict in entering or crossing the intersection. In applying each condition, the volumes for the major and minor streets shall be for the same 8 hours. The higher volume for the minor street approach shall be used and is not required to be the same approach during each of these 8 hours.

If the posted or statutory speed limit or the 85th percentile speed on the major street exceeds 40 MPH, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, the traffic volumes in the 70% columns of Table 4C-1 may be used in place of the 100% column.

If both Condition A and Condition B are not met, a combination of Conditions A and B for Warrant 1 may be used to determine the need for a traffic control signal if both of the following conditions exist for any eight hours of an average day:

- A. The vehicles per hour given in both of the 80% columns of Condition A in Table 4C-1 (see [Appendix J](#)) exist on the major street and the higher-volume approach minor street approaches, respectively, to the intersection; **and**

- B. The vehicles per hour given in both of the 80 % columns of Condition B in Table 4C-1 exist on the major street and the higher-volume minor street approaches, respectively, to the intersection.

If the posted or statutory speed limit or the 85th percentile speed on the major street exceeds 40 MPH, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, the traffic volumes in the 56 % columns of Table 4C-1 may be used in place of the 80 % column.

14.1.2 Warrant 2: Four-Hour Vehicular Volume

Warrant 2 conditions are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal.

In accordance with CA MUTCD guidelines, the need for a traffic control signal shall be considered if an engineering study finds that for each of any four hours in an average day, the plot representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher-volume minor street approach (one direction only) all fall above the applicable curve in Figure 4C-1 (see **Appendix J**) for the existing combination of approach lanes. On the minor street, the higher volume shall not be required to be the same approach during each of these four hours.

If the posted or statutory speed limit or the 85th percentile speed on the major street exceeds 40 MPH, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, Figure 4C-2 may be used in place of 4C-1.

14.1.3 Warrant 3: Peak-Hour Vehicular Volume

Warrant 3 is intended for use at a location where traffic conditions are such that for a minimum of one hour of an average day, the minor street traffic suffers undue delay when entering or crossing the major street. This signal warrant shall be applied when high occupancy vehicle complexes attract or discharge large numbers of vehicles over a short period of time. (i.e. offices, manufacturing plants, industrial complexes, etc.)

In accordance with CA MUTCD guidelines, the need for a traffic control signal shall be considered if an engineering study finds that the criteria in either of the following two categories are met:

- A. If all three of the following conditions exist for the same one hour (any four consecutive 15-minute periods) of an average day
- The total stop delay experienced by the traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds: 4 vehicle hours for a one-lane approach; or 5 vehicle-hours for a two-lane approach; **and**
 - The volume on the same minor street approach equals or exceeds 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes; **and**
 - The total entering volume serviced during the hour equals or exceeds 650 vehicles per hour for intersections with three approaches or 800 vehicles per hour for intersections with four or more approaches.
- B. The plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) of an average day falls

above the applicable curve in Figure 4C-3 (see **Appendix J**) for the existing combination of approach lanes.

If the posted or statutory speed limit or the 85th percentile speed on the major street exceeds 40 MPH, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, Figure 4C-4 may be used in place of 4C-3.

14.2 TRAFFIC SIGNAL WARRANT ANALYSIS

This section summarizes the results of each traffic signal warrant evaluated for the four study intersections for Existing and Existing With Project Conditions. Detailed signal warrant analysis sheets are contained in **Appendix J**.

Since the posted speed limit on Phantom West (major street) is 50 MPH, the 70% criterion is used for the non-combination warrant analysis for Condition A and Condition B. Similarly, the 56% criterion is for the combination warrant analysis for Condition A and Condition B combination.

In addition, since the posted speed limit on Phantom West (major street) is 50 MPH, Figure 4C-2 is used for Warrant 2 and Figure 4C-4 of the CA MUTCD is used for Warrant 3.

14.2.1 Existing Signal Warrant Analysis

Table 22 shows the signal warrant analysis results for Existing. As shown, none of the existing unsignalized study intersections meet any of the applicable warrants discussed above.

TABLE 21, EXISTING WARRANT SUMMARY

MUTCD Signal Warrant	Existing Conditions Warrant Satisfied?			
	Int. 2 Phantom West / McCoy Circle	Int. 3 Phantom West / George Blvd.	Int. 4 Phantom East / Nevada Ave.	Int. 5 Nevada Ave. / McCoy Circle
Warrant 1: Eight Hour Vehicular Volume	No	No	No	No
Warrant 2: Four Hour Vehicular Volume	No	No	No	No
Warrant 3: Peak Hour Vehicular Volume	No	No	No	No

14.2.2 Existing With Project Signal Warrant Analysis

Table 23 shows the signal warrant analysis results for Existing With Project. As shown, none of the existing unsignalized study intersections meet any of the applicable warrants discussed above.

TABLE 25, EXISTING WITH PROJECT WARRANT SUMMARY

MUTCD Signal Warrant	Existing With Project Conditions Warrant Satisfied?			
	Int. 2 Phantom West / Innovation Drive	Int. 3 Phantom West / George Blvd.	Int. 4 Phantom East / Nevada Ave.	Int. 5 Nevada Ave. / Innovation Drive
Warrant 1: Eight Hour Vehicular Volume	No	No	No	No
Warrant 2: Four Hour Vehicular Volume	No	No	No	No
Warrant 3: Peak Hour Vehicular Volume	No	No	No	No

14.2.3 Forecast Year 2021 SCLA Specific Plan Phase 1 Signal Warrant Analysis

As discussed previously in **Section 8.3** of this report, the intersection of Phantom West and Innovation Drive is expected to operate unacceptably as a two-way-stop controlled intersection under Forecast Year 2021 SCLA Specific Plan Phase 1. The recommended intersection improvement would be to signalize this location. As shown in **Table 26**, a traffic signal is warranted at this location under Year 2021 SCLASP Phase 1 conditions.

TABLE 26, YEAR 2021 SCLA PHASE 1 WARRANT SUMMARY

MUTCD Signal Warrant	Year 2021 SCLASP Phase 1 Conditions Warrant Satisfied?			
	Int. 2 Phantom West / Innovation Drive	Int. 3 Phantom West / George Blvd.	Int. 4 Phantom East / Nevada Ave.	Int. 5 Nevada Ave. / Innovation Drive
Warrant 3: Peak Hour Vehicular Volume	YES	No	No	YES

15 FINDINGS AND RECOMMENDATIONS

Lots 2 is forecast to generate approximately 4,407 passenger car equivalent trips per day with approximately 397 trips occurring during PM peak hour. Lot 19 is forecast to generate approximately 5,077 passenger car equivalent trips per day with approximately 455 occurring during the PM peak hour. Combined, the proposed projects are forecast to generate an approximate total of 9,484 daily trips with 852 PM peak hour trips.

The results of the Existing analysis show that all intersections are forecast to operate at acceptable levels of service (LOS D or better). Therefore, no significant impacts were identified and no mitigation measures are required for this scenario.

The results of the intersection analysis under Existing With Project analysis show that all study intersections are forecast to operate at acceptable levels of service (LOS D or better) with the addition of project-related traffic volumes. Therefore, no significant impacts were identified and no mitigation measures are required for this scenario.

The results of the intersection analysis under Forecast Project Opening Year 2019 Without Project analysis show that all intersections are forecast to operate at acceptable levels of service (LOS D or better). Therefore, no significant impacts were identified and no mitigation measures are required for this scenario.

The results of the intersection analysis under Forecast Year 2019 With Project analysis show that all study intersections are forecast to operate at acceptable levels of service (LOS D or better) with the addition of project-related traffic volumes. Therefore, no significant impacts were identified and no mitigation measures are required for this scenario.

The results of the intersection analysis under Forecast SCLA Specific Plan Phase 1 development conditions show that all study intersections are forecast to operate at acceptable levels of service (LOS D or better) with the addition of project-related traffic volumes with the exception of the following intersections:

2. Phantom West at Innovation Drive/McCoy Circle (LOS F)

The following mitigation measure has been identified to achieve acceptable LOS and fully mitigate project forecast significant impacts at the study intersection for Forecast SCLA Specific Plan Phase 1 conditions:

- **Required Improvement #1** - Int. 2 – Phantom West at Innovation Drive/McCoy Circle
 - Signalize Intersection
 - Extend westbound approach lanes 300' east of limit line

With the implementation of the identified improvement, the impacted study intersection is expected to operate at acceptable levels of service.

Buildout intersection lane geometries have been identified that will provide PM peak hour operations at LOS D or better. It is anticipated that SCLA Specific Plan TDM measures will be developed that will reduce development trips made during the critical peak hours. Additionally, while the long-range analysis assumes that a large portion of the SCLA Specific Plan will develop as 35% manufacturing and 65%

warehouse, programmatic limitations on manufacturing development would result in significant reductions in peak hour traffic generation.

Based on AASHTO guidelines, a clear line of sight is required at all project driveways as follows:

- Lot 2:
 - Driveways #1 & #2 = 775 feet for vehicles turning right onto Phantom West
 - Driveway #3 = 695 feet for vehicles turning right onto Innovation Way
 - Driveway #4 = 765 feet for vehicles turning left onto Innovation Way
- Lot 19:
 - Driveway #1 = 850 feet for vehicles turning left onto Phantom West
 - Driveway #2 through #5 = 765 feet for vehicles turning left onto Nevada Avenue

The signal warrant analysis shows that no unsignalized study intersections meet signal warrants for Existing and Existing With Project conditions. For Year 2021 SCLASP Phase 1, traffic signals are warranted at the intersections of Phantom West & Innovation Drive and Nevada Avenue & Innovation Drive.