TRAFFIC STUDY

LANCASTER 3

CITY OF LANCASTER

LOS ANGELES COUNTY, CALIFORNIA

LSA

March 2020

TRAFFIC STUDY

LANCASTER 3

CITY OF LANCASTER

LOS ANGELES COUNTY, CALIFORNIA

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Project No. USP1901

LSA

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1.0 INTRODUCTION

The Traffic Study (TS) has been prepared to assess the potential circulation impacts associated with the proposed Lancaster 3 Project (project) to be located at the northeast corner of 17th Street East and East Avenue J4 in the City of Lancaster (City). The project is bounded by East Avenue J2 to the north, East Avenue J4 to the south, 17th Street East to the west, and existing residential units to the east. Figure 1-1 illustrates the regional and project location. (Figures and tables are located at the end of each chapter.)

The City of Lancaster follows the City of Lancaster Department of Public Works *Traffic Study Guidelines*, dated January 5, 2009. Therefore, this report is intended to satisfy the requirements established by the City's TS guidelines, as well as the requirements for the disclosure of potential impacts and mitigation measures pursuant to the California Environmental Quality Act (CEQA). The scope of work for this TS, including trip generation, trip distribution, study area, and analysis methodologies, has been approved by City staff via the Scoping Agreement process. A copy of the Scoping Agreement is included as Appendix A.

This study examines traffic operations in the vicinity of the proposed project under the following four scenarios:

- Existing Traffic Conditions;
- Existing with Project Traffic Conditions;
- Project Build-out (2025) Traffic Conditions; and
- Project Build-out (2025) with Project Traffic Conditions.

Traffic conditions were examined for the weekday daily, a.m. and p.m. peak hour conditions. The a.m. peak hour is defined as the one hour of highest traffic volumes occurring between 7:00 and 9:00 a.m. The p.m. peak hour is the one hour of highest traffic volumes occurring between 4:00 and 6:00 p.m.

1.1 PROJECT DESCRIPTION

The proposed project consists of the construction of a multi-family residential complex on an approximately 11.34 acres site. The project will include eleven, three-story buildings that will have a total of 264 dwelling units. The project site is designated as Multi-Residential in the City's General Plan 2030 (dated July 14, 2009) and is zoned as High Density Residential in the City's Zoning Map. Figure 1-2 illustrates the conceptual site plan for the project.

As illustrated in Figure 1-2, access to the project site will be provided via two driveways – Driveway 1, located on East Avenue J4; and Driveway 2, located on East Avenue J2. Driveway 1 will operate as a full-access driveway, and Driveway 2 will operate as an exit-only driveway.

1.2 STUDY AREA

The Study area intersections include any intersections that the City requested to be analyzed during the scoping agreement process. Roadway segments adjacent to the project and between study intersections and/or project driveways also need to be analyzed. As such, the following intersections and roadway segments have been included in the study:

1.2.1 Study Intersections

1. 15th Street East/East Avenue J4;
2. 17th Street East/East Avenue J4;
3. Project Driveway 1 – Park Circle Apartments Driveway/East Avenue J4;
4. Project Driveway 2 – Shopping Center Driveway/East Avenue J2;
5. 20th Street East/East Avenue J2; and
6. 20th Street East/East Avenue J4 – 4th Street.

Figure 1-3 illustrates the locations of all study intersections.

1.2.2 Roadway Segments

1. East Avenue J4, between 15th Street East and 17th Street East;
2. East Avenue J4, between 17th Street East and Project Driveway 1 – Park Circle Apartments Driveway;
3. East Avenue J4, between Project Driveway 1 – Park Circle Apartments Driveway and 20th Street East; and
4. 17th Street East, between East Avenue J4 and East Avenue J8.

All study intersections and roadway segments are under the jurisdiction of the City of Lancaster.

1.3 LIST OF CHAPTER 1.0 FIGURES

- Figure 1-1: Regional and Project Location
- Figure 1-2: Conceptual Site Plan
- Figure 1-3: Study Area Intersections

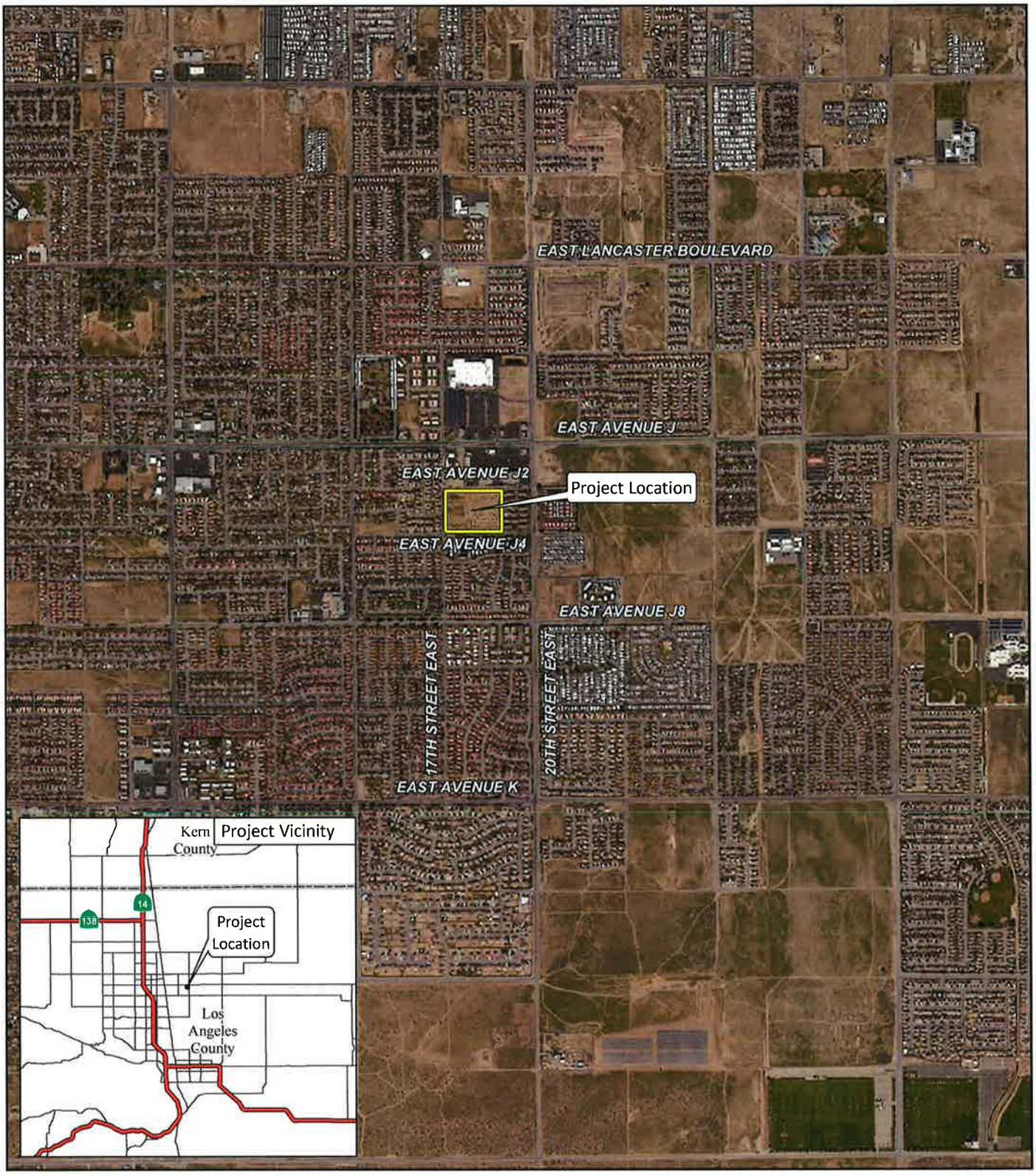

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FIGURE 1-1

N

0 1000 2000
FEET

SOURCE: ESRI Streetmap, 2013, Bing Aerial, 2015.

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Lancaster 3
Traffic Study

Regional and Project Location

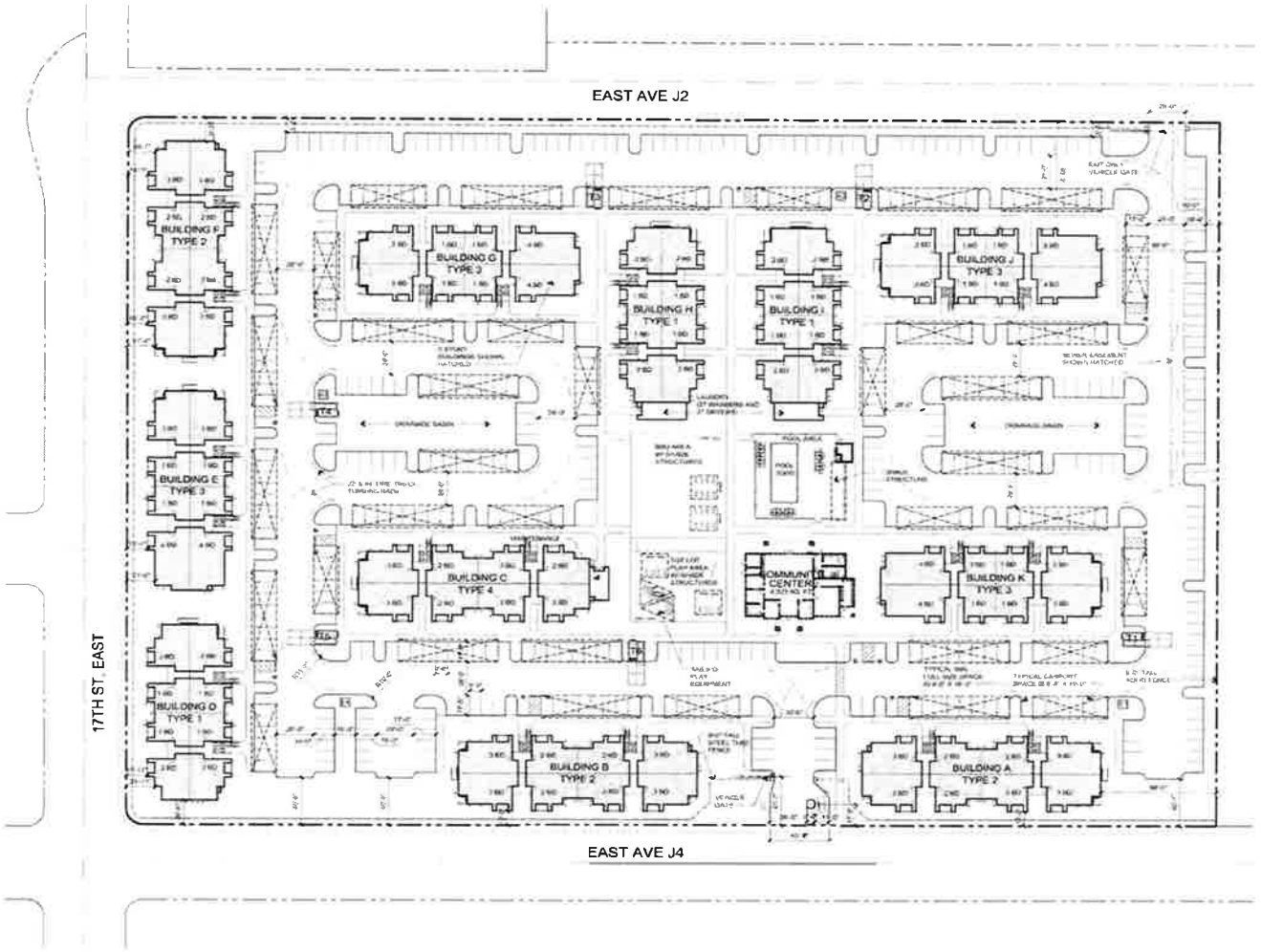

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FIGURE 1-2

N

0 40 80

FEET

SOURCE: Kuchman Architects PC, October 2019

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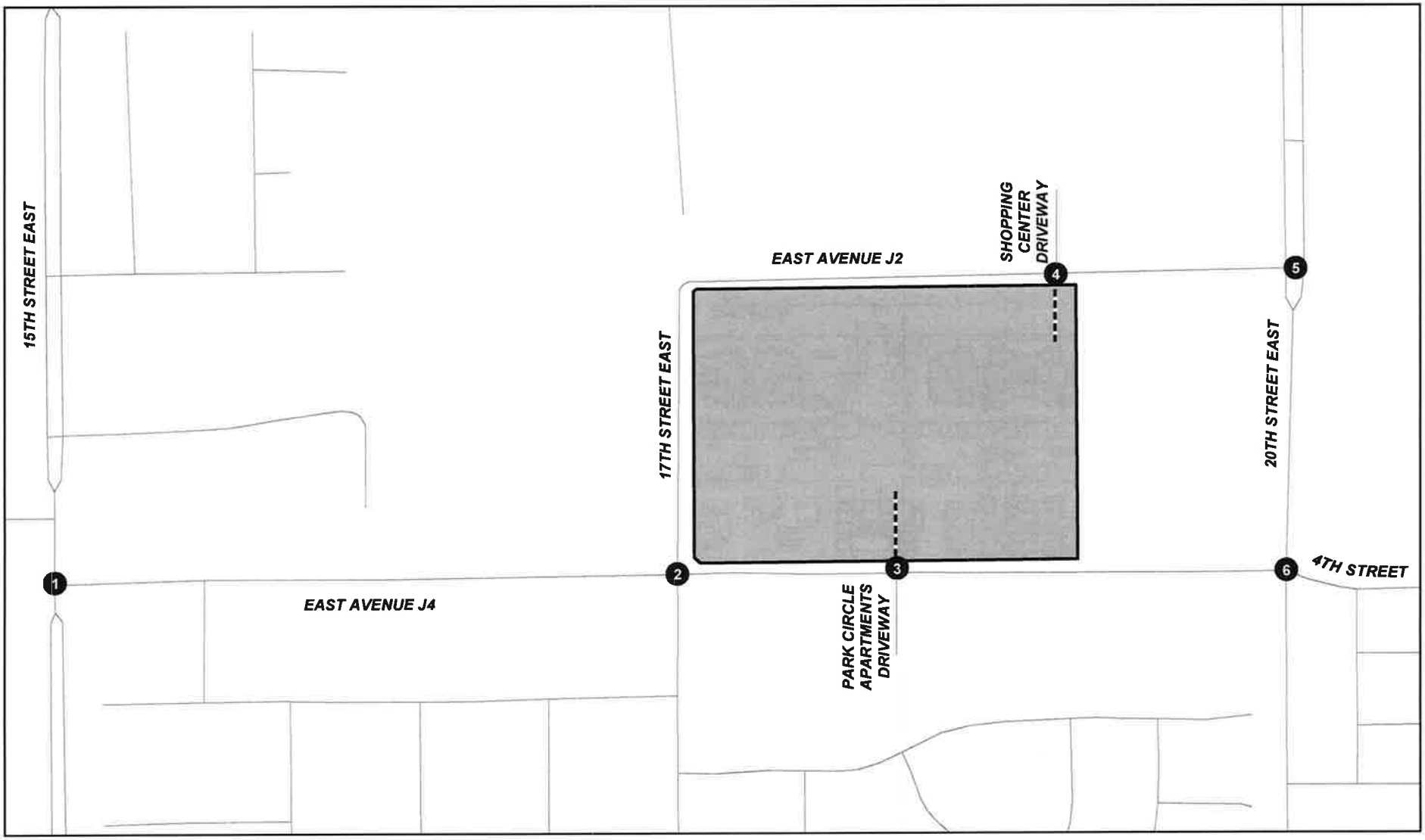
Lancaster 3 Project
Traffic Study

Conceptual Site Plan



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LEGEND

- Project Site
- Study Intersection
- Project Driveway

0 150 300
FEET

SOURCE: ESRI Streetmap, 2013.

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FIGURE 1-3

Lancaster 3
Traffic Study

Study Area Intersections

2.0 ANALYSIS METHODOLOGY

2.1 INTERSECTION LEVEL OF SERVICE DEFINITIONS

Level of Service (LOS) is a qualitative assessment of the quantitative effects of such factors as traffic volume, roadway geometrics, speed, delay, and maneuverability on roadway and intersection operations. LOS is assigned along the following letter gradient where LOS A represents free-flow activity, and LOS F represents overcapacity operation. LOS definitions using the Intersection Capacity Utilization (ICU) and Highway Capacity Manual (HCM) methodologies are detailed below.

2.1.1 Intersection Capacity Utilization

The ICU methodology compares the amount of traffic an intersection is able to process (capacity) to the level of traffic during peak hours (volume). The resulting volume-to-capacity (v/c) ratio is expressed in terms of LOS. The ICU establishes levels of service A through F for intersections as shown in Table 2-A. Table 2-B illustrates the LOS criteria for signalized intersections using the ICU methodology.

2.1.2 Highway Capacity Manual

In the HCM methodology, control delay alone is used to characterize LOS for the entire intersection. Control delay quantifies the increase in travel time due to the traffic signal control and is a surrogate measure of driver discomfort and fuel consumption.

A complete description of the meaning of LOS can be found in the *Transportation Research Board Special Report 209*. The HCM establishes LOS A through F for intersections as shown in Table 2-C. Table 2-D illustrates the LOS criteria for signalized and unsignalized intersections using the HCM methodology.

As per the City's TS Guidelines, study area intersections under the jurisdiction of the City should be analyzed using ICU methodology for signalized intersections and HCM (6th Edition) methodologies for unsignalized intersections. The ICU worksheets and the Synchro 10 software were utilized to determine the LOS for signalized and unsignalized intersections, respectively. These programs calculate LOS based on traffic volume and intersection geometry inputs.

2.2 ROADWAY SEGMENT LEVEL OF SERVICE DEFINITIONS

A description of LOS for roadway segments, as stated in HCM 6, is provided in Table 2-E. Table 2-F summarizes the LOS criteria used to evaluate roadway segments based on the volume-to-capacity (v/c) ratio as per the City's *General Plan 2030 Program Environmental Impact Report Technical* Appendices (dated December 2008). The daily traffic volumes represent the total vehicles (both directions) traveling on a roadway segment within 24 hours. According to the City's TS Guidelines, the roadway capacity is based on the number of lanes and posted speed limit. Roadway capacity is used for calculation of v/c ratio to determine LOS. Table 2-G summarizes the roadway segment capacities. The City has roadway capacities for segments with speed limit between 35 miles per hour (mph) and 55 mph. Since all roadway segments in the traffic study have speed limit of 25 mph,

based on discussion with City staff, extrapolation has been applied to obtain a more accurate value for the roadway segment capacities.

2.3 LEVEL OF SERVICE PROCEDURES AND THRESHOLDS

All study intersections and roadway segments analyzed in this report are under the jurisdiction of the City of Lancaster. The City uses LOS D as its minimum level of service criteria for intersections and roadway segments.

2.4 PROJECT SIGNIFICANCE THRESHOLD

All the intersections analyzed in this TS are stop sign controlled intersections. As per the City's TS Guidelines, a significant impact occurs at a study intersection under the following conditions:

- For intersections operating at a satisfactory LOS under without project conditions, a significant impact occurs when the addition of project trips causes the peak hour LOS to fall below the City's LOS standard, LOS D.

- For stop sign controlled intersections operating at an unsatisfactory LOS under without project conditions, a significant impact occurs when the addition of project trips causes the intersection delay to increase by 2 percent or more.

As for study area roadway segments, as per the City's TS Guidelines, a significant impact occurs under the following conditions:

- For roadway segments operating at a satisfactory LOS under without project conditions, a significant impact occurs when the addition of project trips causes the LOS to fall below the City's LOS standard, LOS D.

- For roadway segments operating at an unsatisfactory LOS under without project conditions, a significant impact occurs when the addition of project trips causes the v/c ratio to increase by 0.020 or more.

2.5 LIST OF CHAPTER 2.0 TABLES

Table 2-A: ICU Intersection Level of Service Definitions

LOS	Description
A	No approach phase is fully utilized by traffic, and no vehicle waits longer than one red indication. Typically, the approach appears quite open, turns are made easily, and nearly all drivers find freedom of operation.
B	This service level represents stable operation, where an occasional approach phase is fully utilized, and a substantial number are nearing full use. Many drivers begin to feel restricted within platoons of vehicles
C	This level still represents stable operating conditions. Occasionally, drivers may have to wait through more than one red signal indication, and backups may develop behind turning vehicles. Most drivers feel somewhat restricted, but not objectionably so.
D	This level encompasses a zone of increasing restriction approaching instability at the intersection. Delays to approaching vehicles may be substantial during short peaks within the peak period; however, enough cycles with lower demand occur to permit periodic clearance of developing queues, thus preventing excessive backups.
E	Capacity occurs at the upper end of this service level. It represents the most vehicles that any particular intersection approach can accommodate. Full utilization of every signal cycle is attained no matter how great the demand.
F	This level describes forced-flow operations at low speeds, where volumes exceed capacity. These conditions usually result from queues of vehicles backing up from a restriction downstream. Speeds are reduced substantially, and stoppages may occur for short or long periods of time due to the congestion. In the extreme case, speed can drop to zero.

Source: Los Angeles County Metropolitan Transportation Authority *Congestion Management Program* (2010)

Table 2-B: Level of Service Criteria for Signalized Intersections Using ICU Methodology

LOS	Signalized Intersection Volume-to-Capacity Ratio
A	<0.60
B	0.61 – 0.70
C	0.71 – 0.80
D	0.81 – 0.90
E	0.91 – 1.00
F	>1.00

Source: Los Angeles County Metropolitan Transportation Authority *Congestion Management Program* (2010)

Table 2-C: HCM Intersection Level of Service Definitions

LOS	Description
A	Traffic operations with a control delay of 10 seconds per vehicle or less and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is exceptionally favorable or the cycle length is very short. If LOS A is the result of favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.
B	Traffic operations with control delay between 10 seconds per vehicle and 20 seconds per vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.
C	Traffic operations with control delay between 20 and 35 seconds per vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when progression is favorable or the cycle length is moderate. Individual cycle failures (i.e., one or more queued vehicles are not able to depart as a result of the insufficient capacity during the cycle) may begin to appear at this level. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.
D	Traffic operations with control delay between 35 and 55 seconds per vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.
E	Traffic operations with control delay between 55 and 80 seconds per vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.
F	Traffic operations with control delay exceeding 80 seconds per vehicle or a volume-to-capacity ratio greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.

Source: *Highway Capacity Manual* (6th Edition)

Table 2-D: Level of Service Criteria for Unsignalized and Signalized Intersections Using HCM Methodology

Level of Service	Unsignalized Intersection Average Delay per Vehicle (sec.)	Signalized Intersection Average Delay per Vehicle (sec.)
A	≤ 10	≤ 10
B	> 10 and ≤ 15	> 10 and ≤ 20
C	> 15 and ≤ 25	> 20 and ≤ 35
D	> 25 and ≤ 35	> 35 and ≤ 55
E	> 35 and ≤ 50	> 55 and ≤ 80
F	> 50	> 80

Source: *Highway Capacity Manual* (6th Edition)

Table 2-E: HCM Roadway Segment Level of Service Definitions

LOS	Description
A	Describes primarily free-flow operation. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Control Delay at the boundary intersection is minimal. The travel speed exceeds 80% of the base free-flow speed, and the volume-to-capacity ratio is no greater than 1.0.
B	Describes reasonably unimpeded operation. The ability to maneuver within the traffic stream is only slightly restricted, and control delay at the boundary is not significant. The travel speed is between 67% and 80% of the base free-flow speed, and the volume-to-capacity ratio is no greater than 1.0.
C	Describes stable operation. The ability to maneuver and change lanes at mid-segment locations may be more restricted than at LOS B. Longer queues at the boundary intersection may contribute to lower travel speeds. The travel speed is between 50% and 67% of the base free-flow speed, and the volume-to-capacity ratio is no greater than 1.0.
D	Indicates a less stable condition in which small increases in flow may cause substantial increases in delay and decreases in travel speed. This operation may be due to adverse signal progression, high volume, or inappropriate signal timing at the boundary intersections. The travel speed is between 40% and 50% of the base free-flow speed, and the volume-to-capacity ratio is no greater than 1.0.
E	Characterized by unstable operation and significant delay. Such operations may be due to some combination of adverse progression, high volume, and inappropriate signal timing at the boundary intersections. The travel speed is between 30% and 40% of the base free-flow speed, and the volume-to-capacity ratio is no greater than 1.0.
F	Characterized by flow at extremely low speed. Congestion is likely occurring at the boundary intersections, as indicated by high delay and extensive queuing. The travel speed is between 30% or less of the base free-flow speed, and the volume-to-capacity ratio is greater than 1.0.

Source: *Highway Capacity Manual* (6th Edition)

Table 2-F: Level of Service Criteria for Roadway Segments

Level of Service	Volume-to-Capacity Ratio
A	0.00 – 0.60
B	0.61 – 0.70
C	0.71 – 0.80
D	0.81 – 0.90
E	0.91 – 1.00
F	> 1.00

Source: Los Angeles County Metropolitan Transportation Authority *Congestion Management Program* (2010)

Table 2-G: City of Lancaster Roadway Segment Capacities

Speed Limit (MPH)						
Number of Lanes	**55**	**50**	**45**	**40**	**35**	**25^**
2	22,200	19,100	18,300	16,900	13,500	9,150
2*	23,300	20,200	19,200	17,800	14,300	9,800
4	44,400	38,400	36,800	34,100	29,300	21,750
4*	46,700	40,500	38,800	35,900	31,000	23,150
6	66,500	57,800	55,400	51,300	46,200	36,050
6*	70,100	60,800	58,300	54,000	48,700	38,000

Source: City of Lancaster Department of Public Works *Traffic Study Guidelines* (2009)
MPH = Miles per hour
*Presence of median or two-way left-turn lane
^Based on discussion with City staff, extrapolation has been applied to provide a more accurate estimation for roadway segments with speed limit of 25mph

3.0 CIRCULATION NETWORK SETTING

3.1 EXISTING CIRCULATION NETWORK

This section provides a description of the circulation network within the study area. Figure 3-1 illustrates existing study intersection geometrics and traffic control. Figure 3-2 illustrates existing with project study intersection geometrics and traffic control.

Within the City of Lancaster, major roadways are classified based on the City's General Plan. However, some roadways in the TS study area do not have any designations in the City's General Plan. Hence, the classifications for these roadways were established based on discussions with City staff. Following is a brief description of major roadways within the study area:

- **20th Street East:** Within the study area, 20th Street East is currently a four-lane divided road. It is designated as a six-lane Major Arterial in the City's General Plan. The posted speed limit is 50 miles per hour (mph). Parking is not permitted on either side of this roadway within the project study area.
- **17th Street East:** Within the study area, 17th Street East is currently a two-lane undivided road. It is not classified in the City's General Plan. However, based on discussions with City staff, it has been designated as a Collector for purposes of this traffic study. The posted speed limit is 25 mph. On-street parking is permitted on both sides of this roadway within the project study area.
- **East Avenue J2:** Within the study area, Avenue J2 is currently a two-lane undivided road. It is not classified in the City's General Plan. However, based on discussions with City staff, it has been designated as a Collector for purposes of this traffic study. The posted speed limit is 25 mph. On-street parking is permitted on both sides of this roadway within the project study area.
- **East Avenue J4:** Within the study area, Avenue J4 is currently a two-lane undivided road. It is not classified in the City's General Plan. However, based on discussions with City staff, it has been designated as a Collector for purposes of this traffic study. The posted speed limit is 25 mph. On-street parking is permitted on both sides of this roadway within the project study area.

Table 3-A lists the classifications for the study area roadway segments.

3.2 BIKES, PEDESTRIANS, AND TRANSIT

3.2.1 Bicycle Circulation

The overall intent of the City's Master Plan of Trails and Bikeways (Master Plan) is to guide the planning and design of pedestrian, bicycle, and equestrian facilities in a comprehensive manner throughout Lancaster. According to the Master Plan, the City recognizes three classes of bicycle facilities: Class I – Bike Paths, Class II – Bike Lanes, and Class III – Bike Routes. Class I facilities are bike lanes located on a separate protected path, Class II facilities are marked bike lanes on the pavement adjacent to traffic, and Class III facilities consist of posted riding areas. As part of the City's Bikeway Network, Class II bike lanes have been added to northbound and southbound directions of 20th Street East within the study area. This network provides linkages between

residential areas, commercial centers, transportation hubs, employment centers, and recreational activities. Figure 3-3 illustrates the bikeway network within the City of Lancaster.

3.2.2 Pedestrians

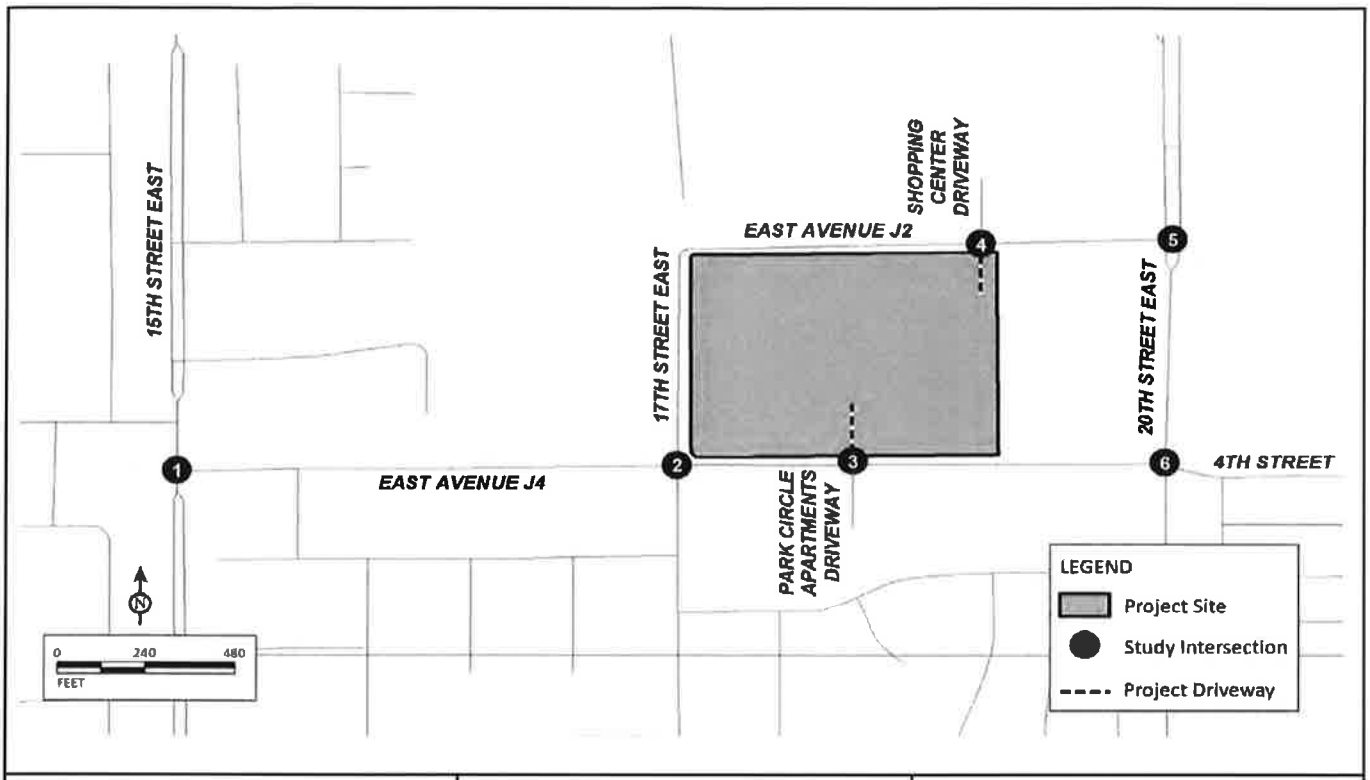
The City supports the integration of pedestrian-oriented improvements and amenities within the circulation system to improve walkability. The City's vision is to create a connected network of on-road and off-road trails and bikeway facilities to accommodate users of all ages and abilities. The Master Plan is a comprehensive plan that will guide the design and development of pedestrian, bicycle, and trail facilities that will encourage people to use healthy transportation modes in Lancaster. The long-term goal of this Master Plan is to guide the development of a pleasant, safe, and convenient non-motorized transportation network that everyone in the City can use. Figure 3-4 illustrates the pedestrian trails within the City.

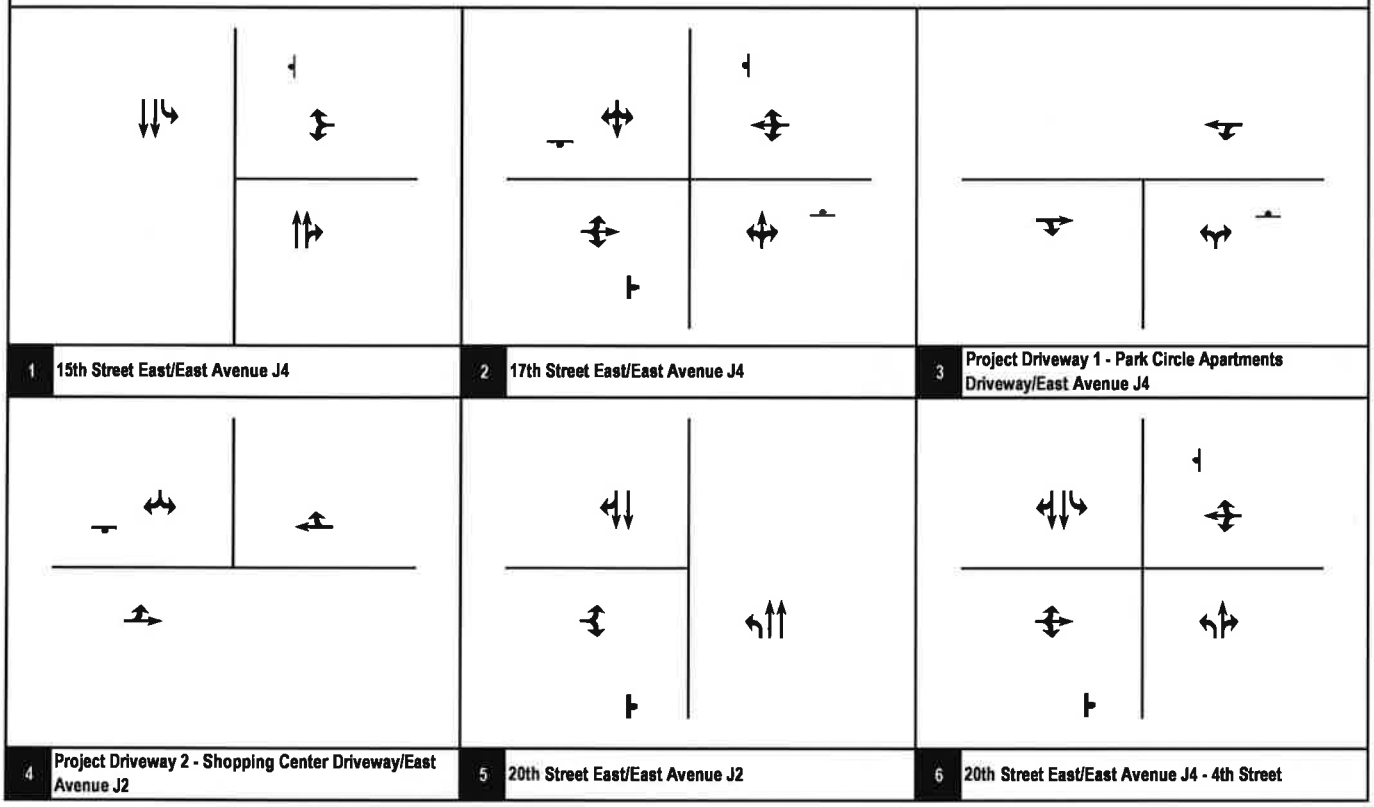
3.2.3 Transit

Antelope Valley Transit Authority (AVTA) provides local bus and paratransit services within the Cities of Lancaster and Palmdale, as well as the unincorporated portions of northern Los Angeles County. AVTA's total service area covers 1,200 square miles and is bounded by the Kern County line to the north, the San Bernardino County line to the east, the Angeles National Forest to the south, and Interstate 5 to the West. The fixed route service area consists of approximately 100 square miles. AVTA Local bus routes 4, 11, 12, 50, and 94 operate within the study area.

3.3 LIST OF CHAPTER 3.0 FIGURES AND TABLES

- Figure 3-1: Existing Study Intersection Geometrics and Traffic Control
- Figure 3-2: Existing with Project Study Intersection Geometrics and Traffic Control
- Figure 3-3: City of Lancaster Bikeway Network
- Figure 3-4: City of Lancaster Pedestrian Trails
- Table 3-A: City of Lancaster Roadway Segment Classification





1	15th Street East/East Avenue J4
2	17th Street East/East Avenue J4
3	Project Driveway 1 - Park Circle Apartments Driveway/East Avenue J4
4	Project Driveway 2 - Shopping Center Driveway/East Avenue J2
5	20th Street East/East Avenue J2
6	20th Street East/East Avenue J4 - 4th Street

LSA

FIGURE 3-1

Legend

Stop Sign

Project Driveway

Lancaster 3

Traffic Study

Existing Study Intersection Geometrics and Traffic Control

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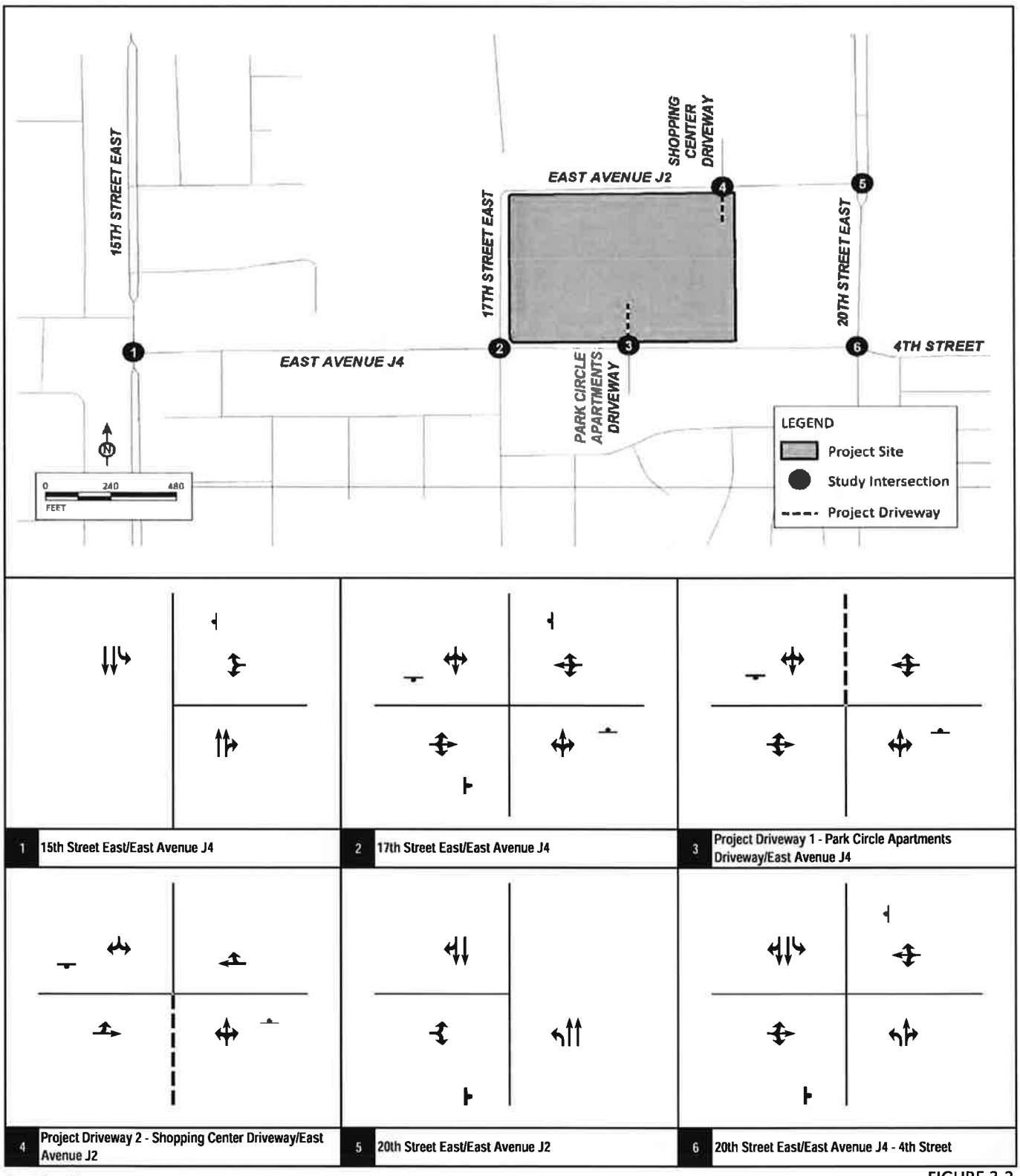

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FIGURE 3-2

Legend

Stop Sign

Project Driveway

Lancaster 3

Traffic Study

Existing with Project Study Intersection Geometrics and Traffic Control

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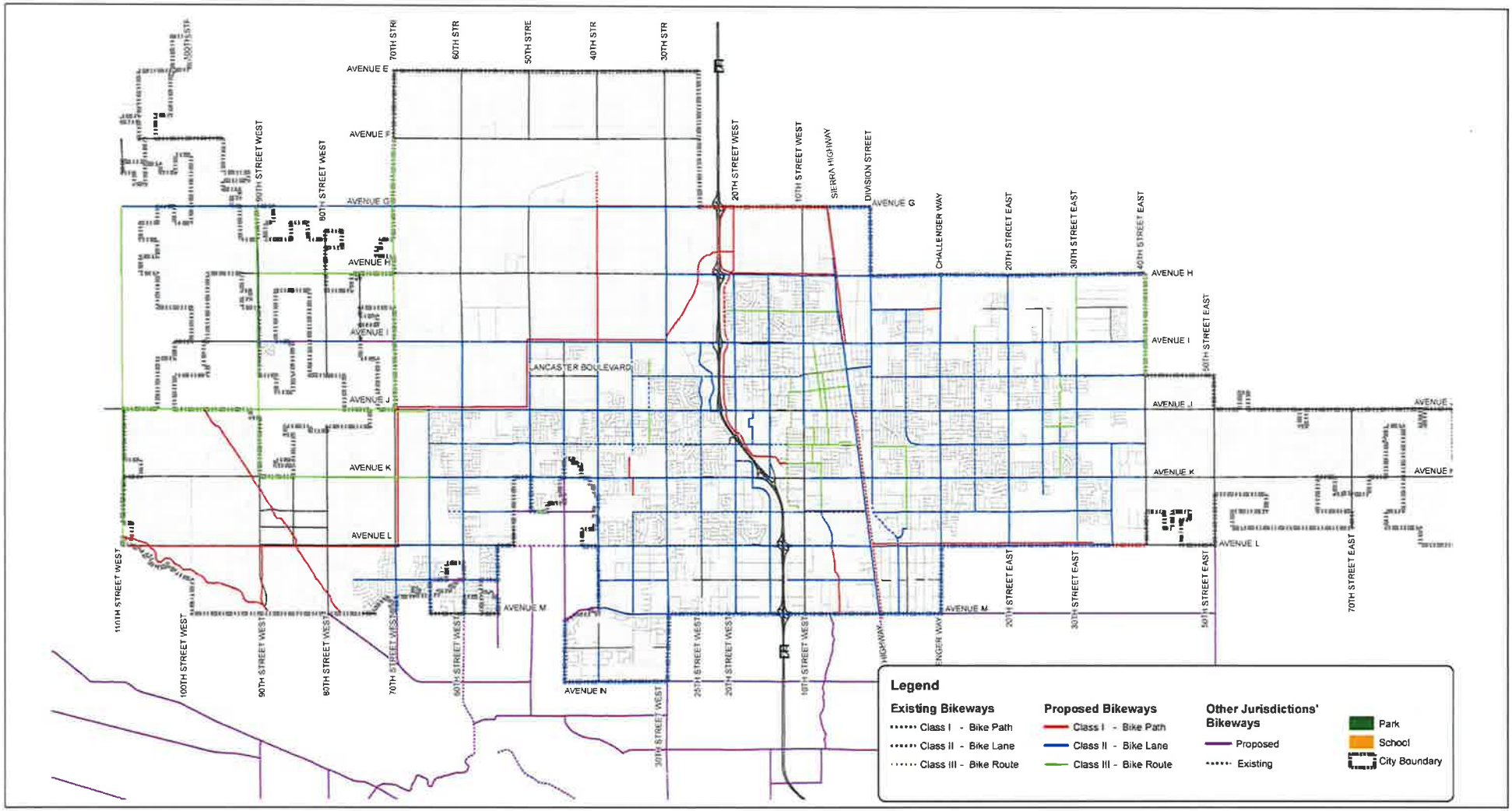

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FIGURE 3-3

Lancaster 3
Traffic Study
City of Lancaster Bikeway Network

Source: City of Lancaster

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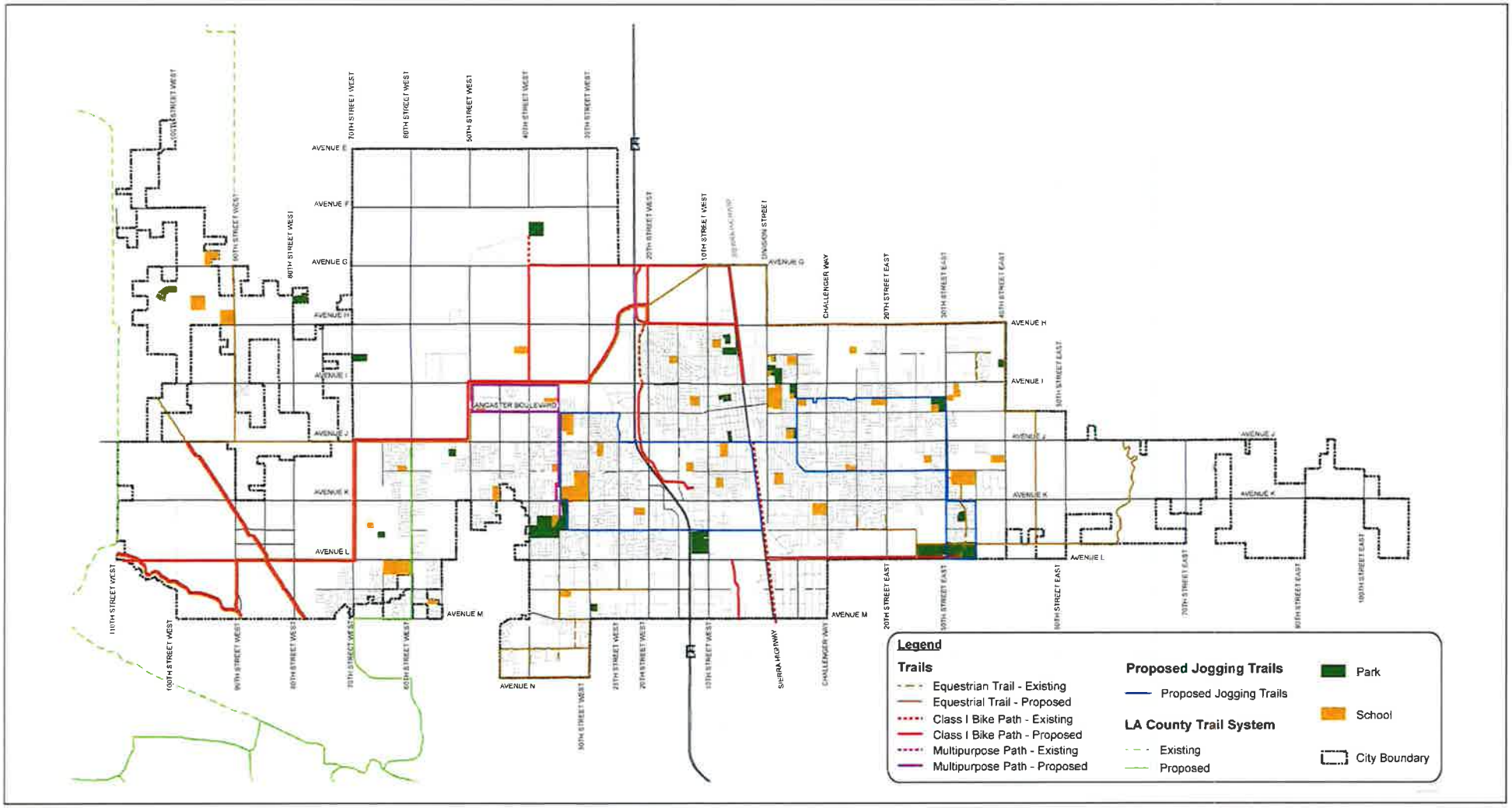

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FIGURE 3-4

Lancaster 3
Traffic Study
City of Lancaster Pedestrian Trails

Source: City of Lancaster

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Table 3-A - City of Lancaster Roadway Segment Classification

Roadway	#	Segment	Existing Condition Number of Lanes	Jurisdiction	Roadway Classification[1]
East Avenue J4	1	between 15th Street East and 17th Street East	2	Lancaster	Collector
	2	between 17th Street East and Project Driveway 1 - Park Circle Apartments Driveway	2	Lancaster	Collector
	3	between Project Driveway 1 - Park Circle Apartments Driveway and 20th Street East	2	Lancaster	Collector
17th Street East	4	between East Avenue J4 and East Avenue J8	2	Lancaster	Collector

Notes:

[1] Since all segments listed above are not classified in the *City of Lancaster General Plan*, classifications are based on discussion with City staff.

4.0 TRAFFIC VOLUMES FOR WITHOUT PROJECT SCENARIOS

4.1 EXISTING TRAFFIC VOLUMES

For all intersections, existing traffic volumes are based on counts collected by Counts Unlimited in January 2020. Detailed count sheets are included in Appendix B.

Vehicle classification counts were conducted at the intersection of East Avenue J4/15th Street East and 20th Street East/East Avenue J4 – 4th Street. At these intersections, counts were converted to Passenger Car Equivalent (PCE) volumes. The concept of PCEs accounts for the larger impact of trucks on traffic operations. It does so by assigning each type of truck a PCE factor that represents the number of passenger vehicles that could travel through an intersection in the same time that a particular type of truck could. PCE volumes at study intersections were computed using regionally accepted truck conversion factors.

The percentage of trucks at the remaining study intersections without classification counts was determined based on truck percentages derived from adjacent intersections with classification counts. At these locations, truck PCE volumes were computed using a PCE factor of 2.0 for all trucks, consistent with the HCM 6 methodologies.

Figure 4-1 illustrates existing peak hour traffic volumes at study intersections.

4.2 PROJECT BUILD-OUT (2025) TRAFFIC VOLUMES

As approved during the City's scoping agreement process (Appendix A), traffic volumes for project build-out conditions were developed by applying a growth of 2.0 percent per annum to the existing without project traffic volumes and adding trips from cumulative projects in the area. The City's TS guidelines require that the project build-out should be considered at a minimum of five years from existing conditions. Therefore, the project build-out year has been considered as year 2025 for this TS.

Information concerning cumulative projects in the vicinity of the proposed project was obtained from City staff. Figure 4-2 illustrates the cumulative project locations. The trip generation for some cumulative projects was developed using rates from the Institute of Transportation Engineers (ITE) *Trip Generation Manual* (10th Edition). For the remaining cumulative projects, the trip generation was obtained from the traffic studies and Environmental Impact Reports (EIR) prepared for the projects. Table 4-A lists the cumulative projects included in this analysis and shows the cumulative projects are expected to generate 330 a.m. peak hour trips, 920 p.m. peak hour trips, and 11,214 daily trips. Cumulative project trips were assigned to the roadway network based on their locations in relation to surrounding land uses and regional arterials. Figure 4-3 illustrates the peak hour cumulative project trip assignment at study area intersections. Figure 4-4 illustrates the peak hour traffic volumes at study intersections under project build-out conditions.

Detailed volume development worksheets are included in Appendix C.

4.3 LIST OF CHAPTER 4.0 FIGURES AND TABLES

- Figure 4-1: Existing Peak Hour Traffic Volumes
- Figure 4-2: Cumulative Project Locations
- Figure 4-3: Cumulative Projects Trip Assignment
- Figure 4-4: Project Build-out (2025) Peak Hour Traffic Volumes
- Table 4-A: Cumulative Projects Trip Generation

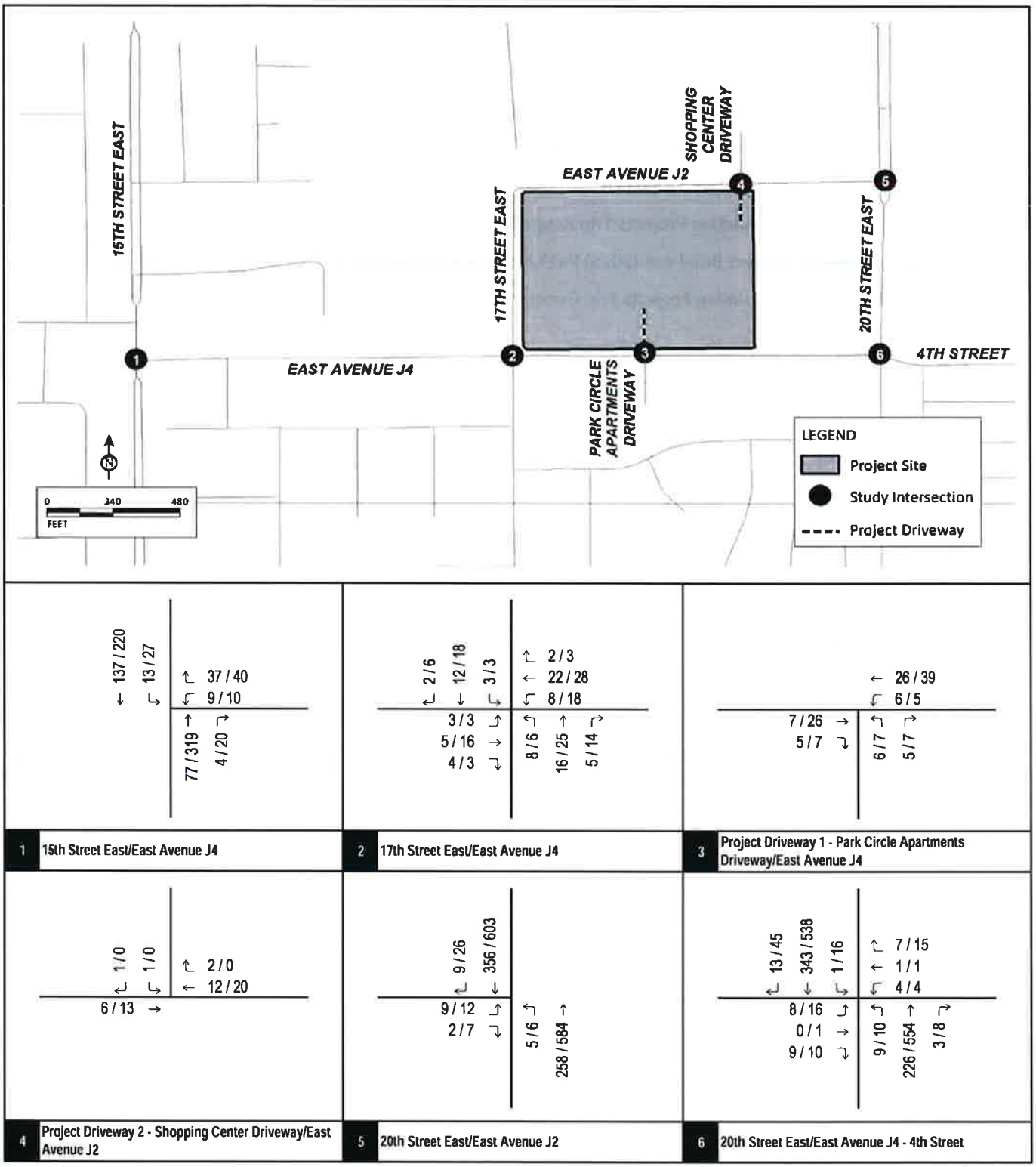

FIGURE 4-1

LSA

XXX / YYY

AM / PM Peak Hour PCE Volumes

Lancaster 3
Traffic Study

Existing Peak Hour Traffic Volumes

LSA

LEGEND

Project Location

Cumulative Project

0 500 1000

FEET

FIGURE 4-2

Lancaster 3
Traffic Study

Cumulative Project Locations

SOURCE: ESRI Streetmap, 2013, Bing Aerial, 2015.

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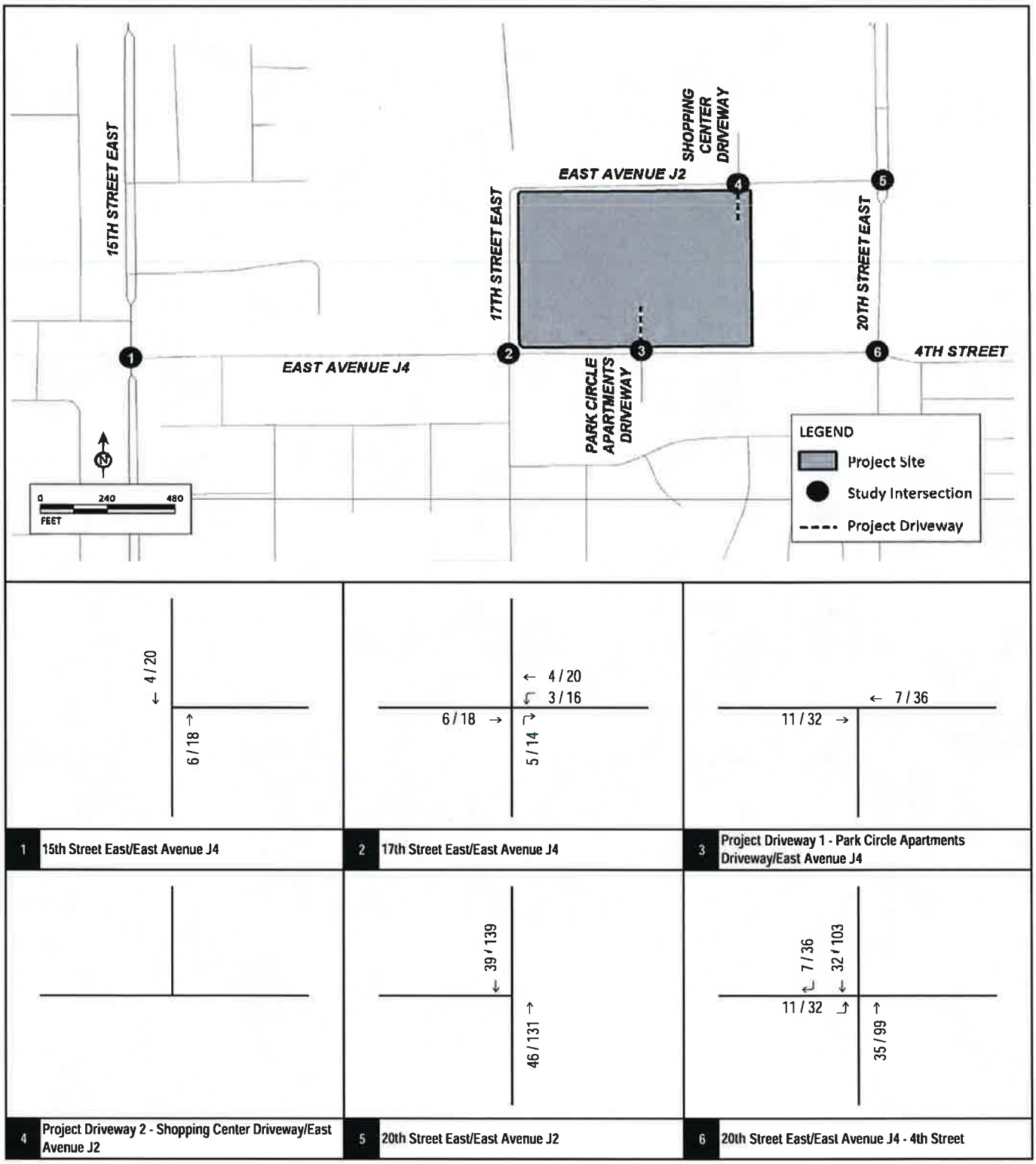

FIGURE 4-3

LSA

XXX / YYY
AM / PM Peak Hour Trips

Lancaster 3
Traffic Study

Cumulative Project Trip Assignment

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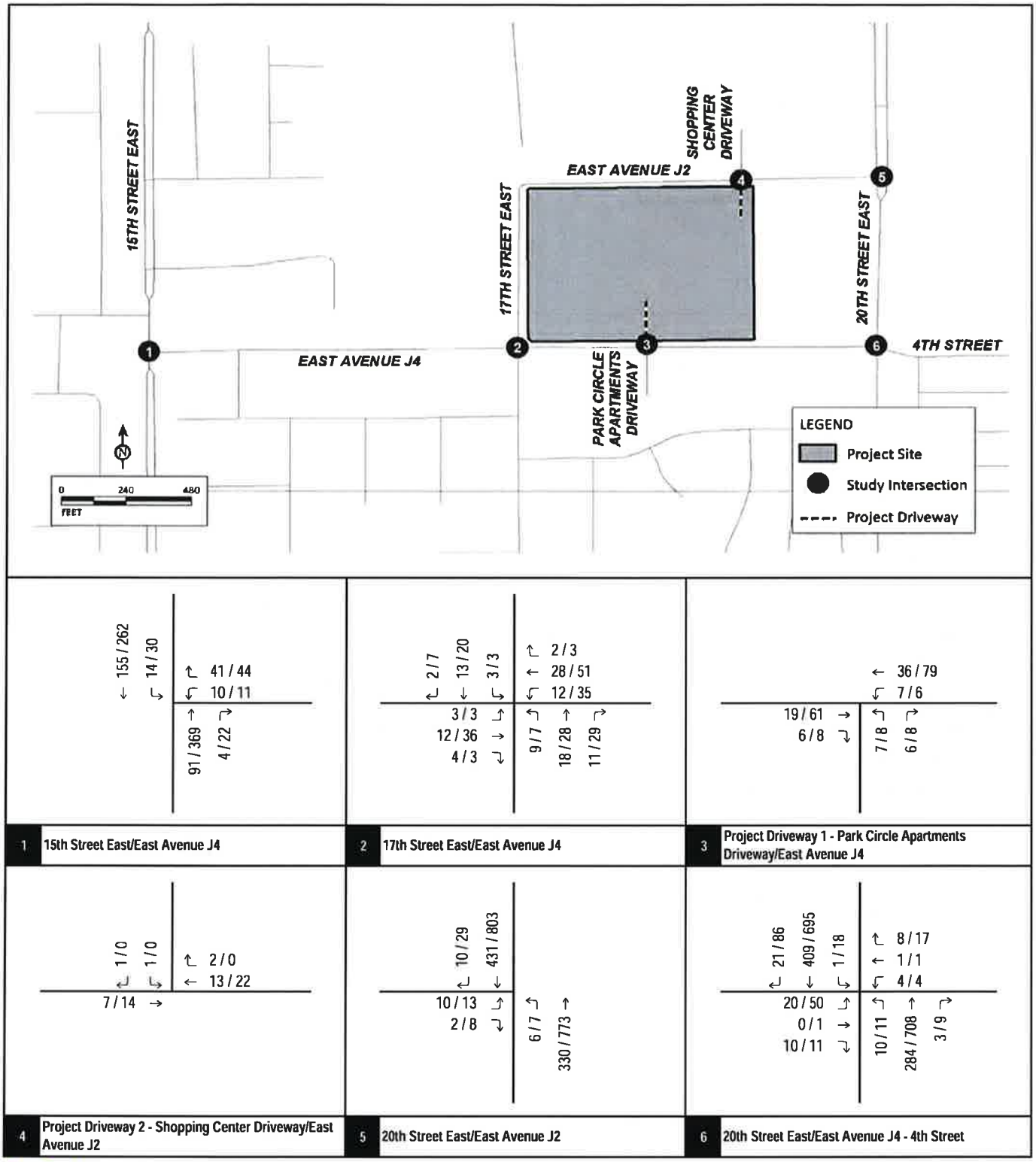

FIGURE 4-4

LSA

XXX / YYY

AM / PM Peak Hour PCE Volumes

Lancaster 3

Traffic Study

Project Build-out (2025) Peak Hour Traffic Volumes

LSA

Table 4-A - Cumulative Projects Trip Generation

	Units	A.M. Peak Hour			P.M. Peak Hour			Daily
		In	Out	Total	In	Out	Total	
1. DR 19-42	96.24 TSF							
Northwest Corner of East Avenue J and 20th Street East								
Trips/Unit[1]		0.42	0.29	0.71	1.11	1.48	2.59	40.67
Trip Generation		40	28	68	107	142	249	3,914
Pass-by Trips[1]		(11)	(8)	(19)	(30)	(40)	(70)	(1,096)
Net Trip Generation		29	20	49	77	102	179	2,818
2. Tract Map 54025	98 DU							
Southeast corner of East Lancaster Boulevard and 20th Street East								
Trips/Unit[2]		0.19	0.55	0.74	0.62	0.37	0.99	9.44
Trip Generation		19	54	73	61	36	97	925
3. CUP 07-04	156.78 TSF							
Southeast corner of East Avenue J and 20th Street East								
Trips/Unit[3]		0.63	0.40	1.03	1.80	1.95	3.75	42.94
Trip Generation		99	63	162	282	306	588	6,732
Pass-by Trips[4]		0	0	0	0	0	0	0
Net Trip Generation		99	63	162	282	306	588	6,732
4. SPR 18-01	101 DU							
Northeast corner of East Avenue I and 20th Street East								
Trips/Unit[5]		0.11	0.35	0.46	0.35	0.21	0.56	7.32
Trip Generation		11	35	46	35	21	56	739
Net Trip Generation		158	172	330	455	465	920	11,214

Notes:

TSF= Thousand Square Feet; DU=Dwelling Units

[1] Trip Generation and Pass-by rates based on the Lancaster Retail Center Environmental Impact Report prepared by LSA, dated Jan 31, 2001.

[2] Rates based on the Institute of Transportation Engineers (ITE) *Trip Generation Manual* (10th edition) for Land Use 210 – "Single Family Detached Housing", Setting/Location - "General Urban/Suburban."

[3] Trip Generation rates based on CUP 07-04 Environmental Impact Report Table 5 "Project Trip Generation". The area used for the trip generation calculation is obtained by subtracting the area of existing facilties from the total area in the updated site plan.

[4] A Pass-by rate of 0% is applied to AM, PM, and daily trip generation to be consistent with the CUP 07-04 project trip generation table.

[5] Rates based on the ITE *Trip Generation Manual* (10th edition) for Land Use 220 – "Multifamily Housing (Low-Rise)", Setting/Location - "General Urban/Suburban."

5.0 PROJECT TRAFFIC

5.1 PROJECT TRIP GENERATION

The project will include eleven, three-story buildings that will have a total of 264 dwelling units. The ITE *Trip Generation Manual* (10th Edition) states that for multifamily housing that have between three and ten levels (floors), the trip generation rates for Land Use 221 "Multifamily Housing (Mid-Rise)" should be used. Therefore, these rates were utilized to develop the project trip generation. As shown in Table 5-A, the project is anticipated to generate 95 trips in the a.m. peak hour, 116 trips in the p.m. peak hour, and 1,436 daily trips.

5.2 PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

The distribution of project trips was developed based on the regional roadway network and the locations of residential, employment, and commercial centers in relation to the proposed project. The project trip distribution was confirmed with City staff during the scoping agreement process. Figures 5-1 illustrates the trip distribution for the proposed project at the study intersections. The project trip assignment is the product of the project trip generation and trip distribution percentages. Figures 5-2 illustrates the project trip assignment at study intersections.

5.3 LIST OF CHAPTER 5.0 FIGURES AND TABLES

- Figure 5-1: Project Trip Distribution
- Figure 5-2: Project Trip Assignment
- Table 5-A: Project Trip Generation

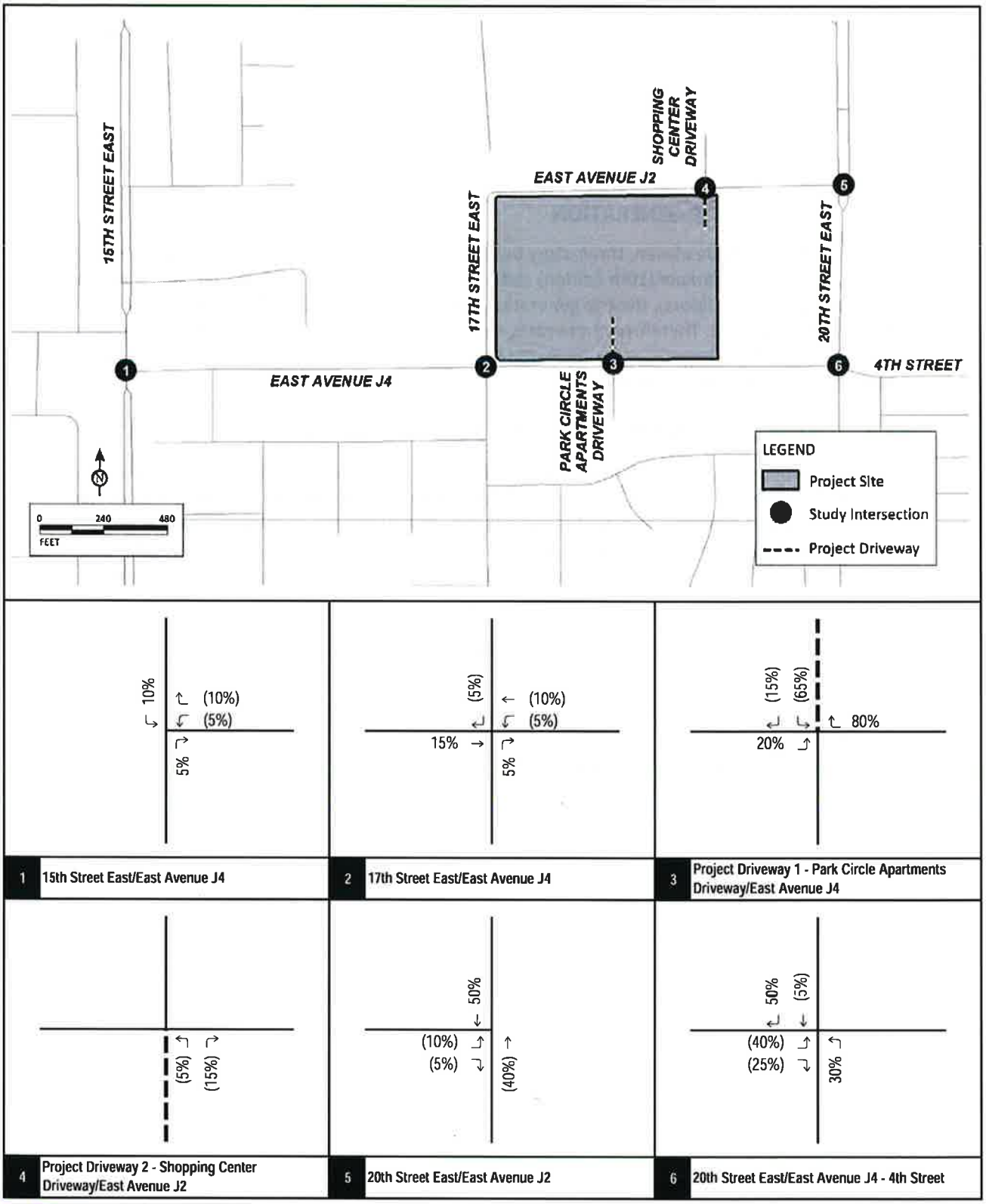

FIGURE 5-1

LSA

XX% (YY%)
Inbound% (Outbound%) Distribution

Project Driveway

Lancaster 3
Traffic Study

Project Trip Distribution

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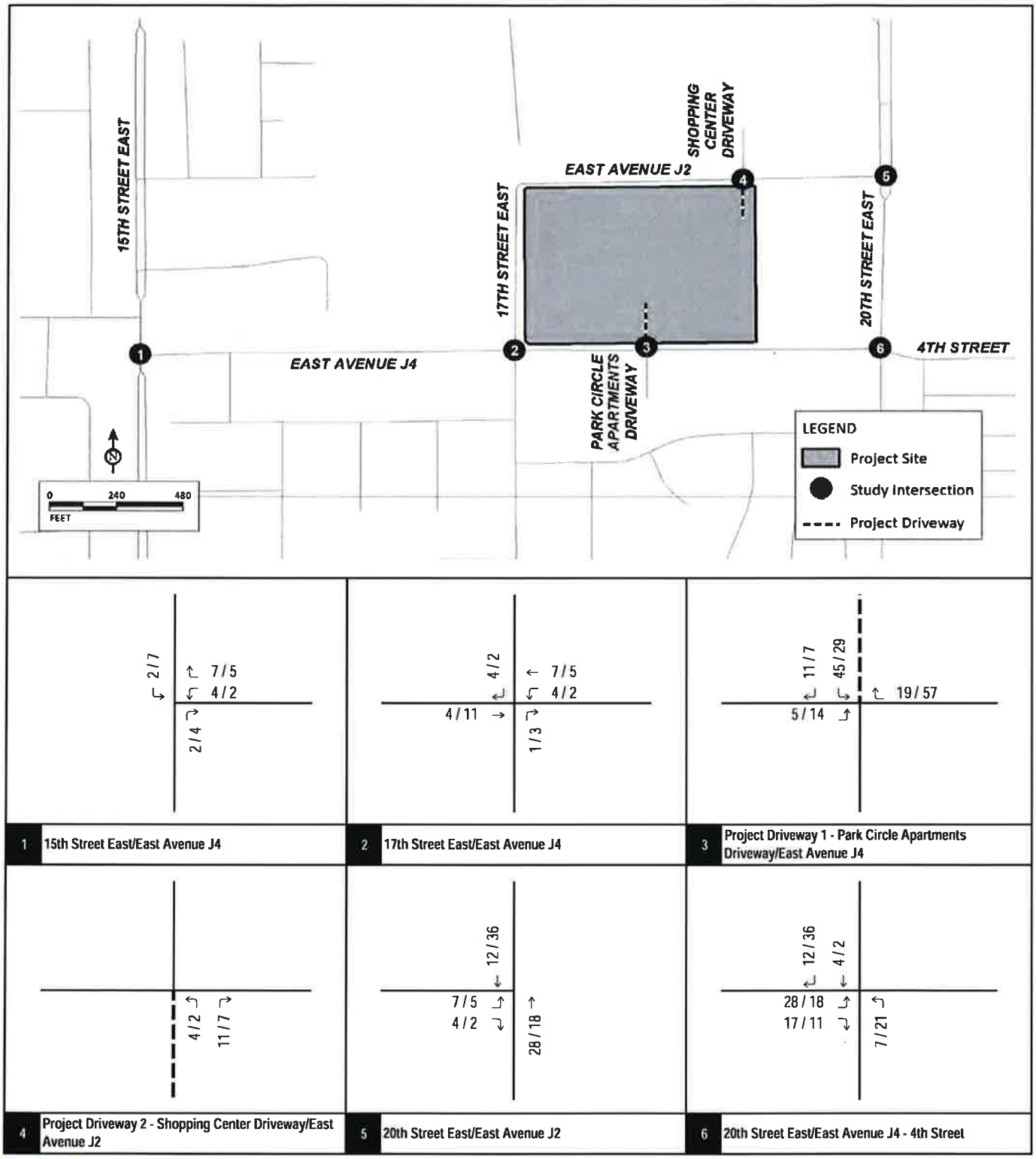

FIGURE 5-2

LSA

XX / YY
AM / PM Peak Hour Trips

---· Project Driveway

Lancaster 3
Traffic Study

Project Trip Assignment

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LSA

Table 5-A - Project Trip Generation

Land Use	Units	A.M. Peak Hour			P.M. Peak Hour			Daily
		In	Out	Total	In	Out	Total	
Multi-Family Residential	264 DU							
Trips/Unit[1]		0.09	0.27	0.36	0.27	0.17	0.44	5.44
Trip Generation		24	71	95	71	45	116	1,436

Notes:

DU = Dwelling Unit

[1] Rates based on Land Use 221 - "Multifamily Housing (Mid-Rise)" from the Institute of Transportation Engineers (ITE) *Trip Generation Manual,* 10th Edition; Setting/Location - "General Urban/Suburban."

6.0 TRAFFIC VOLUMES FOR WITH PROJECT SCENARIOS

Existing, and project build-out with project traffic volumes were developed by adding project traffic to the corresponding without project scenarios. Figures 6-1 and 6-2 illustrate "with project" peak hour traffic volumes at study intersections under existing and project build-out conditions, respectively.

Detailed volume development worksheets are included in Appendix C.

6.1 LIST OF CHAPTER 6.0 FIGURES

- Figure 6-1: Existing with Project Peak Hour Traffic Volumes
- Figure 6-2: Project Build-out (2025) with Project Peak Hour Traffic Volumes

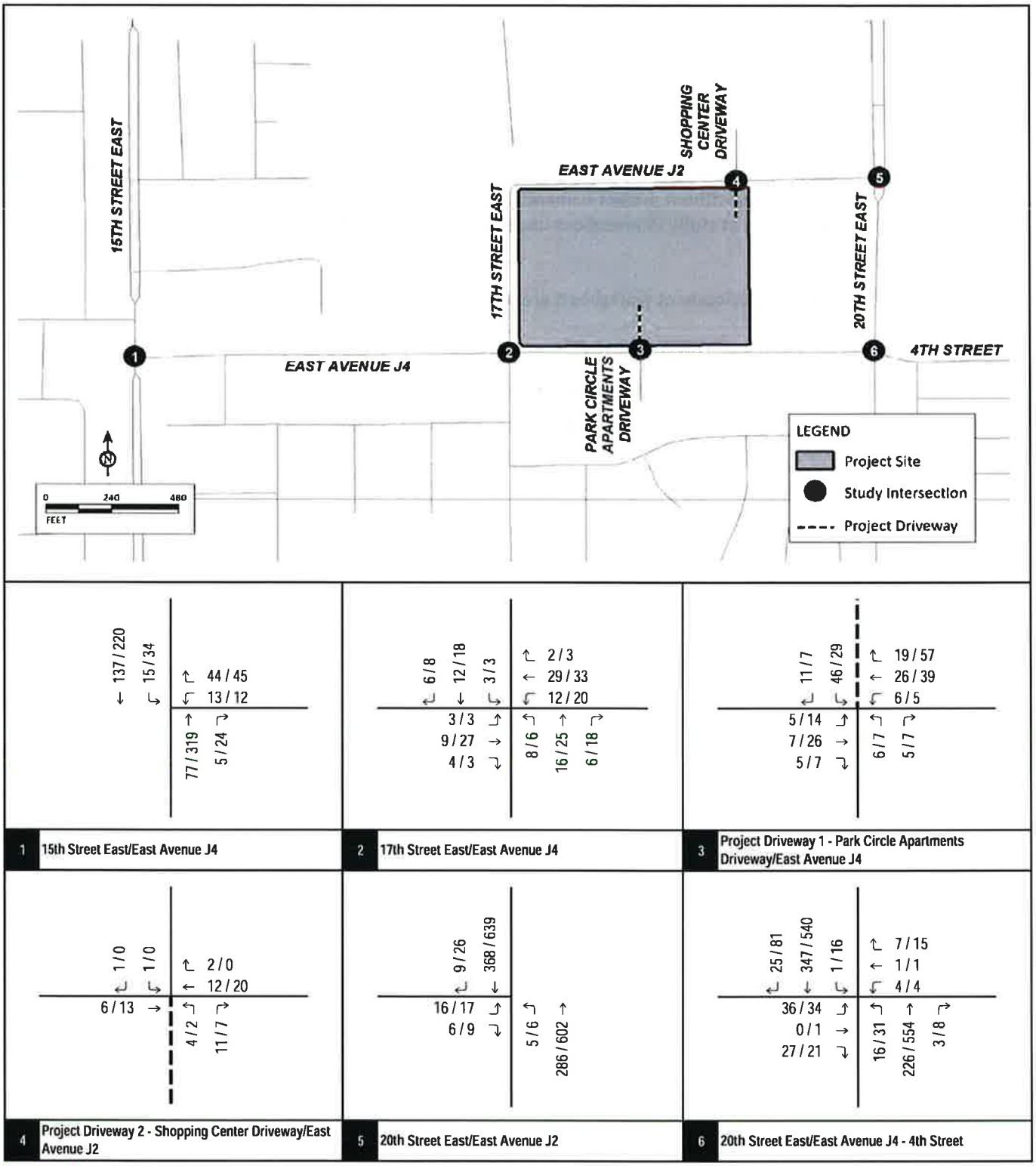

FIGURE 6-1

LSA

XXX / YYY

AM / PM Peak Hour PCE Volumes ---- Project Driveway

Lancaster 3
Traffic Study

Existing with Project Peak Hour Traffic Volumes

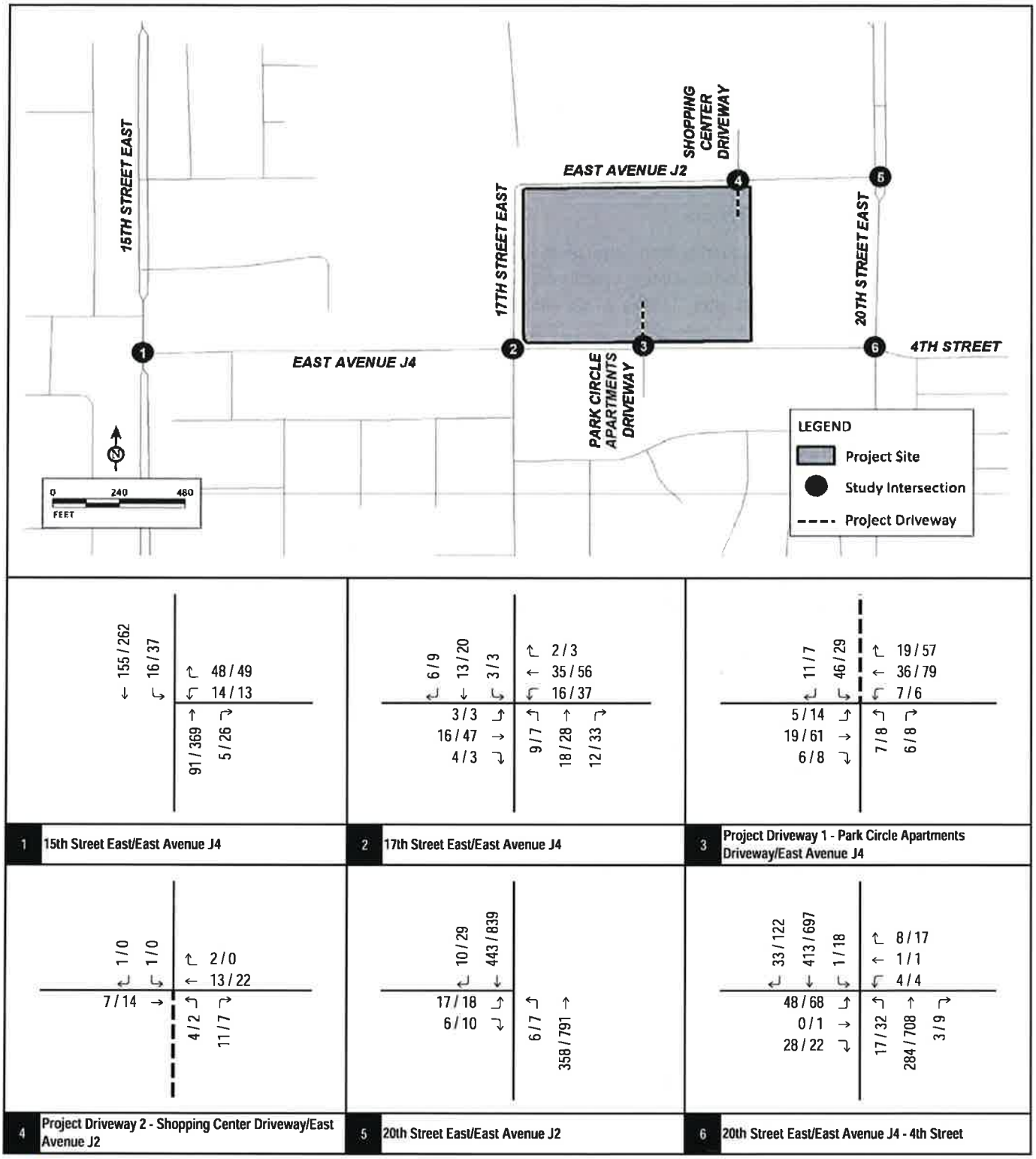

FIGURE 6-2

LSA

XXX / YYY
AM / PM Peak Hour PCE Volumes ---- Project Driveway

Lancaster 3
Traffic Study

Project Build-out (2025) with Project Peak Hour Traffic Volumes

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7.0 INTERSECTION LEVELS OF SERVICE

7.1 EXISTING LEVELS OF SERVICE

7.1.1 Study Intersections

Figure 3-1 illustrates existing study intersection geometrics and traffic control. An intersection LOS analysis was conducted for existing conditions using the methodologies previously discussed. Table 7-A summarizes the results of this analysis and shows that all study intersections operate at a satisfactory LOS.

7.1.2 Roadway Segments

A roadway segment LOS analysis was conducted for existing conditions using the methodologies previously discussed. Table 7-B summarizes the results of this analysis and shows that all roadway segments are forecast to operate at a satisfactory LOS under existing conditions.

7.2 EXISTING WITH PROJECT LEVELS OF SERVICE

Analysis of the existing with project scenario is provided for CEQA compliance to identify direct project impacts if the project were to be built and in operation today. This scenario eliminates the effects of ambient growth and other cumulative projects and deals specifically with project impacts.

7.2.1 Study Intersections

An intersection LOS analysis was conducted for existing with project conditions using the methodologies previously discussed. Table 7-A summarizes the results of this analysis and shows that the following intersection is forecast to operate at an unsatisfactory LOS under existing with project conditions:

- 20th Street East/East Avenue J4 – 4th Street (p.m. peak hour only).

This intersection operates at a satisfactory LOS under existing conditions. As such, the project has a significant direct impact at this intersection.

All other study intersections are forecast to operate at a satisfactory LOS under existing with project conditions.

7.2.2 Roadway Segments

A roadway segment LOS analysis was conducted for existing with project conditions using the methodologies previously discussed. Table 7-B summarizes the results of this analysis and shows that all roadway segments are forecast to operate at a satisfactory LOS under existing with project conditions.

7.3 PROJECT BUILD-OUT (2025) LEVELS OF SERVICE

7.3.1 Study Intersections

An intersection LOS analysis was conducted for project build-out conditions using the methodologies previously discussed. Table 7-C summarizes the results of this analysis and shows that the following intersections are forecast to operate at an unsatisfactory LOS under project build-out conditions:

- 20th Street East/East Avenue J4 – 4th Street (p.m. peak hour only).

All other study intersections are forecast to operate at a satisfactory LOS.

7.3.2 Roadway Segments

A roadway segment LOS analysis was conducted for project build-out conditions using the methodologies previously discussed. Table 7-D summarizes the results of this analysis and shows that all roadway segments are forecast to operate at a satisfactory LOS under project build-out conditions.

7.4 PROJECT BUILD-OUT (2025) WITH PROJECT LEVELS OF SERVICE

7.4.1 Study Intersections

An intersection LOS analysis was conducted for project build-out with project conditions using the methodologies previously discussed. Table 7-C summarizes the results of this analysis and shows that the following intersections are forecast to operate at an unsatisfactory LOS under project build-out with project conditions:

- 20th Street East/East Avenue J4 – 4th Street (p.m. peak hour).

This intersection is forecast to operate at an unsatisfactory LOS even under project build-out without project conditions. Hence, the project contributes to the forecast deficiency at this intersection. As such, the project has a cumulative impact at this intersection.

All other study intersections are forecast to operate at a satisfactory LOS.

7.4.2 Roadway Segments

A roadway segment LOS analysis was conducted for project build-out with project conditions using the methodologies previously discussed. Table 7-D summarizes the results of this analysis and shows that all roadway segments are forecast to operate at a satisfactory LOS under project build-out with project conditions.

Detailed Level of Service Worksheets are included in Appendix D.

7.5 LIST OF CHAPTER 7.0 TABLES

- Table 7-A: Existing Intersection Levels of Service
- Table 7-B: Existing Roadway Segment Levels of Service

- Table 7-C: Project Build-out (2025) Intersection Levels of Service
- Table 7-D: Project Build-out (2025) Roadway Segment Levels of Service

Table 7-8 - Existing Roadway Segment Levels of Service

Roadway Segment	Classification[1]	Without Project				With Project				Significant Impact
		Roadway Capacity[2]	Daily Volume	V/C Ratio	LOS[3]	Roadway Capacity[2]	Daily Volume	V/C Ratio	LOS[3]	
Segments on East Avenue J4										
1 . between 15th Street East and 17th Street East	Collector	9,150	800	0.09	A	9,150	1,000	0.11	A	No
2 . between 17th Street East and Project Driveway 1 - Park Circle Apartments Driveway	Collector	9,150	900	0.10	A	9,150	1,200	0.13	A	No
3 . between Project Driveway 1 - Park Circle Apartments Driveway and 20th Street East	Collector	9,150	900	0.10	A	9,150	1,900	0.21	A	No
Segments on 17th Street East										
4 . between East Avenue J4 and East Avenue J8	Collector	9,150	1,100	0.12	A	9,150	1,200	0.13	A	No

Notes:

LOS = Level of Service; V/C Ratio = Daily Volume/Roadway Capacity Ratio

[1] Classifications for the segments have been obtained based on discussion with City Traffic Engineer.

[2] Roadway Capacity have been obtained from the City of Lancaster Department of Public Works *Traffic Study Guidelines* , adopted January 5, 2009. Since the Traffic Study Guidelines only list roadway capacity with speed limit of 35 mph and above, the roadway segment analysis uses extrapolation to calculate roadway capacity for segments with speed limit under 35 mph.

[3] Roadway Segment LOS criteria used to evaluate roadway segments is based on the volume-to-capacity (v/c) ratio as per the City's *General Plan 2030 Program Environmental Impact Report* Technical Appendices (dated December 2008).

LSA

Table 7-A - Existing Intersection Levels of Service

Intersection	Jurisdiction	Control	LOS Standard	Without Project				With Project				A.M. Peak Hour	P.M. Peak Hour	Significant Impact
				A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour		Increase in Delay (%)	Increase in Delay (%)	
				Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS			
1. 15th Street East/East Avenue J4	City of Lancaster	OWSC	D	9.1	A	10.5	B	9.2	A	10.7	B	1.1%	1.9%	No
2. 17th Street East/East Avenue J4	City of Lancaster	AWSC	D	7.2	A	7.2	A	7.2	A	7.3	A	0.0%	1.4%	No
3. Project Driveway 1 - Park Circle Apartments Driveway/East Avenue J4	City of Lancaster	OWSC/TWSC[1]	D	8.8	A	8.8	A	8.9	A	9.5	A	1.1%	8.0%	No
4. Project Driveway 2 - Shopping Center Driveway/East Avenue J2	City of Lancaster	OWSC/TWSC[1]	D	8.6	A	0.0	A	8.6	A	8.5	A	0.0%	0.0%	No
5. 20th Street East/East Avenue J2	City of Lancaster	OWSC	D	13.4	B	17.9	C	13.6	B	19.6	C	1.5%	9.5%	No
6. 20th Street East/East Avenue J4 - 4th Street	City of Lancaster	TWSC	D	12.4	B	27.5	D	14.4	B	37.9	E *	16.1%	37.8%	Yes

Notes:

* Exceeds LOS Standard

OWSC = One-Way Stop Control; TWSC = Two-Way Stop Control; AWSC = All-Way Stop Control; LOS = Level of Service

Delay = Average control delay in seconds (For OWSC and TWSC intersections, reported delay is for worst-case movement).

[1] This intersection operates as a OWSC intersection under without project conditions, and operates as a TWSC intersection under with project conditions.

Table 7-D - Project Build-out (2025) Roadway Segment Levels of Service

Roadway Segment	Classification[1]	Without Project				With Project				Significant Impact
		Roadway Capacity[2]	Daily Volume	V/C Ratio	LOS[3]	Roadway Capacity[2]	Daily Volume	V/C Ratio	LOS[3]	
Segments on East Avenue J4										
1. between 15th Street East and 17th Street East	Collector	9,150	1,400	0.15	A	9,150	1,600	0.17	A	No
2. between 17th Street East and Project Driveway 1 - Park Circle Apartments Driveway	Collector	9,150	1,800	0.20	A	9,150	2,100	0.23	A	No
3. between Project Driveway 1 - Park Circle Apartments Driveway and 20th Street East	Collector	9,150	1,800	0.20	A	9,150	2,800	0.31	A	No
Segments on 17th Street East										
4. between East Avenue J4 and East Avenue J8	Collector	9,150	1,500	0.16	A	9,150	1,600	0.17	A	No

Notes:

LOS = Level of Service

1 Classifications for the segments have been obtained based on discussion with City Traffic Engineer.

2 Roadway Capacity have been obtained from the City of Lancaster Department of Public Work *Traffic Study Guidelines*, adopted January 5, 2009. Since the Traffic Study Guidelines only list roadway capacity with speed limit of 35 mph and above the roadway segment analysis uses extrapolation to calculate roadway capacity for segments with speed limit under 35 mph.

3 Roadway Segment LOS criteria used to evaluate roadway segments is based on the volume-to-capacity (v/c) ratio as per the City's *General Plan 2030 Program Environmental Impact Report* Technical Appendices (dated December 2008).

LSA

Table 7-C - Project Build-out (2025) Intersection Levels of Service

Intersection	Jurisdiction	Control	LOS Standard	Without Project				With Project				A.M. Peak Hour	P.M. Peak Hour	Significant Impact
				A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour		Increase	Increase	
				Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	in Delay (%)	in Delay (%)	
1. 15th Street East/East Avenue J4	City of Lancaster	OWSC	D	9.2	A	11.0	B	9.3	A	11.2	B	1.1%	1.8%	No
2. 17th Street East/East Avenue J4	City of Lancaster	AWSC	D	7.3	A	7.5	A	7.3	A	7.6	A	0.0%	1.3%	No
3. Project Driveway 1 - Park Circle Apartments Driveway/East Avenue J4	City of Lancaster	OWSC/TWSC[1]	D	8.9	A	9.2	A	9.5	A	10.1	B	6.7%	9.8%	No
4. Project Driveway 2 - Shopping Center Driveway/East Avenue J2	City of Lancaster	OWSC/TWSC[1]	D	8.6	A	0.0	A	8.6	A	8.5	A	0.0%	0.0%	No
5. 20th Street East/East Avenue J2	City of Lancaster	OWSC	D	15.3	C	25.6	D	15.5	C	28.7	D	1.3%	12.1%	No
6. 20th Street East/East Avenue J4 - 4th Street	City of Lancaster	TWSC	D	16.1	C	>100	F *	18.2	C	>100	F *	13.0%	107.4%	Yes

Notes:

* Exceeds LOS Standard

OWSC = One-Way Stop Control; TWSC = Two-Way Stop Control; AWSC = All-Way Stop Control; LOS = Level of Service

Delay = Average control delay in seconds (For OWSC and TWSC intersections, reported delay is for worst-case movement).

[1] This intersection operates as a OWSC intersection under without project conditions, and operates as a TWSC intersection under with project conditions.

8.0 CIRCULATION IMPROVEMENTS, SIGNAL WARRANT ANALYSIS, AND FUNDING SOURCES

8.1 RECOMMENDED IMPROVEMENTS

At intersections or roadway segments where the level of service is forecast to be unsatisfactory or where the project would have a significant impact, the City requires that improvements be identified to reduce traffic impacts to a level of insignificance. Based on the results, the recommended improvements are as follows.

8.1.1 Existing with Project Conditions

- **20th Street East/East Avenue J4 – 4th Street:** Add a northbound through lane. The north leg already has two receiving lanes. Restripe and convert the dedicated left-turn lanes along 20th Street East to a two-way left turn lane.

8.1.2 Project Build-out (2025) with Project Conditions

- **20th Street East/East Avenue J4 – 4th Street:** Install a traffic signal. Additionally, modify improvements implemented under existing with project conditions to convert the two-way left turn lane to dedicated left-turn lanes along 20th Street East.

Figures 8-1 and 8-2 illustrate existing and project build-out with project with improvements study intersection geometrics and traffic control, respectively. Table 8-A summarizes recommended intersection improvements and project fair share. Table 8-B summarizes project contribution to the total new intersection traffic volumes. Tables 8-C and 8-D summarize the LOS at study area intersections with the recommended improvements under existing and project build-out with project conditions. It should be noted that per the City's TS Guidelines, this intersection was evaluated using HCM methodologies, since it currently operates as a two-way stop control (TWSC) intersection. However, since a signal is being recommended as a proposed improvement, the intersection was evaluated using ICU methodologies, consistent with the City's TS guidelines.

8.2 SIGNAL WARRANT ANALYSIS

A peak hour signal warrant analysis was conducted for the intersection of 20th Street East/East Avenue J4 – 4th Street under project build-out conditions. The peak hour warrant analysis utilizes the peak hour signal warrant from the most recent edition of the California Manual on Uniform Traffic Control Devices (CAMUTCD). The speed limit on the major street (20th Street East) is 50 miles per hour (mph). Therefore, this analysis is based on the provisions of the CAMUTCD, 2014, Chapter 4C – Traffic Control Signals Needs Study for Warrant 3 – Peak Hour. Figures 8-3 illustrates the peak hour signal warrant analysis under project build-out condition. As shown in Figure 8-3, a traffic signal will be warranted at the intersection of 20th Street East/East Avenue J4 – 4th Street under project build-out conditions.

8.3 FUNDING SOURCES AND MECHANISMS

Where there is a funding mechanism (fee program) for the recommended improvements, payment into the fee program would be considered sufficient project obligation to alleviate project impacts. At study locations where the addition of project traffic creates a significant direct impact and there is no funding mechanism in place, the project will be responsible for the implementation of the improvement. At locations where the project adds to or creates a forecast deficiency and there is no funding mechanism in place (project build-out conditions), the project is responsible for its fair-share payment.

8.3.1 Project Responsibility

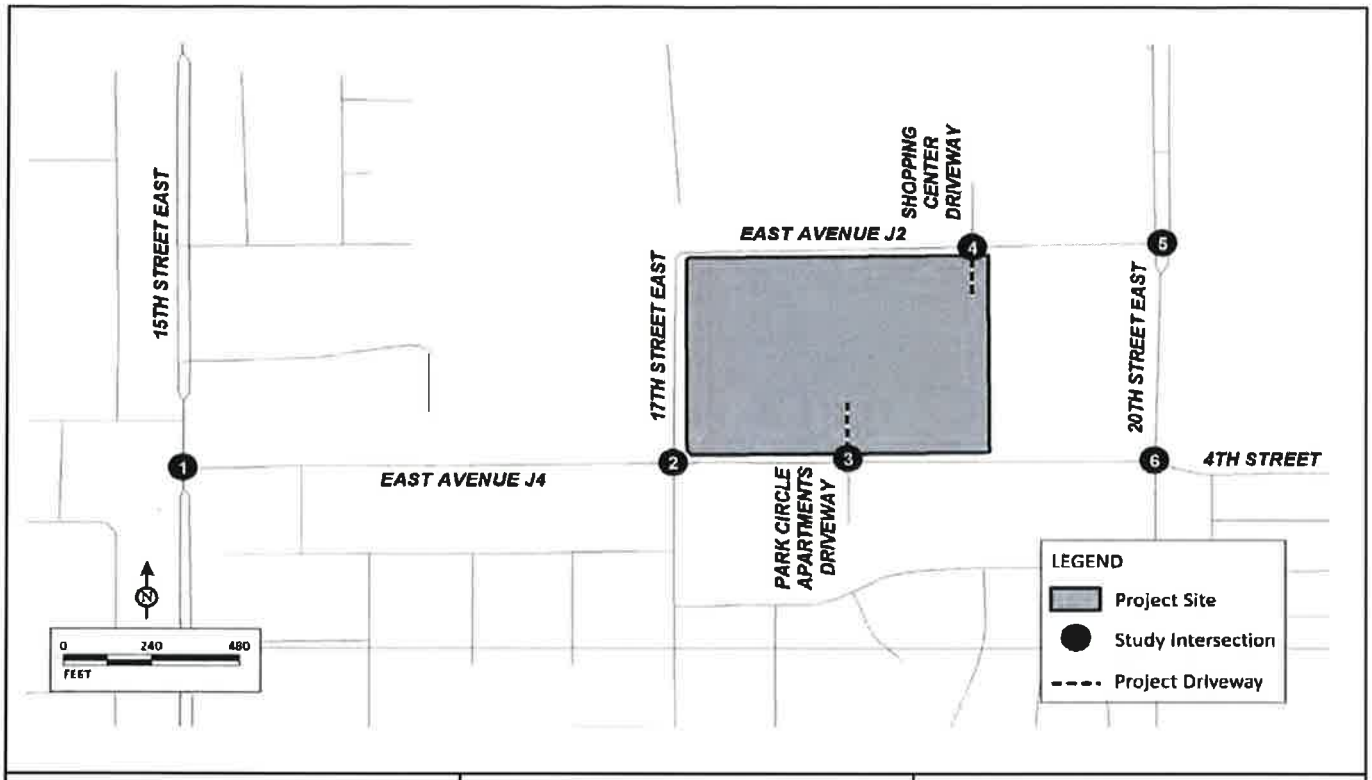
The project has a direct and cumulative impact at the intersection of 20th Street East/East Avenue J4 – 4th Street. The project will be responsible for restriping and converting the dedicated left-turn lanes along 20th Street East to a two-way left turn lane. The addition of a northbound through lane is covered through the City's Traffic Impact Fees. The project will be contributing to the Traffic Impact Fees through payment of its required impact fees. The project will be required to contribute its fair share of 18.30 percent towards the installation of a traffic signal under project build-out conditions, as this intersection was not identified in the City's Traffic Signal Master Plan and the cost of its installation is not covered under the City's Traffic Signal Impact Fee.

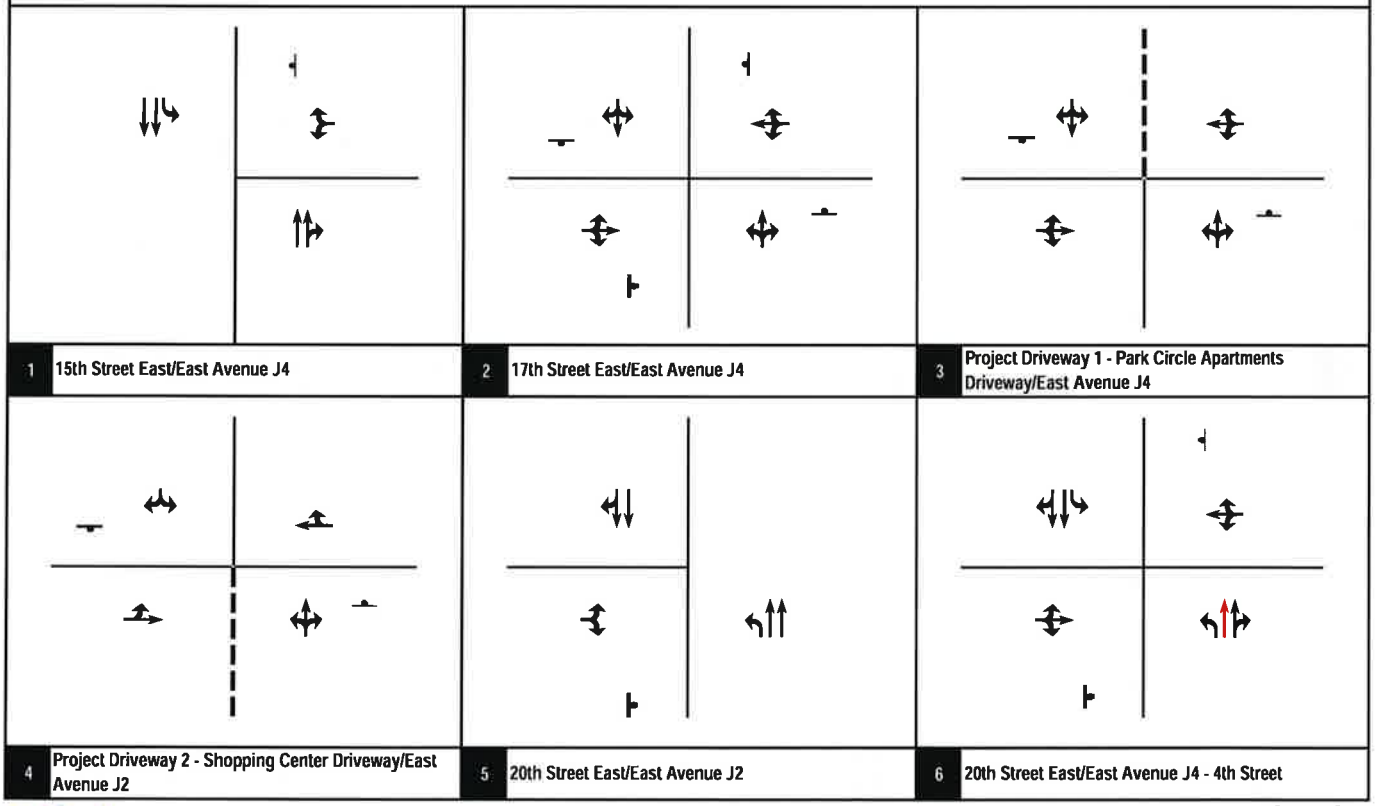
8.3.2 City of Lancaster Traffic Impact Fees

The funding for citywide circulation improvements is included through the City's Traffic Impact Fees. The City's Traffic Impact Fees was adopted in July 1989. The project will be required to pay its contribution to the Traffic Impact Fees. As described earlier, the proposed northbound through lane at the intersection of 20th Street East/East Avenue J4 – 4th Street under existing plus project conditions is covered through the City's Traffic Impact Fees. The project will be paying its appropriate fees to the City for the implementation of this improvement.

8.4 LIST OF CHAPTER 8.0 FIGURES AND TABLES

- Figure 8-1: Existing with Project with Improvements Intersection Geometrics and Traffic Control
- Figure 8-2: Project Build-out (2025) with Project with Improvements Intersection Geometrics and Traffic Control
- Figure 8-3: Project Build-out (2025) Conditions Peak Hour Signal Warrant
- Table 8-A: Recommended Project Intersection Improvements and Fair Share
- Table 8-B: Project Contribution to Total New Intersection Traffic Volumes
- Table 8-C: Existing with Project Recommended Improvements Intersection Levels of Service
- Table 8-D: Project Build-out (2025) with Project Recommended Improvements Intersection Levels of Service





1	15th Street East/East Avenue J4	2	17th Street East/East Avenue J4
3	Project Driveway 1 - Park Circle Apartments Driveway/East Avenue J4	4	Project Driveway 2 - Shopping Center Driveway/East Avenue J2
5	20th Street East/East Avenue J2	6	20th Street East/East Avenue J4 - 4th Street

FIGURE 8-1

LSA

Legend

Stop Sign

Project Driveway

Improvement

Lancaster 3
Traffic Study

Existing with Project with Improvements Intersection Geometrics and Traffic Control

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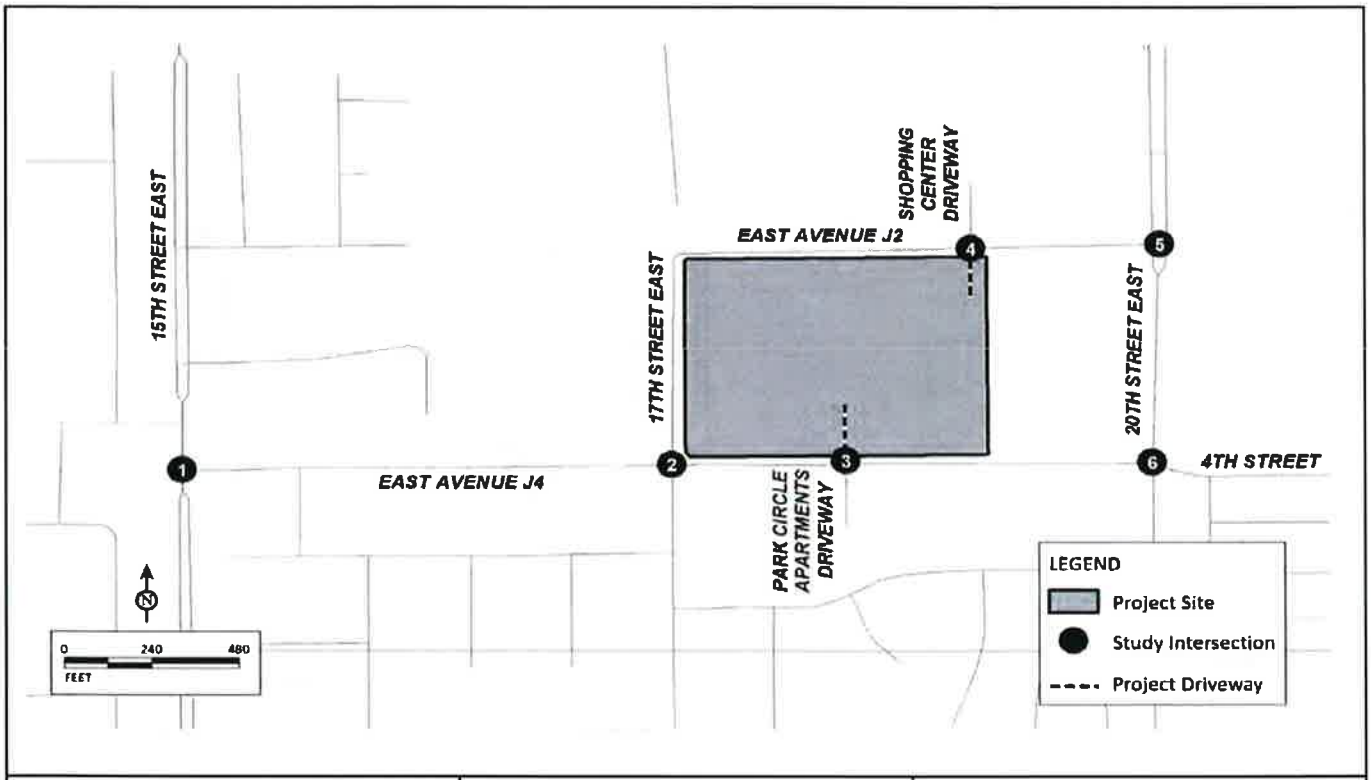

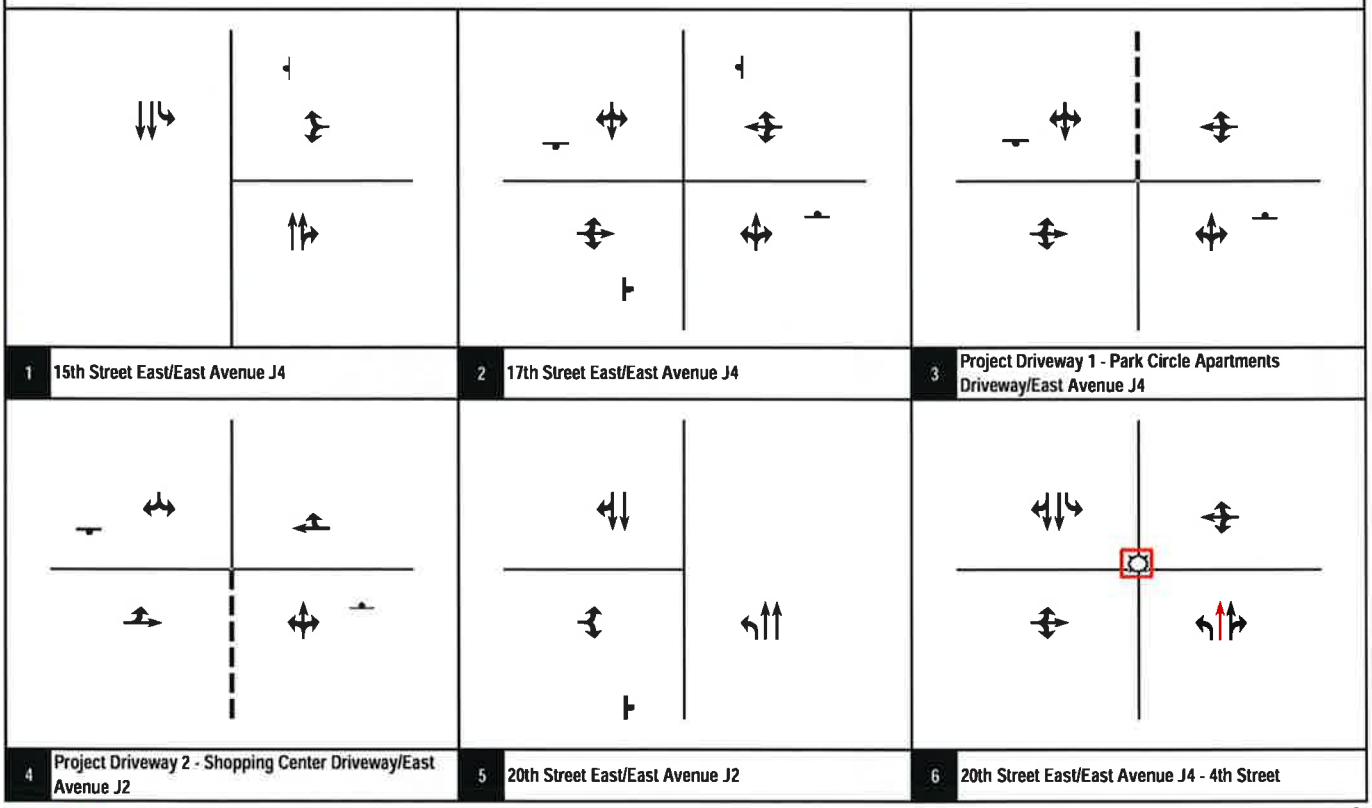

1	15th Street East/East Avenue J4
2	17th Street East/East Avenue J4
3	Project Driveway 1 - Park Circle Apartments Driveway/East Avenue J4
4	Project Driveway 2 - Shopping Center Driveway/East Avenue J2
5	20th Street East/East Avenue J2
6	20th Street East/East Avenue J4 - 4th Street

LSA

FIGURE 8-2

Legend

Stop Sign
Project Driveway
New Signal
Improvement

Lancaster 3
Traffic Study

Project Build-out (2025) with Project with Improvements Intersection Geometrics and Traffic Control

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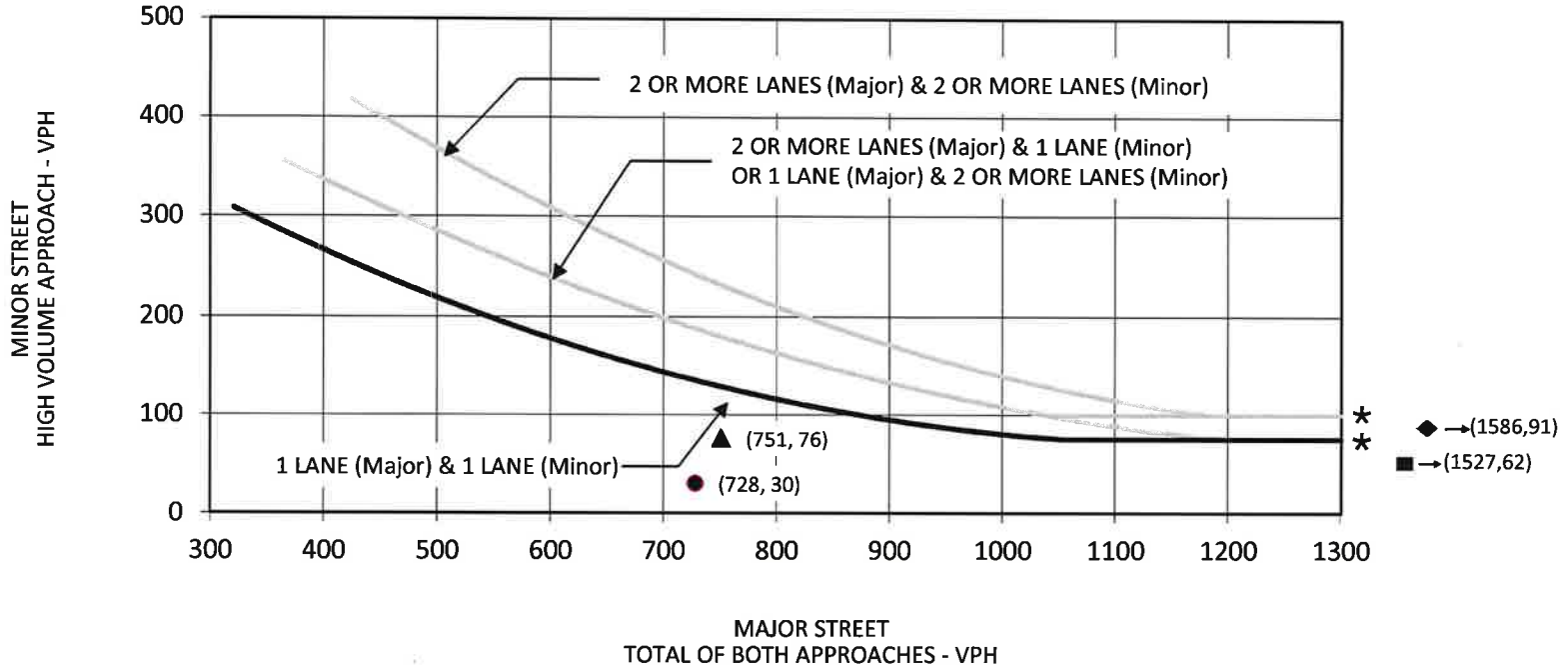
WARRANT 3, PEAK HOUR (70% FACTOR)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 mph ON MAJOR STREET)



★ 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.

LSA

FIGURE 8-3

● No Project AM Peak Hour
▲ With Project AM Peak Hour
■ No Project PM Peak Hour
◆ With Project PM Peak Hour

Lancaster 3
Traffic Study

SOURCE: MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, FIGURE 4C-4

Project Build-out (2025) Conditions Peak Hour Signal Warrant

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Table 8-A - Recommended Project Intersection Improvements and Fair Share

Intersection	Jurisdiction	Existing with Project Improvements	Project Build-out (2025) with Project Improvements	Project Responsibility	Funded Improvements (Traffic Impact Fees)[1]	Improvements Not Funded	Project Fair Share[2]
6 . 20th Street East/East Avenue J4 - 4th Street	City of Lancaster	Add a NBT. Restripe and convert the dedicated left-turn lanes along 20th Street East to a two-way left turn lane.	Add a NBT. Install a traffic signal. Modify the improvements implemented under existing with project conditions to convert the two-way left turn lane to dedicated left-turn lanes along 20th Street East.	Under existing with project conditions, restripe and convert the dedicated left-turn lanes along 20th Street East to a two-way left turn lane.	Add a NBT.	Under project build-out with project conditions, install a traffic signal, restripe and convert the two-way left turn lane to dedicated left-turn lanes along 20th Street East.	18.30%

Notes:

[1] City of Lancaster Traffic Impact Fees, adopted July 1989.

[2] The project's fair share has been calculated based on project traffic as a percentage of total growth from existing to project build-out (2025) conditions.

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Table 8-B - Project Contribution to Total New Intersection Traffic Volumes

Intersection	A.M. Peak Hour					P.M. Peak Hour					
	Total Volume					Total Volume					
	Existing	Build-out + Project	Total Growth	Project Trips	AM Fair Share %	Existing	Build-out + Project	Total Growth	Project Trips	PM Fair Share %	Project Fair Share %
6 . 20th Street East/East Avenue J4 - 4th Street	624	840	216	69	31.94%	1,218	1,699	481	88	18.30%	**18.30%**

Notes:

Bold = Project Fair Share Percentage is the highest fair share value of the AM and PM peak hour when both peak hours are impacted by the project, or only in the peak hour where the project has an impact.

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Table 8-C - Existing with Project Recommended Improvements Intersection Levels of Service

Intersection	Jurisdiction	With Project Without Improvements					With Project With Improvements					
			A.M. Peak Hour		P.M. Peak Hour			A.M. Peak Hour			P.M. Peak Hour	
		Control	Delay (sec.)	LOS	Delay (sec.)	LOS	Control	ICU	Delay (sec.)	LOS	ICU	Delay (sec.)	LOS
6 . 20th Street East/East Avenue J4 - 4th Street	City of Lancaster	TWSC	14.4	B	37.9	E *	Signal	0.43	13.1	B	0.85	24.2	C

Notes:

TWSC = Two-Way Stop Control; LOS = Level of Service

Delay = Average control delay in seconds (For TWSC intersections, reported delay is for worst-case movement).

* Exceeds LOS Standard

It should be noted that per the City of Lancaster Department of Public Works *Traffic Study Guidelines* , dated January 5, 2009, this intersection was evaluated using HCM methodologies, since it currently operates as a TWSC intersection. However, since a signal is being recommended as a proposed improvement, the intersection was evaluated using ICU methodologies, consistent with the City's Traffic Study Guidelines.

Table 8-D - Project Build-out (2025) with Project Recommended Improvements Intersection Levels of Service

Intersection	Jurisdiction	With Project Without Improvements					With Project With Improvements					
			A.M. Peak Hour		P.M. Peak Hour			A.M. Peak Hour			P.M. Peak Hour	
		Control	Delay (sec.)	LOS	Delay (sec.)	LOS	Control	ICU	Delay (sec.)	LOS	ICU	Delay (sec.)	LOS
6 . 20th Street East/East Avenue J4 - 4th Street	City of Lancaster	TWSC	18.2	C	>100	F *	Signal	0.34	7.9	A	0.48	8.1	A

Notes:

TWSC = Two-Way Stop Control; LOS = Level of Service

Delay = Average control delay in seconds (For TWSC intersections, reported delay is for worst-case movement).

* Exceeds LOS Standard

It should be noted that per the City of Lancaster Department of Public Works *Traffic Study Guidelines* , dated January 5, 2009, this intersection was evaluated using HCM methodologies, since it currently operates as a TWSC intersection. However, since a signal is being recommended as a proposed improvement, the intersection was evaluated using ICU methodologies, consistent with the City's Traffic Study Guidelines.

9.0 CONGESTION MANAGEMENT PROGRAM ANALYSIS

The City of Lancaster is within the jurisdiction of Los Angeles County. The Los Angeles County Metropolitan Transportation Authority Congestion Management Program (CMP) includes the *Guidelines for CMP Transportation Impact Analysis* (Appendix D of the CMP) to assist local agencies in evaluating impacts of development projects on the CMP system through the preparation of a regional transportation impact analysis (TIA). As per the guidelines, a TIA is required where:

- The proposed project will add 50 or more trips at CMP arterial monitoring intersections, including freeway on and off-ramp intersections during either the weekday a.m. or p.m. peak hours (of adjacent street traffic); or
- The proposed project will add 150 or more trips; in either direction, at mainline freeway monitoring locations during either the weekday a.m. or p.m. peak hours.

The project would not add 50 or more peak hour trips to any CMP arterial monitoring intersections or mainline freeway monitoring locations. As such, a CMP analysis is not required.

10.0 SPEED ANALYSIS

Speed surveys were conducted along the study area roadway segments to determine average and 85th percentile speed within the project vicinity. Based on consultation with the City Staff, speed surveys was conducted along the following roadway segments:

1. East Avenue J4, between 15th Street East and 17th Street East;
2. East Avenue J4, between 17th Street East and Project Driveway 1 – Park Circle Apartments Driveway;
3. East Avenue J4, between Project Driveway 1 – Park Circle Apartments Driveway and 20th Street East; and
4. 17th Street East, between East Avenue J4 and East Avenue J8.

The greater of the speed survey results between the two days has been utilized to address safety concerns within the project study area.

10.1 SPEED ANALYSIS

The posted speed limit on the three consecutive segments of East Avenue J4 between 15th Street East and 20th Street East is 25 miles per hour (mph). The posted speed limit on the segment of 17th Street East between East Avenue J4 and East Avenue J8 is 25 mph. The operating speed in the segment was obtained based on speed surveys conducted by Counts Unlimited on two typical weekdays, January 7th, 2020 (Day 1) and January 8th, 2020 (Day 2). The higher speed survey results on these two days were considered as a conservative approach for this analysis. Detailed speed survey sheets are available in Appendix B. According to the City of Lancaster Citywide Traffic Calming Policy, adopted October 2008, excessive speeding occurs when the 85th percentile speed is 10 mph above the speed limit. Traffic calming measures shall be considered to reduce the 85th percentile speed to within 10 mph of the speed limit. The speed surveys results are summarized as follow:

- **East Avenue J4, between 15th Street East and 17th Street East:** The average speed is 21 mph in the eastbound direction and 24 mph in the westbound direction. The 85th percentile speed for this segment is 28 mph in the eastbound direction and 31 mph in the westbound direction. 67.41% of vehicles drive within the speed limit in the eastbound direction and 52.73% of vehicles drive within the speed limit in the westbound direction. Since the 85th percentile speed for this segment is within 10 mph of the speed limit, no traffic calming measures are required for this segment.
- **East Avenue J4, between 17th Street East and Project Driveway 1 – Park Circle Apartments Driveway:** The average speed is 24 mph in the eastbound direction and 27 mph in the westbound direction. The 85th percentile speed for this segment is 29 mph in the eastbound direction and 32 mph in the westbound direction. 51.89% of vehicles drive within the speed limit in the eastbound direction and 32.19% of vehicles drive within the speed limit in the westbound direction. Since the 85th percentile speed for this segment is within 10 mph of the speed limit, no traffic calming measures are required for this segment.

- **East Avenue J4, between Project Driveway 1 – Park Circle Apartments Driveway and 20th Street East:** The average speed is 28 mph in the eastbound direction and 25 mph in the westbound direction. The 85th percentile speed for this segment is 34 mph in the eastbound direction and 32 mph in the westbound direction. 31.07% of vehicles drive within the speed limit in the eastbound direction and 45.22% of vehicles drive within the speed limit in the westbound direction. Since the 85th percentile speed for this segment is within 10 mph of the speed limit, no traffic calming measures are required for this segment.
- **17th Street, between East Avenue J4 and East Avenue J8:** The average speed is 27 mph in the northbound direction and 25 mph in the southbound direction. The 85th percentile speed for this segment is 34 mph in the northbound direction and 35 mph in the southbound direction. 41.63% of vehicles drive within the speed limit in the northbound direction and 44.62% of vehicles drive within the speed limit in the southbound direction. Since the 85th percentile speed for this segment is within 10 mph of the speed limit, no traffic calming measures are required for this segment.

The speed surveys are further summarized in Table 10-A.

10.2 CONCLUSION

According to the City of Lancaster Citywide Traffic Calming Policy, adopted October 2008, traffic calming measures shall be considered to reduce the 85th percentile speed to within 10 mph of the speed limit. Since the 85th percentile speed for all segments are within 10 mph of the speed limit, no traffic calming measures are required.

10.3 LIST OF CHAPTER 10.0 TABLES

- Table 10-A: Speed Analysis

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Table 10-A - Speed Analysis

Roadway	Segment	Direction	Posted Speed Limit (mph)	Average Speed (mph)	85th Percentile Speed (mph)	Difference between 85th Percentile Speed and Posted Speed Limit (mph)
East Avenue J4	between 15th Street East and 17th Street East	Eastbound	25	21	28	3
		Westbound	25	24	31	6
	between 17th Street East and Project Driveway 1 - Park Circle Apartments Driveway	Eastbound	25	24	29	4
		Westbound	25	27	32	7
	between Project Driveway 1 - Park Circle Apartments Driveway and 20th Street East	Eastbound	25	28	34	9
		Westbound	25	25	32	7
17th Street East	between East Avenue J4 and East Avenue J8	Northbound	25	27	34	9
		Southbound	25	25	35	10

Notes:

[1]Source: Speed surveys conducted by Counts Unlimited

11.0 SUMMARY AND CONCLUSIONS

The proposed Lancaster 3 project will consist of multi-family residential complex that will have a total of 264 dwelling units. The total area of the multi-family residential complex will be 11.34 acres. The project is forecast to generate 95 trips in the a.m. peak hour, 116 trips in the p.m. peak hour, and 1,436 daily trips.

11.1 EXISTING WITH PROJECT CONDITIONS SUMMARY

Based on the significance criteria as discussed in Section 2.4 "Project Significance Threshold" of this report, under existing with project conditions, a significant direct impact occurs at the intersection of 20th Street East/East Avenue J4 – 4th Street. However, with the implementation of the improvements listed in Section 8.1.1, the intersection is forecast to operate at a satisfactory LOS. All other intersections and all roadway segments operate at a satisfactory LOS under existing with project conditions.

11.2 PROJECT BUILD-OUT (2025) WITH PROJECT CONDITIONS SUMMARY

Based on the significance criteria as discussed in Section 2.4 "Project Significance Threshold" of this report, under project build-out with project conditions, a cumulative project impact occurs at the intersection of 20th Street East/East Avenue J4 – 4th Street. However, with the implementation of the improvements listed in Section 8.1.2, the intersection is forecast to operate at a satisfactory LOS. All other intersections and all roadway segments are forecast to operate at a satisfactory LOS under project build-out with project conditions.

11.3 MITIGATION SUMMARY

The project has a direct and cumulative impact at the intersection of 20th Street East/East Avenue J4 – 4th Street. Based on the improvements discussed in Section 8.1 "Recommended Improvements" of this report, under existing with project conditions, the recommended improvements include adding a northbound through lane and restriping and converting the dedicated left-turn lanes along 20th Street East to a two-way left turn lane. Under project build-out with project conditions, the recommended improvements include installation of a traffic signal, and modifying the improvements implemented under existing with project conditions to convert the two-way left turn lane to dedicated left-turn lanes along 20th Street East. The project will be responsible for restriping and converting the dedicated left-turn lanes along 20th Street East to a two-way left turn lane. The addition of a northbound through lane is covered through the City's Traffic Impact Fees. The project will be contributing to the Traffic Impact Fees through payment of its required impact fees. The project will be required to contribute its fair share of 18.30 percent towards the installation of a traffic signal under project build-out conditions, as this intersection was not identified in the City's Traffic Signal Master Plan and the cost of its installation is not covered under the City's Traffic Signal Impact Fee.

11.4 SPEED ANALYSIS SUMMARY

According to the City of Lancaster Citywide Traffic Calming Policy, adopted October 2008, traffic calming measures shall be considered to reduce the 85th percentile speed to within 10 mph of the

speed limit. Since the 85th percentile speed for all segments are within 10 mph of the speed limit, no traffic calming measures are required.