KUNZMAN ASSOCIATES, INC.

CENTER STREET WAREHOUSE PROJECT

TRAFFIC IMPACT ANALYSIS

January 19, 2016

Traffic Engineering | Transportation Planning | Parking | Noise/Vibration | Expert Witness
Air Quality | Global Climate Change | Health Risk Assessment

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CENTER STREET WAREHOUSE PROJECT

TRAFFIC IMPACT ANALYSIS

This report contains the traffic impact analysis for the proposed Center Street Warehouse project. The project site is located at 6055 Center Street in the City of Riverside. The approximately 16 acre project site is proposed to be developed with 308,000 square feet of manufacturing.

The traffic report contains documentation of existing traffic conditions, trips generated by the project, distribution of the project trips to roads outside the project, calculation of existing plus project[1] traffic conditions, and an analysis of Opening Year (2017) traffic conditions without and with the project. Each of these topics is contained in a separate section of the report. The first section is "Findings", and subsequent sections expand upon the findings. In this way, information on any particular aspect of the study can be easily located by the reader.

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

[1] The existing plus project conditions has been analyzed to comply with the Sunnyvale West Neighborhood Association v. City of Sunnyvale CEQA court case. This scenario assumes the full development of the proposed project and full absorption of the proposed project trips on the circulation system at the present time.

I. FINDINGS

This section summarizes the existing traffic conditions, project traffic impacts, and the proposed mitigation measures.

A. Definition of Deficiency and Significant Impact

The following definitions of deficiencies and significant impacts have been developed in accordance with the City of Riverside requirements:

The definition of an intersection deficiency has been obtained from the City of Riverside Traffic Impact Analysis Preparation Guide, 2012. The Guide states that peak hour intersection operations of Level of Service D or better are generally acceptable along all City roadways of Collector or higher classification. An exception to the local road standard is Level of Service E, at intersections of City Arterials that are used by regional freeway bypass traffic and at heavily traveled freeway interchanges.

B. Existing Traffic Conditions

1. The project site is currently undeveloped and is not generating significant trips.

2. Existing roadways adjacent to the project include Center Street, Placentia Lane, and Orange Street to the east of the project site.

3. The study area intersections currently operate at acceptable Levels of Service during the peak hours for Existing traffic conditions, except for the following study area intersection that currently operates at unacceptable Levels of Service during the peak hours:

   Iowa Avenue/I-215 Freeway NB Ramps (NS) at:
   La Cadena Drive (EW) - #9

4. Traffic signals appear to currently be warranted at the following study area intersections for Existing traffic conditions (see Appendix E):

   Main Street/Riverside Avenue (NS) at:
   Center Street (EW) - #1

   West La Cadena Drive (NS) at:
   Stephens Avenue/I-215 Freeway SB Ramps (EW) - #6

   Highgrove Place (NS) at:
   Center Street (EW) - #8

The unsignalized intersections have been evaluated for traffic signals using the California Department of Transportation Warrant 3 Peak Hour traffic signal warrant analysis, as specified in the California Manual of Uniform Traffic Control Devices (2014 Update).

C. Traffic Impacts

1. The proposed land use for the approximately 16 acre project site is 308,000 square feet of manufacturing and will have access to Center Street.

2. The proposed development is projected to generate approximately 1,576 daily vehicle trips in Passenger Car Equivalent's, 301 of which will occur during the morning peak hour in Passenger Car Equivalent's and 303 of which will occur during the evening peak hour in Passenger Car Equivalent's.

3. For Existing Plus Project traffic conditions, the study area intersections are projected to operate at acceptable Levels of Service during the peak hours, except for the following study area intersection that is projected to operate at unacceptable Levels of Service during the peak hours, without improvements:

    Iowa Avenue/I-215 Freeway NB Ramps (NS) at:
    La Cadena Drive (EW) - #9

4. For Opening Year (2017) Without Project traffic conditions, the study area intersections are projected to operate at acceptable Levels of Service during the peak hours, except for the following study area intersection that is projected to operate at unacceptable Levels of Service during the peak hours, without improvements:

    Iowa Avenue/I-215 Freeway NB Ramps (NS) at:
    La Cadena Drive (EW) - #9

5. For Opening Year (2017) With Project traffic conditions, the study area intersections are projected to operate at acceptable Levels of Service during the peak hours, except for the following study area intersection that is projected to operate at unacceptable Levels of Service during the peak hours, without improvements:

    Iowa Avenue/I-215 Freeway NB Ramps (NS) at:
    La Cadena Drive (EW) - #9

D. Mitigation Measures

The following measures are recommended to mitigate the impact of the project on traffic circulation:

1. Site-specific circulation and access recommendations are depicted on Figure 45.

2. As shown in Table 7, the project site does not significantly impact any study area intersections for Opening Year (2017) With Project traffic conditions.

3. Construct Center Street from the west project boundary to the east project boundary at its ultimate half-section width including landscaping and parkway improvements in conjunction with development, as necessary.

4. Construct Placentia Lane from the west project boundary to the east project boundary at its ultimate half-section width including landscaping and parkway improvements in conjunction with development, as necessary.

5. Sufficient on-site parking should be provided to meet City of Riverside parking code requirements.

6. On-site traffic signing and striping should be implemented in conjunction with detailed construction plans for the project.

7. Sight distance at the project accesses shall comply with standard California Department of Transportation and City of Riverside sight distance standards. The final grading, landscaping, and street improvement plans shall demonstrate that sight distance standards are met. Such plans must be reviewed by the City and approved as consistent with this measure prior to issue of grading permits.

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

9. Participate in the phased construction of off-site traffic signals through payment of traffic signal mitigation fees. The traffic signals within the study area at buildout should specifically include an interconnect of the traffic signals to function in a coordinated system.

II. CONGESTION MANGEMENT PROGRAM METHODOLOGY

This section discusses the Congestion Management Plan. The purpose, prescribed methodology, and definition of a significant traffic impact are discussed.

A. Congestion Management Plan

The Congestion Management Plan is a result of Proposition 111 which was a statewide initiative approved by the voters in June, 1990. The proposition allowed for a nine cent per gallon state gasoline tax increase over a five year period.

Proposition 111 explicitly stated that the new gas tax revenues were to be used to fix existing traffic problems and was not to be used to promote future development. For a City to get its share of the Proposition 111 gas tax, it has to follow certain procedures specified by the State Legislature. The legislation requires that a traffic impact analysis be prepared for new development. The traffic impact analysis is prepared to monitor and fix traffic problems caused by new development.

The Legislature requires that adjacent jurisdictions use a standard methodology for conducting a traffic impact analysis. To assure that adjacent jurisdictions use a standard methodology in preparing a traffic impact analysis, one common procedure is that all Cities within a County, and the County agency itself, adopt and use one standard methodology for conducting a traffic impact analysis.

Although each City has developed standards for preparing a traffic impact analysis, traffic impact analysis requirements do vary in detail from one City to another, but not in overall intent or concept. The general approach selected by each City for conducting a traffic impact analysis has common elements.

The general approach for conducting a traffic impact analysis is that existing peak hour traffic is counted and the percent of roadway capacity currently being used is determined. Then growth in traffic is accounted for and added to existing traffic and the percent of roadway capacity used is again determined. The project traffic is then added and the percent of roadway capacity used is again determined. If the new project adds traffic to an overcrowded facility, then the new project has to mitigate the traffic impact so that the facility operates at a level that is no worse than before the project traffic was added.

If the project size is below a certain minimum threshold level, then a project does not have to have a traffic impact analysis prepared, once it is shown or agreed that the project is below the minimum threshold.

If a project is bigger than the minimum threshold size, then a traffic impact analysis is required.

B. Prescribed Methodology for a Traffic Impact Analysis

The traffic impact analysis must include all monitored intersections to which the project adds traffic above a certain minimum amount.

In the City of Riverside, the minimum project added trips that are needed before an intersection has to be studied is 50 or more peak hour trips.

The City of Riverside allows Level of Service D to be used as a maximum acceptable threshold for the study area intersections.

A significant impact occurs at a study intersection when the addition of project generated trips causes either peak hour Level of Service to degrade from acceptable Level of Service (A thru D) to unacceptable Level of Service (E or F) or peak hour delay to increase as follows:

Level of Service A/B	=	By 10.0 seconds
Level of Service C	=	By 8.0 seconds
Level of Service D	=	By 5.0 seconds
Level of Service E	=	By 2.0 seconds
Level of Service F	=	By 1.0 seconds

In the City of Riverside, the technique used to assess the capacity needs of an intersection is known as the Intersection Delay Method (see Appendix D) based on the Highway Capacity Manual. To calculate delay, the volume of traffic using the intersection is compared with the capacity of the intersection. Signalized intersections are considered deficient (Level of Service F) if the overall intersection critical volume to capacity ratio equals or exceeds 1.0, even if the level of service defined by the delay value is below the defined Level of Service standard. The Volume to Capacity ratio is defined as the critical volumes divided by the intersection capacity. A Volume to Capacity ratio greater than 1.0 implies an infinite queue.

The Level of Service analysis for signalized intersections has been performed using optimized signal timing. This analysis has included an assumed lost time of four seconds per phase. Signal timing optimization has considered pedestrian safety and signal coordination requirements. Appropriate time for pedestrian crossings has also been considered in the signalized intersection analysis.

In the City of Colton, the definition of an intersection deficiency has been obtained from the City of Colton General Plan. The General Plan states that peak hour intersection operations of Level of Service D or better are generally acceptable. Therefore, any intersection operating at Level of Service E to F will be considered deficient. A traffic impact is considered significant if the project both: i) contributes measurable traffic to and ii) substantially and adversely changes the Level of Service at any off-site location projected to experience deficient operations under foreseeable cumulative conditions, where feasible improvements consistent with the City of Colton General Plan cannot be constructed.

The County of Riverside has established, as a Countywide target, a Level of Service C on all County maintained roads and conventional State Highways, except that a Level of Service E

could be allowed on Congestion Management System Highways and Roadways as specified in the County of Riverside Congestion Management Plan, 2011.

In accordance with the County of Riverside General Plan, Level of Service C should be maintained, except that a Level of Service D could be allowed on at any combination of Major Arterials, Expressways, or conventional State Highways as specified in the County of Riverside Congestion Management Plan, 2011. In addition, Level of Service E is permissible in designated transit or pedestrian-oriented community centers and at freeway ramp terminals under the jurisdiction of Caltrans.

Consistent with County of Riverside guidelines, an impact is considered significant if the proposed project causes an intersection to drop below the target Levels of Service as described above.

Project trips are generated using rates and procedures contained in the Institute of Transportation Engineers, Trip Generation Manual, 9th Edition, 2012, and the City of Fontana, Truck Trip Generation Study, August 2003.

This traffic analysis has been prepared in accordance with the traffic impact analysis requirements.

The project generated trips were added to the study area intersections, and a full intersection analysis was conducted, even when the project added traffic failed to meet the minimum thresholds that require an intersection analysis.

C. Mitigation Measures

If a project is large enough to require that a traffic impact analysis be prepared, and if the project adds traffic to an intersection above a minimum threshold, and if the intersection is operating at above an acceptable level of operation, then the project must mitigate its traffic impact.

Traffic mitigation can be in many forms including adding lanes. Lanes can sometimes be obtained through restriping or elimination of parking, and sometimes require spot roadway widening.

III. PROJECT DESCRIPTION

This section discusses the project's location and proposed development. Figure 1 shows the project location and Figure 2 illustrates the site plan.

A. Location

The project site is located at 6055 Center Street in the City of Riverside.

B. Proposed Development

The approximately 16 acre project site is proposed to be developed with 308,000 square feet of manufacturing and will have access to Center Street.

Figure 1
Project Location Map

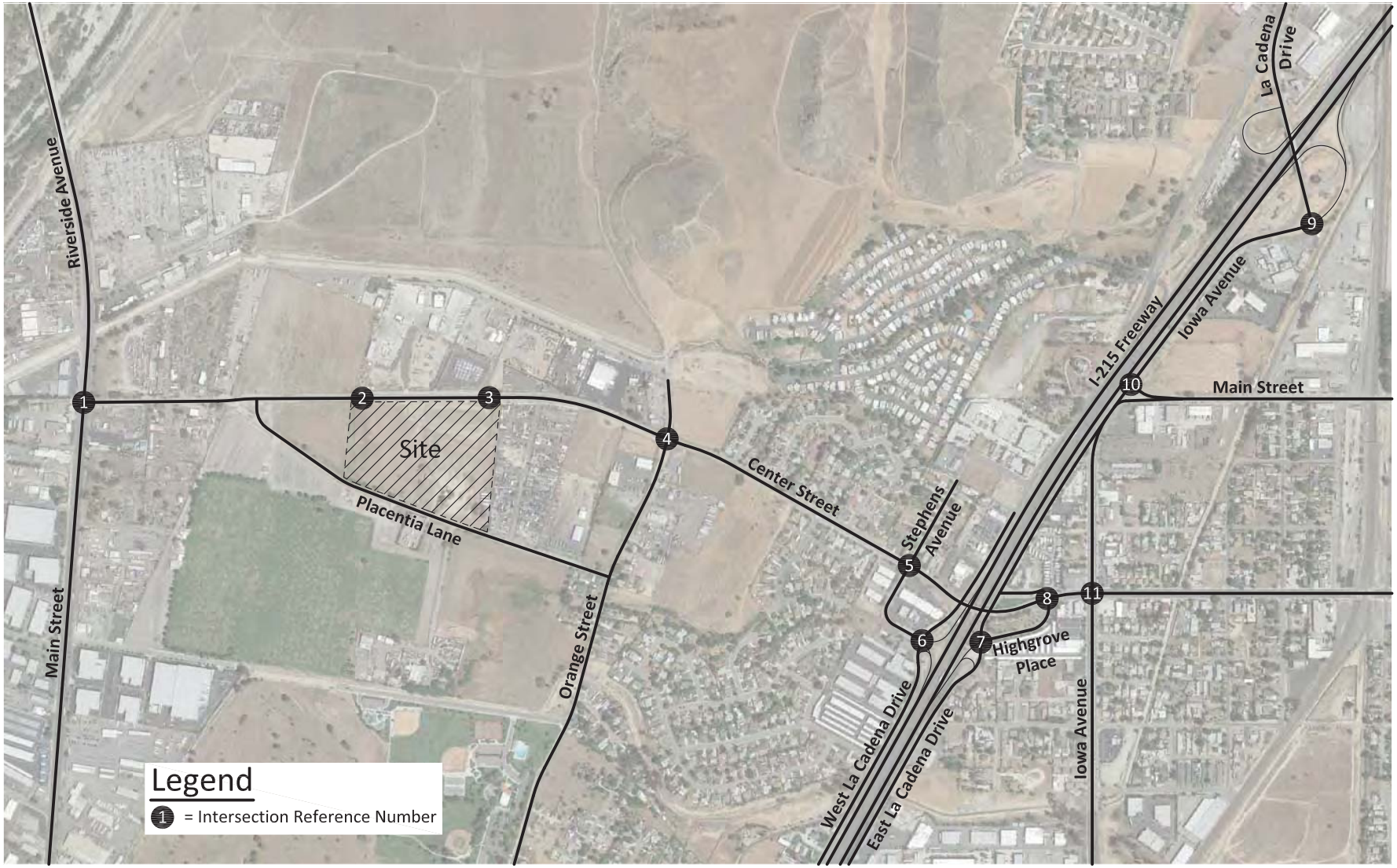

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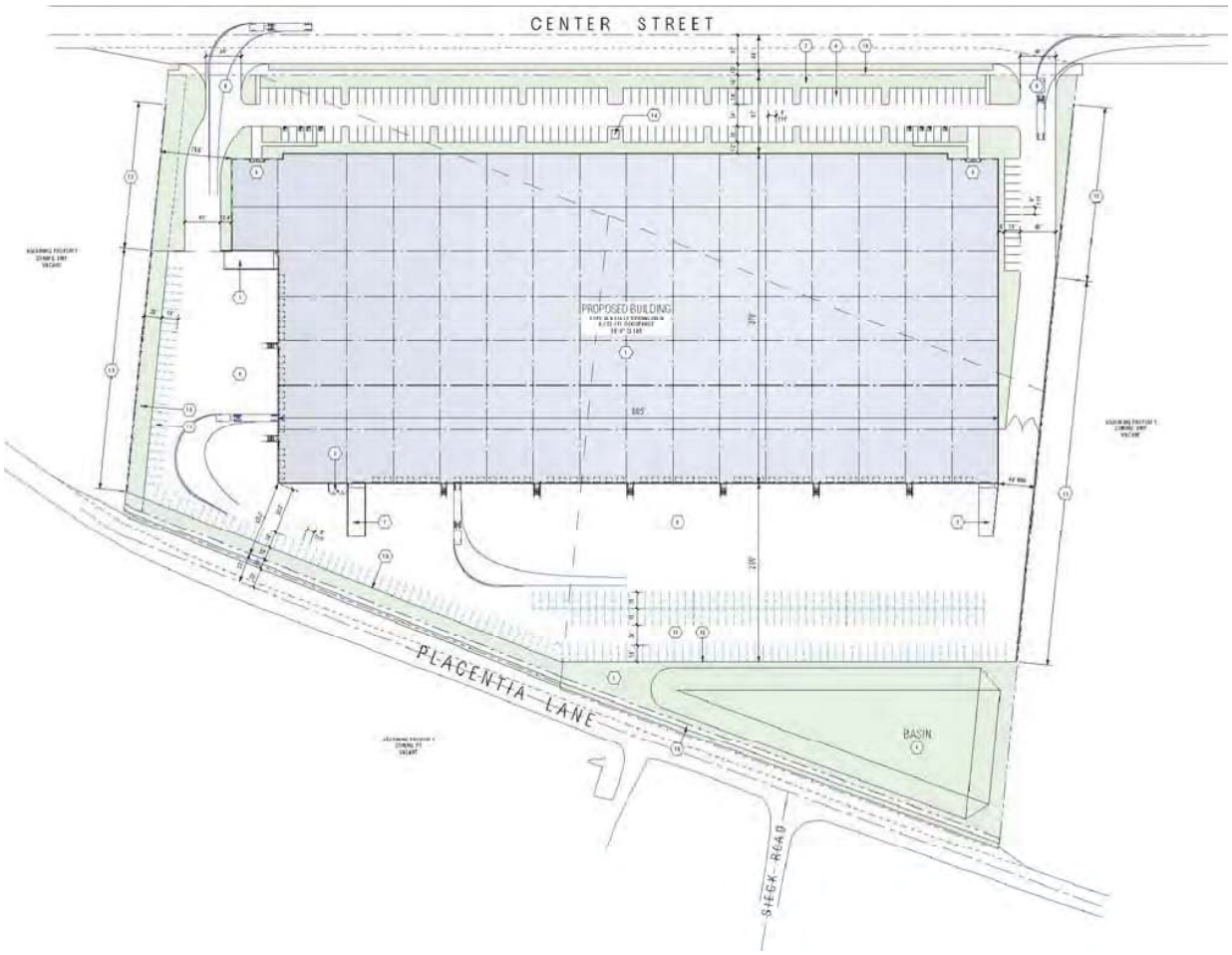
Figure 2
Site Plan



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IV. EXISTING TRAFFIC CONDITIONS

The traffic conditions as they exist today are discussed below and illustrated on Figures 3 to 15.

A. Study Area

Appendix B includes the scoping agreement with City of Riverside staff. The study area includes the following intersections:

Main Street/Riverside Avenue (NS) at:
- Center Street (EW) - #1

Project West Access (NS) at:
- Center Street (EW) - #2

Project East Access (NS) at:
- Center Street (EW) - #3

Orange Street (NS) at:
- Center Street (EW) - #4

Stephens Avenue (NS) at:
- Center Street (EW) - #5

West La Cadena Drive (NS) at:
- Stephens Avenue/I-215 Freeway SB Ramps (EW) - #6

East La Cadena Drive (NS) at:
- Highgrove Place/I-215 Freeway NB Ramps (EW) - #7

Highgrove Place (NS) at:
- Center Street (EW) - #8

Iowa Avenue/I-215 Freeway NB Ramps (NS) at:
- La Cadena Drive (EW) - #9

Iowa Avenue (NS) at:
- Main Street (EW) - #10
- Center Street (EW) - #11

B. Surrounding Street System

Existing roadways within the study area include Main Street, Riverside Avenue, Orange Street, Stephens Avenue, West La Cadena Drive, East La Cadena Drive, Highgrove Place, Iowa Avenue, Center Street, La Cadena Drive, and Main Street.

Main Street (City of Riverside): This north-south four lane divided roadway is classified as an Arterial (100 foot right-of-way) on the City of Riverside General Plan Circulation Element. It currently carries approximately 20,000 vehicles per day in the study area.

Riverside Avenue: This north-south four lane divided roadway is classified as a Major Arterial (96 to 114 foot right-of-way) on the City of Colton General Plan Circulation Element. It currently carries approximately 21,600 vehicles per day in the study area.

Orange Street: This north-south two lane undivided roadway is classified as a Collector (66 foot right-of-way) on the City of Colton General Plan Circulation Element. It currently carries approximately 500 to 2,700 vehicles per day in the study area.

Stephens Avenue: This north-south two lane undivided roadway is not classified on the County of Riverside General Plan Circulation Element. It currently carries approximately 300 to 5,600 vehicles per day in the study area.

West La Cadena Drive: This north-south two lane undivided roadway is not classified on the County of Riverside General Plan Circulation Element. It currently carries approximately 8,100 to 8,400 vehicles per day in the study area.

East La Cadena Drive: This north-south two lane undivided roadway is not classified on the County of Riverside General Plan Circulation Element. It currently carries approximately 3,300 to 4,000 vehicles per day in the study area.

Highgrove Place: This north-south two lane undivided roadway is not classified on the County of Riverside General Plan Circulation Element. It currently carries approximately 400 to 3,700 vehicles per day in the study area.

Iowa Avenue: This north-south two lane divided to four lane divided roadway is classified as an Arterial (128 foot right-of-way) south of Central Avenue and is not classified north of Central Avenue on the County of Riverside General Plan Circulation Element. It currently carries approximately 19,100 to 20,200 vehicles per day in the study area.

Center Street: This east-west two lane divided to four lane undivided roadway is classified as an Arterial (88 foot right-of-way) within City of Riverside boundaries on the City of Riverside General Plan Circulation Element, as a Major Arterial (96 to 114 foot right-of-way) within City of Colton boundaries on the City of Colton General Place Circulation Element, and as a Secondary (100 foot right-of-way) within County of Riverside boundaries on the County of Riverside General Plan Circulation Element. It currently carries approximately 4,400 to 8,800 vehicles per day in the study area.

La Cadena Drive: This east-west two lane divided roadway is classified as a Secondary Arterial (88 foot right-of-way) on the City of Colton General Plan Circulation Element. It currently carries approximately 18,300 vehicles per day in the study area.

Main Street (County of Riverside): This east-west two lane divided roadway is classified as a Secondary (100 foot right-of-way) on the County of Riverside General Plan Circulation Element. It currently carries approximately 6,100 vehicles per day in the study area.

C. Existing Travel Lanes and Intersection Controls

Figure 3 identifies the existing roadway conditions and intersection geometry for study area roadways. The number of through lanes for existing roadways and the existing intersection controls are identified.

D. Existing Average Daily Traffic Volumes

Figure 4 depicts the Existing average daily traffic volumes. The Existing average daily traffic volumes have been obtained from the 2014 Traffic Volumes on California State Highways by the California Department of Transportation and factored from peak hour counts (see Appendix C) made for Kunzman Associates, Inc. in December 2015 using the following formula for each intersection leg:

PM Peak Hour (Approach Volume + Exit Volume) x 12 = Leg Volume.

This is a conservative estimate and may over estimate the average daily traffic volumes.

E. Existing Intersection Delay

The technique used to assess the capacity needs of an intersection is known as the Intersection Delay Method (see Appendix D). To calculate delay, the volume of traffic using the intersection is compared with the capacity of the intersection.

The existing delay and Level of Service for intersections in the vicinity of the project are shown in Table 1. Existing delay is based upon manual weekday morning and evening peak hour counts made for Kunzman Associates, Inc. in August 2014 (see Figures 5 and 6). Traffic count worksheets are provided in Appendix C.

There are two peak hours in a weekday. The morning peak hour is between 7 AM and 9 AM, and the evening peak hour is between 4 PM and 6 PM. The actual peak hour within the two hour interval is the four consecutive 15 minute periods with the highest total volume when all movements are added together. Thus, the evening peak hour at one intersection may be 4:45 PM to 5:45 PM if those four consecutive 15 minute periods have the highest combined volume. Explicit peak hour factors have been calculated using the data collected for this project.

The study area intersections currently operate at acceptable Levels of Service during the peak hours for Existing traffic conditions, except for the following study area intersection that currently operates at unacceptable Levels of Service during the peak hours:

Iowa Avenue/I-215 Freeway NB Ramps (NS) at:
La Cadena Drive (EW) - #9

Existing delay worksheets are provided in Appendix D.

F. Existing Traffic Signal Warrant Analysis

Traffic signals appear to currently be warranted at the following study area intersections for Existing traffic conditions (see Appendix E):

Main Street/Riverside Avenue (NS) at:
Center Street (EW) - #1

West La Cadena Drive (NS) at:
Stephens Avenue/I-215 Freeway SB Ramps (EW) - #6

Highgrove Place (NS) at:
Center Street (EW) - #8

The unsignalized intersections have been evaluated for traffic signals using the California Department of Transportation Warrant 3 Peak Hour traffic signal warrant analysis, as specified in the California Manual of Uniform Traffic Control Devices (2014 Update).

G. City of Riverside Circulation Plan

Figure 7 shows the current City of Riverside General Plan Circulation Element. Both existing and future roadways are included in the Circulation Element of the General Plan and are graphically depicted on Figure 7. This figure shows the nature and extent of arterial highways that are needed to adequately serve the ultimate development depicted by the land use element of the General Plan. The City of Riverside General Plan roadway cross-sections are illustrated on Figure 8.

H. City of Colton Circulation Plan

Figure 9 shows the current City of Colton General Plan Circulation Element. Both existing and future roadways are included in the Circulation Element of the General Plan and are graphically depicted on Figure 9. This figure shows the nature and extent of arterial highways that are needed to adequately serve the ultimate development depicted by the land use element of the General Plan. The City of Colton General Plan roadway cross-sections are illustrated on Figure 10.

I. County of Riverside Circulation Plan

Figure 11 shows the current County of Riverside General Plan Circulation Element. Both existing and future roadways are included in the Circulation Element of the General Plan and are graphically depicted on Figure 11. This figure shows the nature and extent of arterial highways that are needed to adequately serve the ultimate development depicted by the land use element of the General Plan. The County of Riverside General Plan roadway cross-sections are illustrated on Figure 12.

J. Existing Transit Service

The study area is currently served by the Riverside Transit Agency Route 12 along Main Street, Orange Street, West La Cadena Drive, and Center Street, and Route 14 along Iowa Avenue and Center Street within the study area. The existing bus routes provided within the study area are shown on Figure 13.

K. Bicycle & Pedestrian Facilities

Existing pedestrian facilities adjacent to the project site are shown on Figure 14. The City of Riverside bike paths are illustrated on Figure 15.

Table 1

Existing Intersection Delay and Level of Service

Intersection	Jurisdiction	Traffic Control[3]	Intersection Approach Lanes[1]												Peak Hour Delay-LOS[2]	
			Northbound			Southbound			Eastbound			Westbound				
			L	T	R	L	T	R	L	T	R	L	T	R	Morning	Evening
Main Street/Riverside Avenue (NS) at:																
Center Street (EW) - #1	Colton/Riverside	CSS	0	2	d	1	2	0	0	0	0	0	1	0	14.0-B	14.9-B
Orange Street (NS) at:																
Center Street (EW) - #4	Riverside	AWS	0	1	0	0	1	0	0	1	0	0	1	0	8.5-A	9.8-A
Stephens Avenue (NS) at:																
Center Street (EW) - #5	Riverside County	TS	0	1	0	0	1	0	0.5	0.5	1	0.5	0.5	d	14.0-B	11.8-B
West La Cadena Drive (NS) at:																
Stephens Avenue/I-215 Freeway SB Ramps (EW) - #6	Caltrans	AWS	0.5	0.5	1>>	0.5	0.5	d	0	1	0	0	1	0	14.1-B	19.5-C
East La Cadena Drive (NS) at:																
Highgrove Place/I-215 Freeway NB Ramps (EW) - #7	Caltrans	AWS	0	0.5	0.5	0.5	0.5	0	0.5	0.5	1>>	1	0	1>>	8.7-A	9.7-A
Highgrove Place (NS) at:																
Center Street (EW) - #8	Riverside County	CSS	0.5	0.5	1	0	1	0	0.5	0.5	1>>	0	1	0	12.2-B	12.1-B
Iowa Avenue/I-215 Freeway NB Ramps (NS) at:																
La Cadena Drive (EW) - #9	Caltrans	TS	1	1	0	0	0.5	0.5	0.5	0	0.5	0	0	0	74.9-E	99.9-F[4]
Iowa Avenue (NS) at:																
Main Street (EW) - #10	Colton/Riverside County	TS	0	1	1>>	1	1	0	0	0	0	1	0	1	16.2-B	16.9-B
Center Street (EW) - #11	Riverside County	TS	1	2	d	1	2	d	1	1.5	0.5	1	1	1	18.1-B	17.4-B

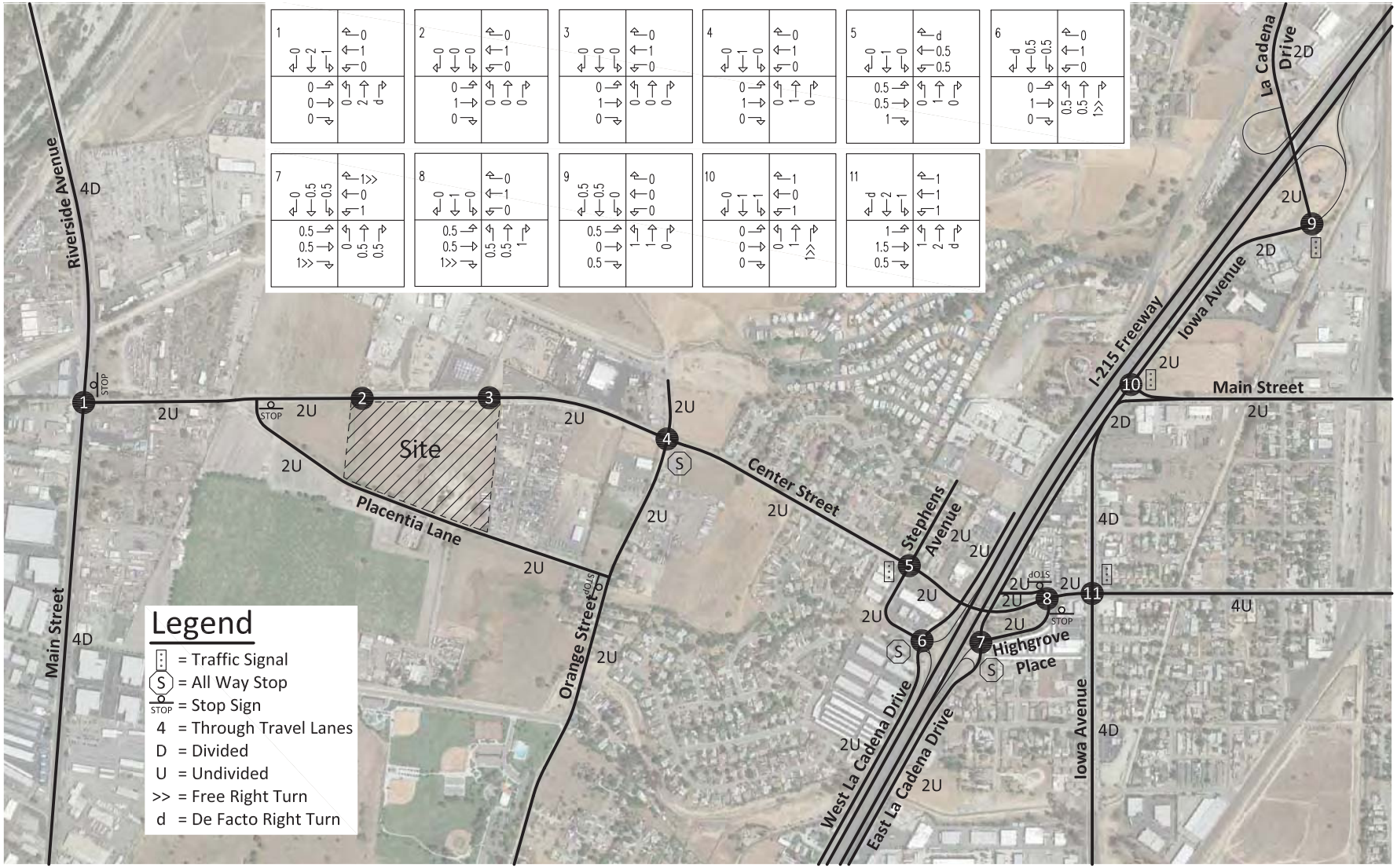
[1] When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicle to travel outside the through lanes. L = Left; T = Throug R = Right; d = De Facto Right Turn Lane; >> = Free Right Turn Lane

[2] Delay and level of service has been calculated using the following analysis software: Highway Capacity Software (2010). Per the Highway Capacity Manual, overall average for intersection delay and level of service are shown for intersections with traffic signal or all way stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] CSS = Cross Street Stop; AWS = All Way Stop; TS = Traffic Signal

[4] 99.9-F = Delay High, Intersection Unstable, Level of Service F

Figure 3
Existing Through Travel Lanes and Intersection Controls



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Intersection reference numbers are in upper left corner of turning movement boxes.

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Figure 4
Existing Average Daily Traffic Volumes

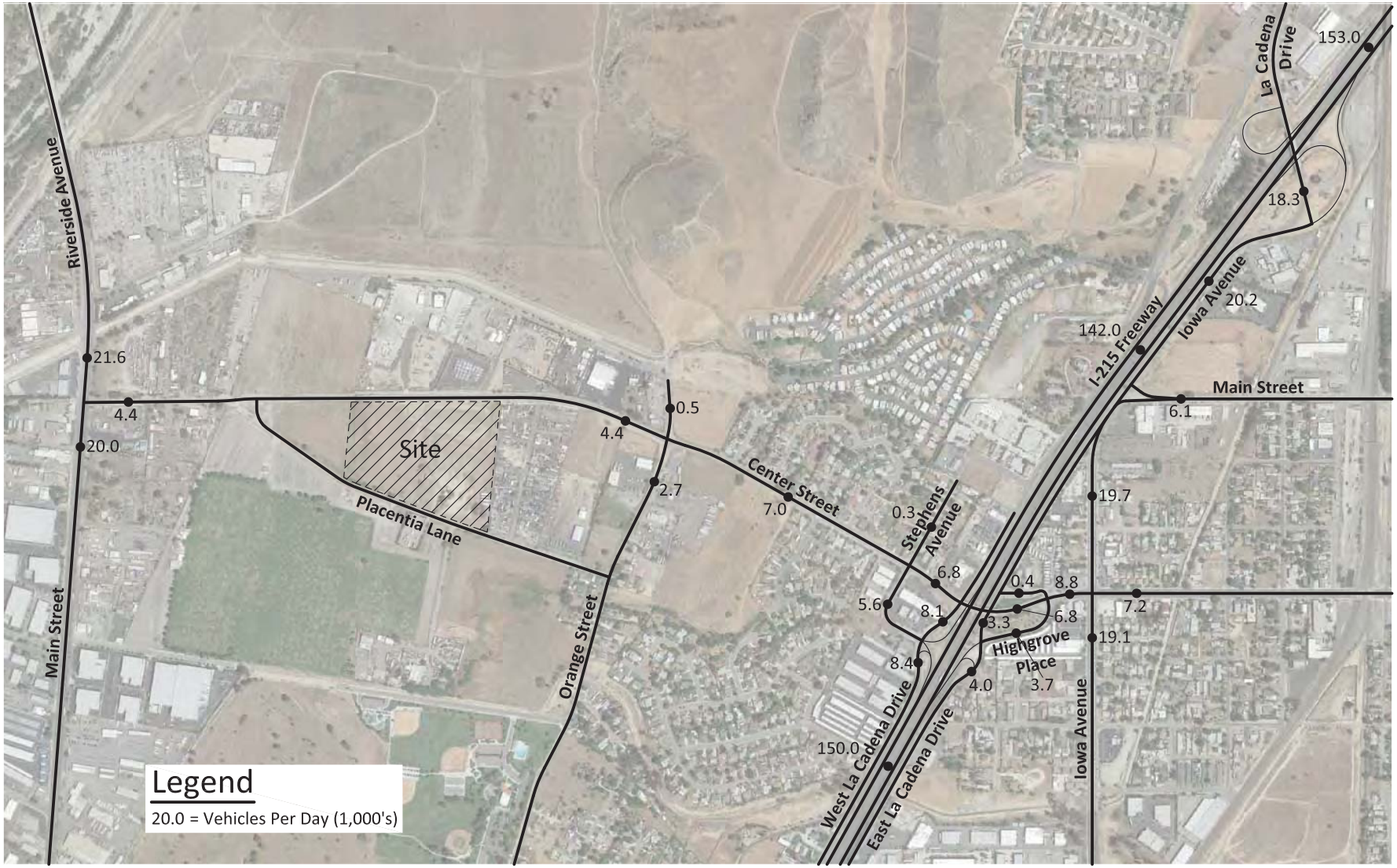

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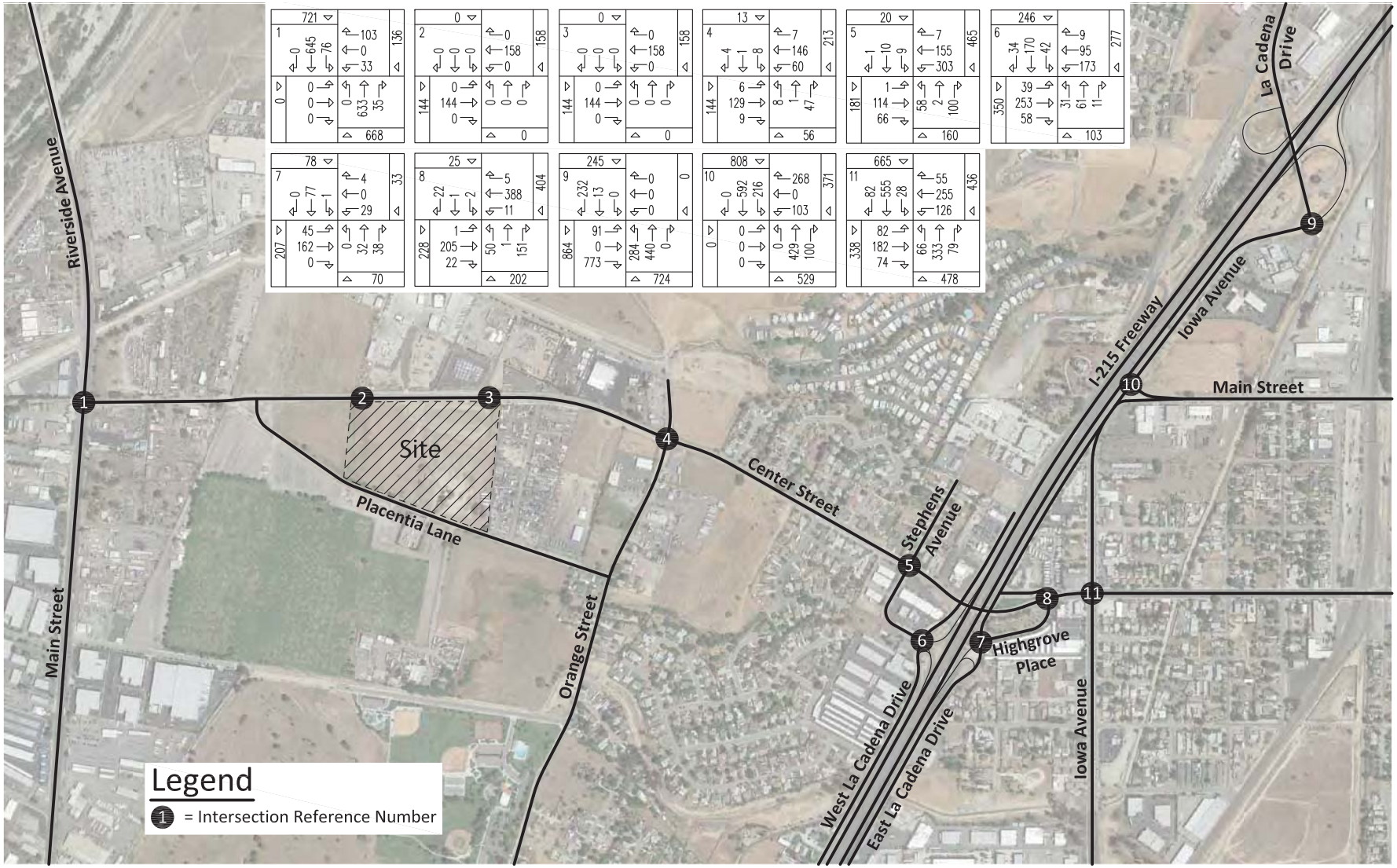
Figure 5
Existing Morning Peak Hour Intersection Turning Movement Volumes



KUNZMAN ASSOCIATES, INC. Intersection reference numbers are in upper left corner of turning movement boxes. JN 6055a

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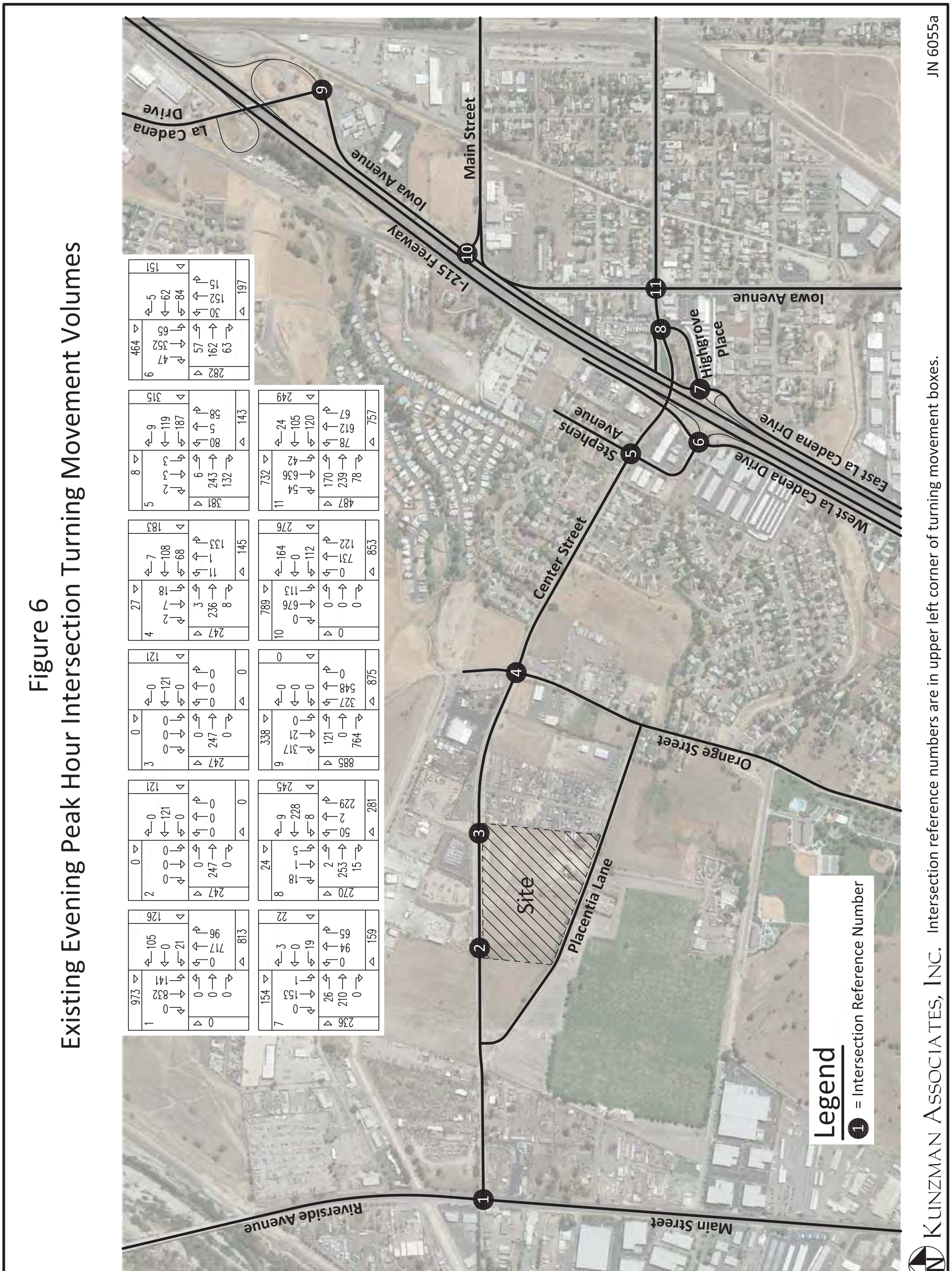
Figure 6
Existing Evening Peak Hour Intersection Turning Movement Volumes
JN 6055a
La Cadena Drive
Iowa Avenue
Main Street
I-215 Freeway
Highgrove Place
East La Cadena Drive
West La Cadena Drive
Stephens Avenue
Center Street
Orange Street
Site
Placentia Lane
Riverside Avenue
Main Street
Legend
= Intersection Reference Number
Intersection reference numbers are in upper left corner of turning movement boxes.
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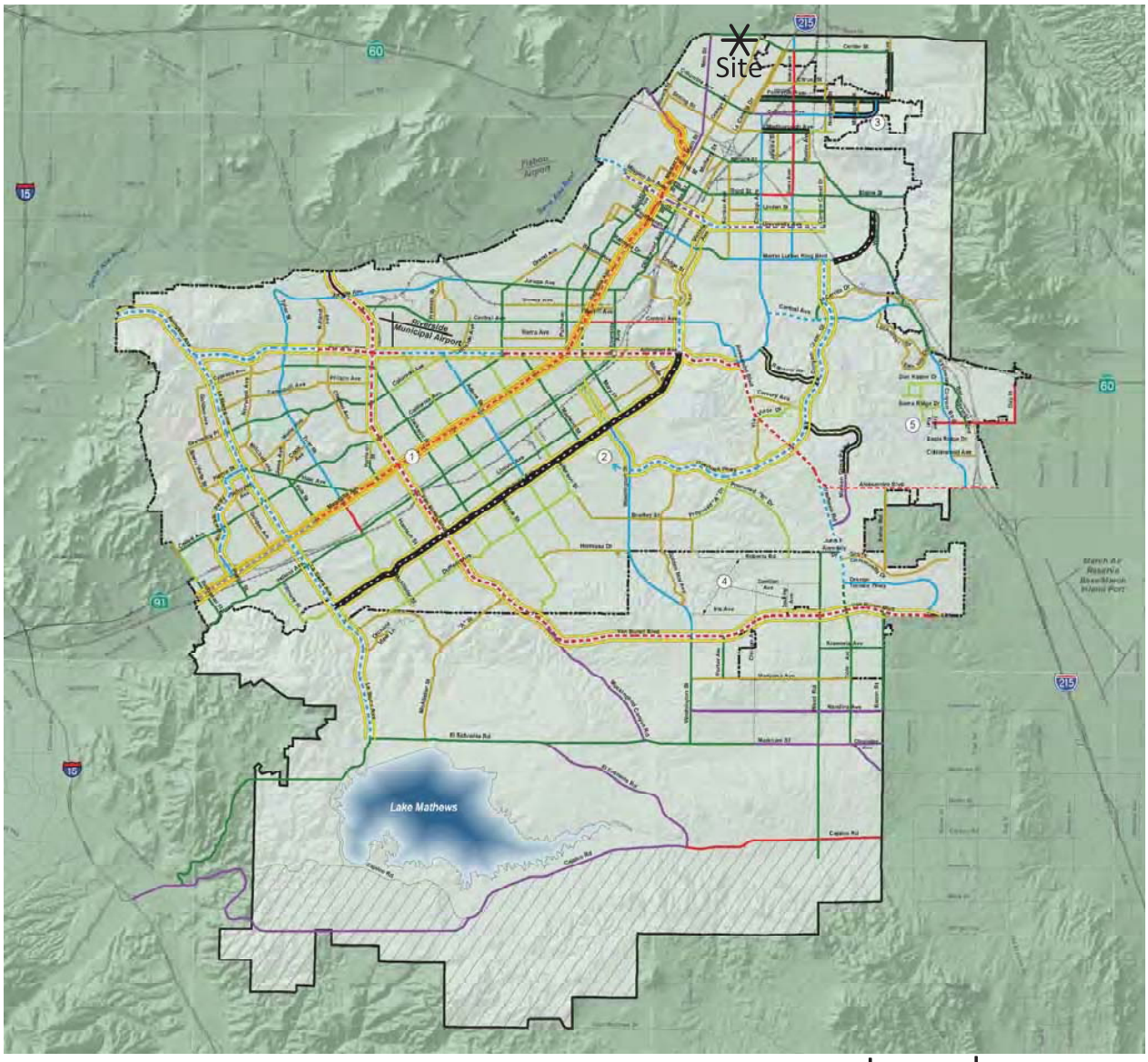
Figure 7
City of Riverside General Plan Circulation Element



Legend

66 FT LOCAL	2 LANES *
86 FT COLLECTOR	2 LANES
80 FT COLLECTOR	2 LANES
86 FT ARTERIAL	4 LANES
100 FT ARTERIAL	4 LANES
110 FT ARTERIAL	4 LANES
120 FT ARTERIAL	6 LANES
144 FT ARTERIAL	8 LANES

SCENIC BOULEVARD
REQUIRES SPECIAL LANDSCAPING. ADDITIONAL RIGHT-OF-WAY MAY BE REQUIRED
SPECIAL BOULEVARD
TWO-LANE DIVIDED ROADWAY OF VARIABLE GEOMETRIC DESIGN
SPECIAL BOULEVARD
VARIABLE WIDTHS AND DESIGN. CONTACT PUBLIC WORKS FOR DETAIL. SEE OBJECTIVE COM-3 AND POLICIES COM-3.1 THROUGH COM-3.5.
PARKWAYS
FOR INFORMATION ON PARKWAYS SEE LAND USE ELEMENT.
CETAP CORRIDOR AREA
CORRIDOR OPTIONS SUBJECT TO SPECIAL STUDY
RIVERSIDE CITY BOUNDARY
RIVERSIDE PROPOSED SPHERE OF INFLUENCE

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Source: City of Riverside

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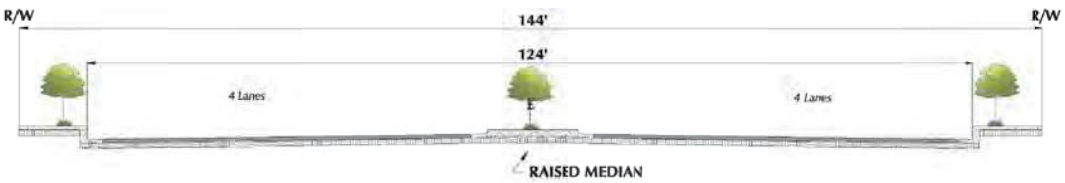
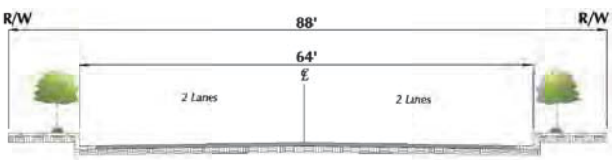
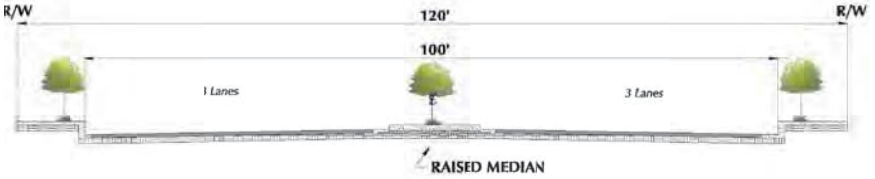
Figure 8
City of Riverside General Plan Roadway Cross-Sections



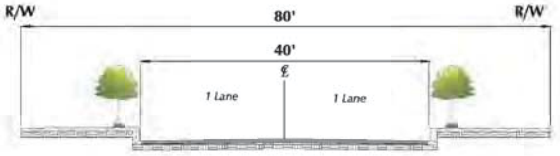
144-FOOT ARTERIAL



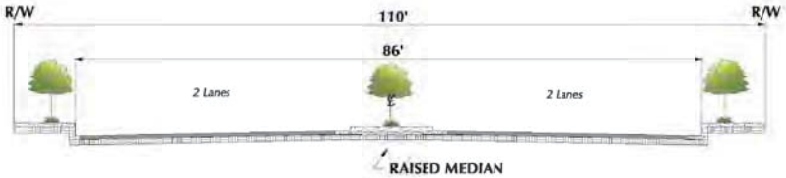
88-FOOT ARTERIAL



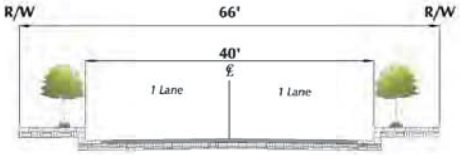
120-FOOT ARTERIAL



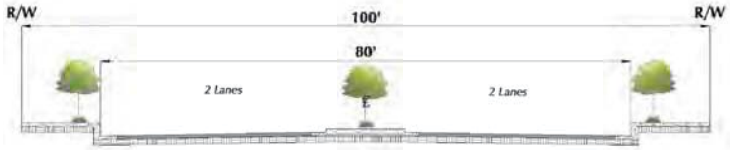
80-FOOT COLLECTOR



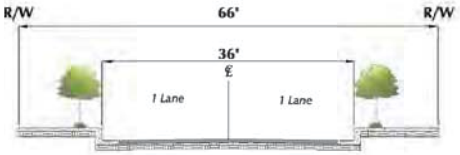
110-FOOT ARTERIAL



66-FOOT COLLECTOR



100-FOOT ARTERIAL



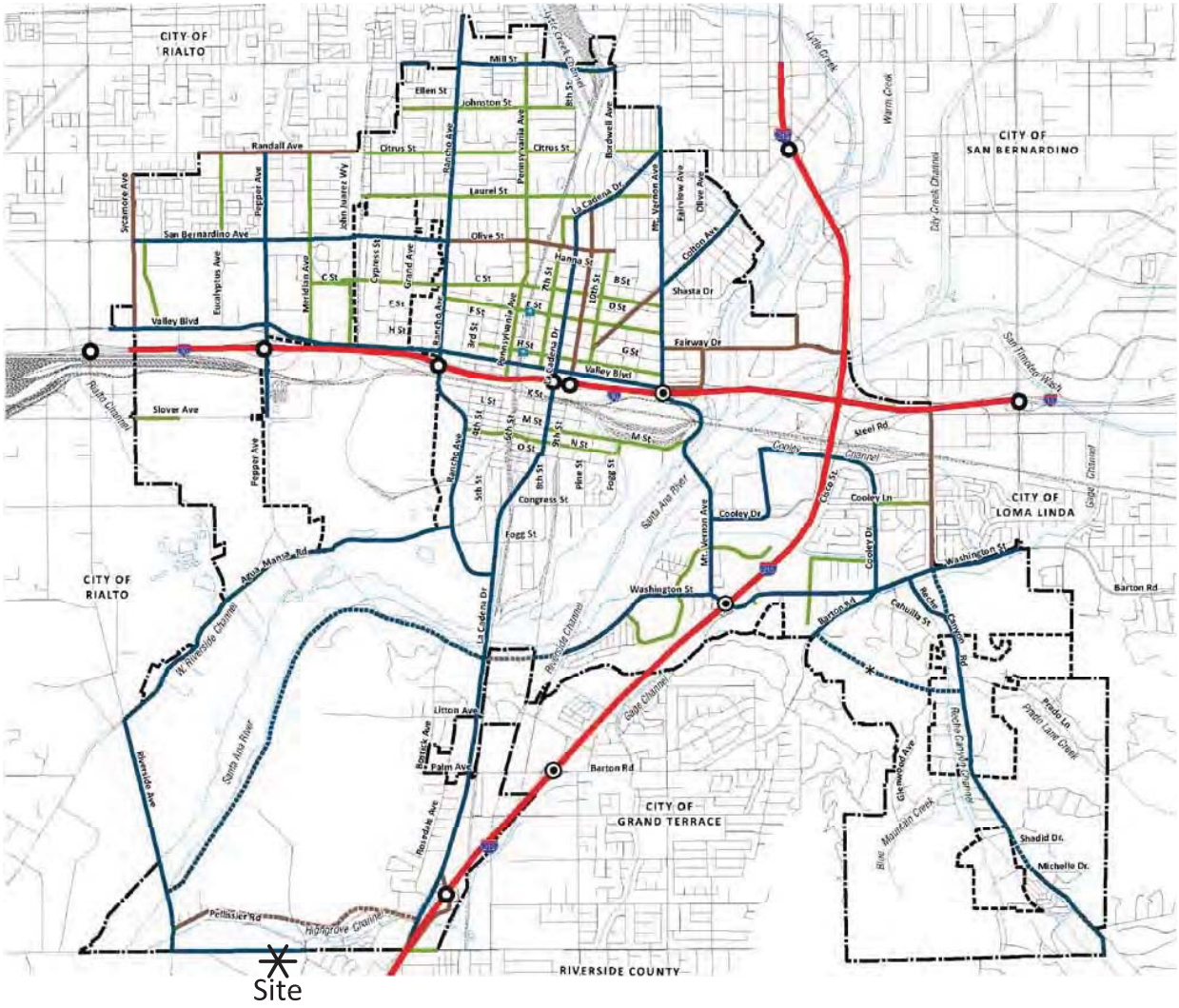
LOCAL STREET

KUNZMAN ASSOCIATES, INC.
OVER 40 YEARS OF EXCELLENT SERVICE

Source: City of Riverside

JN 6055a

Figure 9
City of Colton General Plan Circulation Element

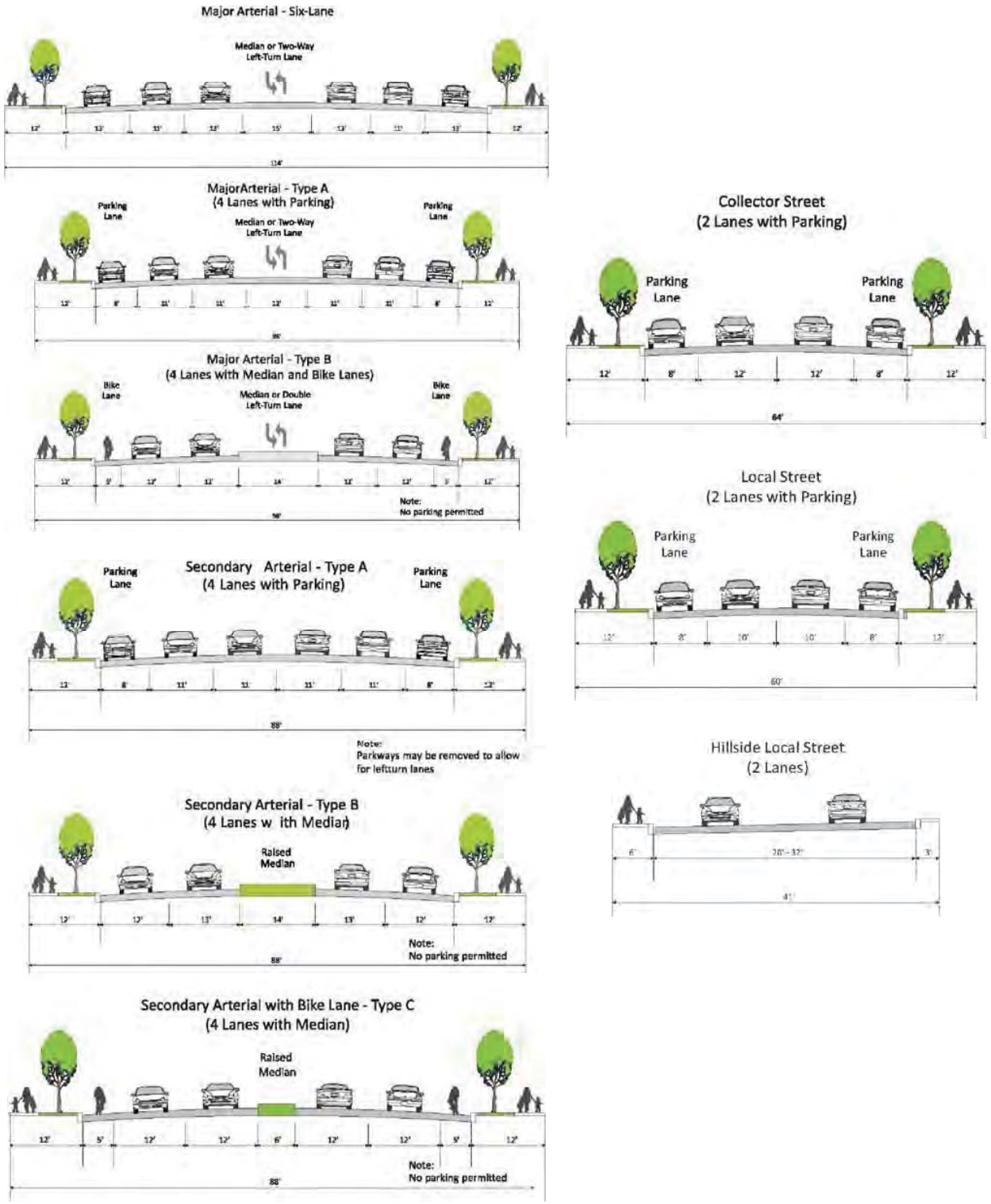


KUNZMAN ASSOCIATES, INC.
OVER 40 YEARS OF EXCELLENT SERVICE

Source: City of Colton

JN 6055a

Figure 10
City of Colton General Plan Roadway Cross-Sections



KUNZMAN ASSOCIATES, INC.
OVER 40 YEARS OF EXCELLENT SERVICE

Source: City of Colton

JN 6055a

Figure 11
County of Riverside General Plan Circulation Element

Legend

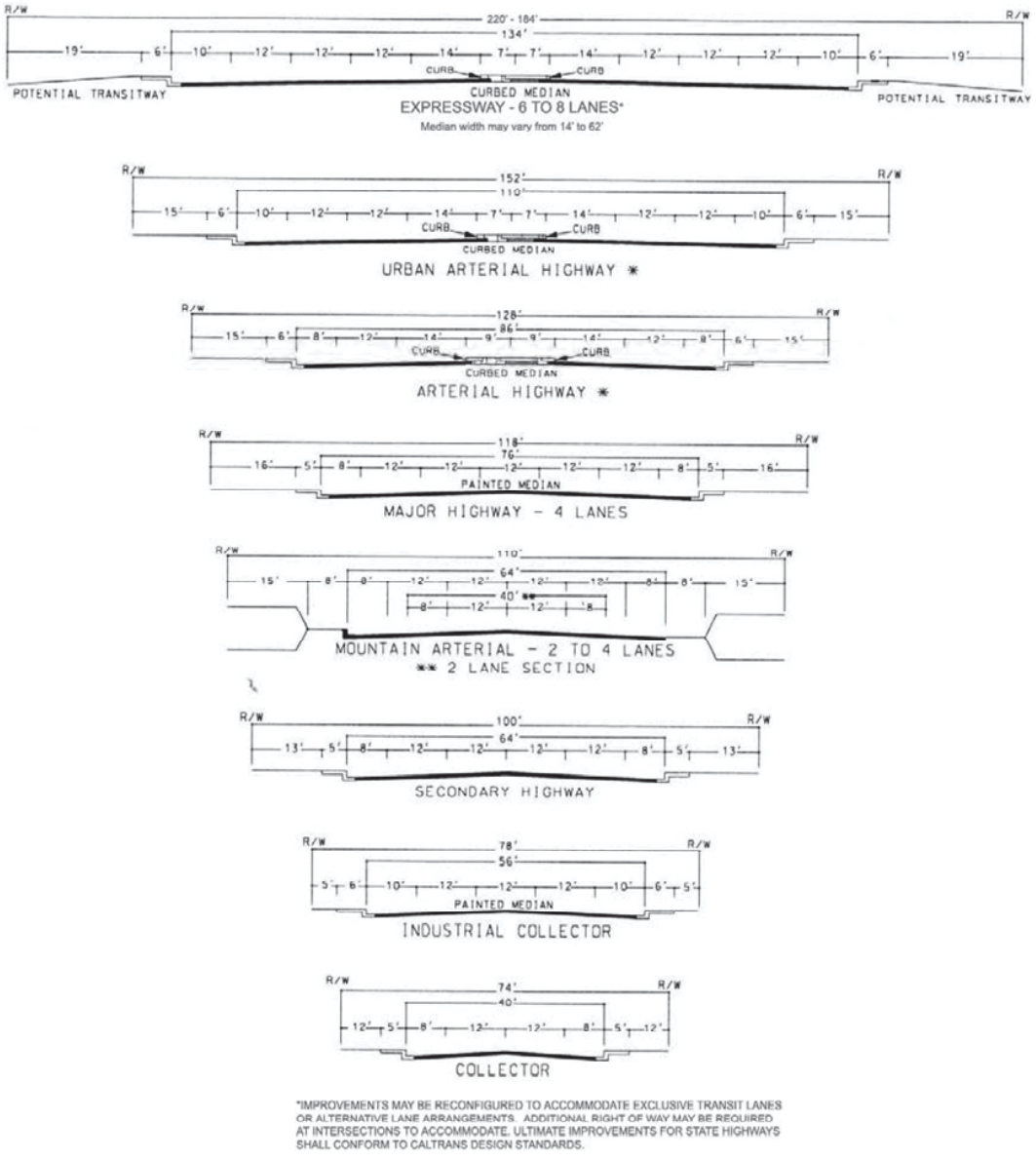
- Freeway
- Expressway (220' ROW)
- Urban Arterial (152' ROW)
- Arterial (128' ROW)
- Major (118' ROW)
- Mountain Arterial (110' ROW)
- Secondary (100' ROW)
- Collector (74' ROW)
- Moreno Valley to San Bernardino Corridor
- Cajalco Romona Corridor
- SR-79 Re-alignment Alternatives
- Existing Interchange
- Proposed Interchange
- Bridge
- Rail
- Water
- City
- Area Plan Boundary

KUNZMAN ASSOCIATES, INC.
OVER 40 YEARS OF EXCELLENT SERVICE

Source: County of Riverside

JN 6055a

Figure 12
County of Riverside General Plan Roadway Cross-Sections

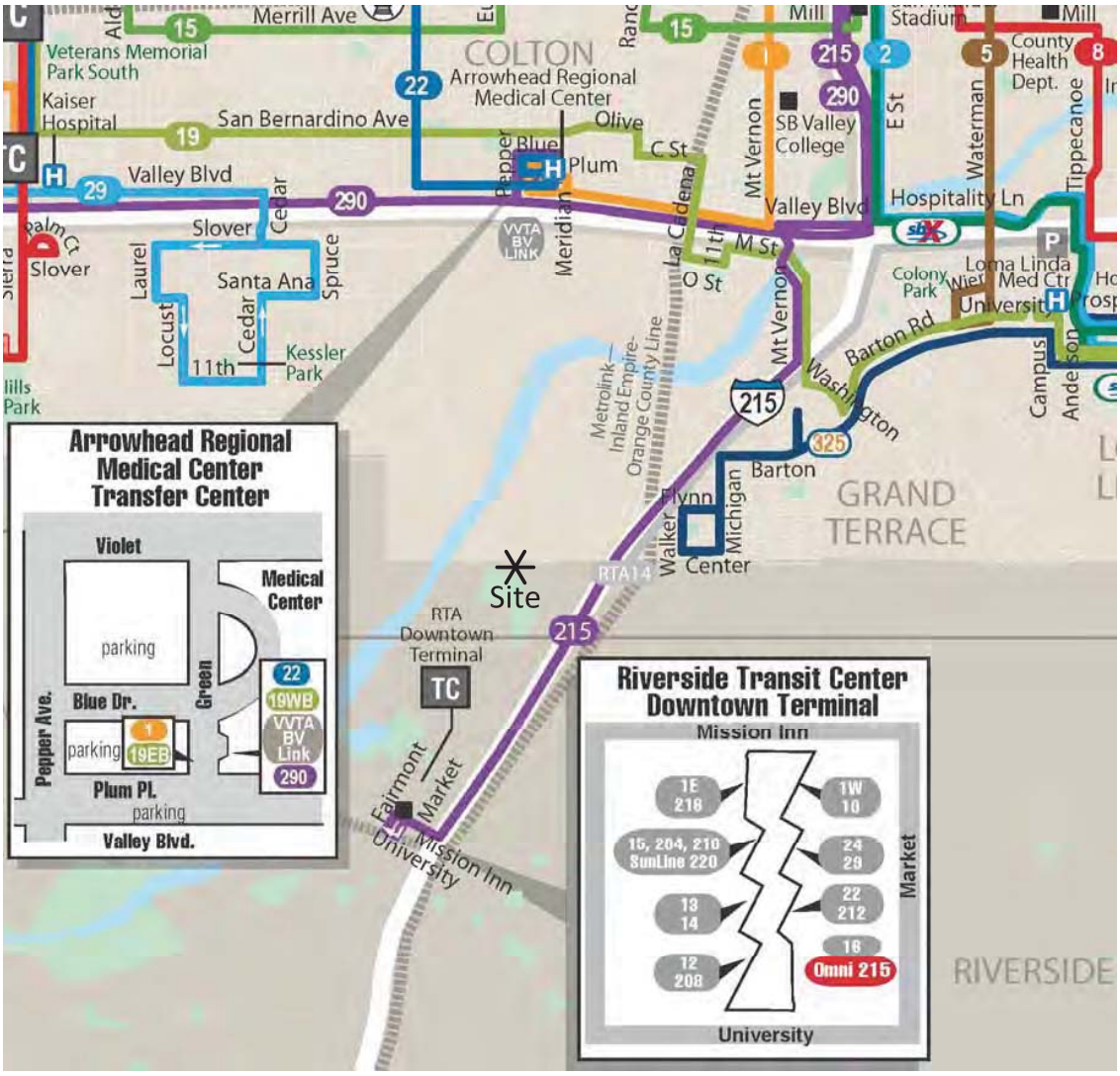


*IMPROVEMENTS MAY BE RECONFIGURED TO ACCOMMODATE EXCLUSIVE TRANSIT LANES OR ALTERNATIVE LANE ARRANGEMENTS. ADDITIONAL RIGHT OF WAY MAY BE REQUIRED AT INTERSECTIONS TO ACCOMMODATE. ULTIMATE IMPROVEMENTS FOR STATE HIGHWAYS SHALL CONFORM TO CALTRANS DESIGN STANDARDS.

KUNZMAN ASSOCIATES, INC. Source: County of Riverside JN 6055a

OVER 40 YEARS OF EXCELLENT SERVICE

Figure 13
Existing Transit Routes

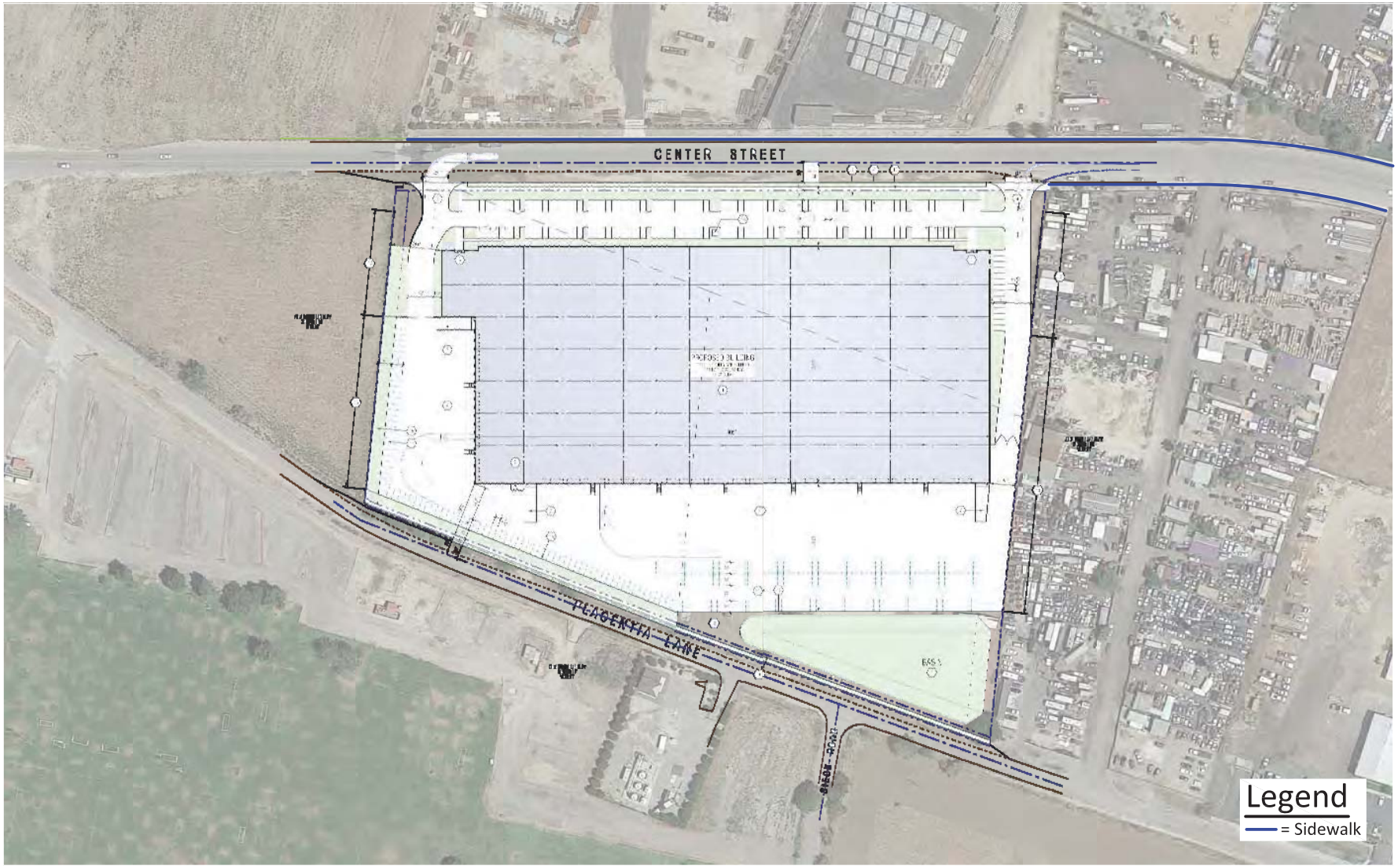


Legend

KUNZMAN ASSOCIATES, INC. Source: Riverside Transit Agency JN 6055a

OVER 40 YEARS OF EXCELLENT SERVICE

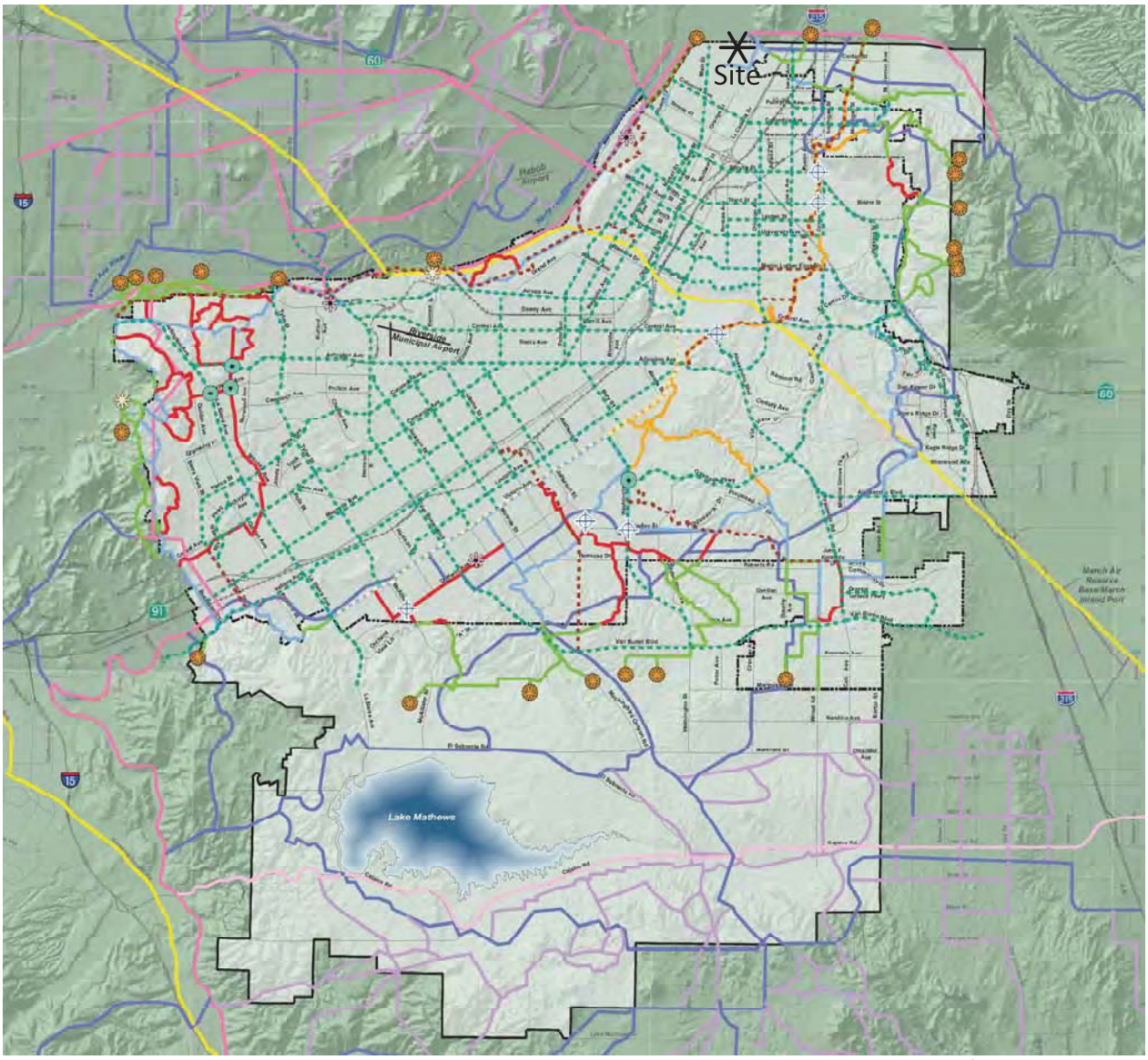
Figure 14
Existing Pedestrian Facilities



KUNZMAN ASSOCIATES, INC.
OVER 40 YEARS OF EXCELLENT SERVICE

JN 6055a

Figure 15
City of Riverside Bike Paths



Legend

CITY TRAIL POINTS
STAGING AREAS EXISTING FACILITIES
STAGING AREAS PROPOSED FACILITIES
CONNECTION TO COUNTY DESIGNATED TRAILS
TRAIL CROSSING PROPOSED STOP SIGN
TRAIL CROSSING PROPOSED TRAFFIC SIGNAL
CITY TRAILS
PRIMARY - EQUESTRIAN, BIKE & PEDESTRIAN TRAIL
SECONDARY - EQUESTRIAN, BIKE & PEDESTRIAN TRAIL
SECONDARY - NO EQUESTRIAN
IN ADJACENT JURISDICTION
CITY BIKEWAYS
CLASS 1
CLASS 1&2
CLASS 2
RIVERSIDE COUNTY TRAILS
CLASS 1 BIKE PATH
CLASS 1 BIKE PATH/REGIONAL TRAIL
COMMUNITY TRAIL
REGIONAL TRAIL
HISTORIC TRAIL
RIVERSIDE CITY BOUNDARY
RIVERSIDE PROPOSED SPHERE OF INFLUENCE

KUNZMAN ASSOCIATES, INC.
OVER 40 YEARS OF EXCELLENT SERVICE

Source: City of Riverside

JN 6055a

V. PROJECT TRAFFIC

The approximately 16 acre project site is proposed to be developed with 308,000 square feet of manufacturing and will have access to Center Street.

A. Site Traffic

1. Trip Generation

The trips generated by the project are determined by multiplying an appropriate trip generation rate by the quantity of land use. Trip generation rates are predicated on the assumption that energy costs, the availability of roadway capacity, the availability of vehicles to drive, and life styles remain similar to what are known today. A major change in these variables may affect trip generation rates.

Trip generation rates were determined for daily trips, morning peak hour inbound and outbound trips, and evening peak hour inbound and outbound trips for the proposed land use. By multiplying the trip generation rates by the land use quantity, the traffic volumes are determined. Table 2 shows the project trip generation based upon rates obtained from the Institute of Transportation Engineers, Trip Generation Manual, 9th Edition, and the City of Fontana, Truck Trip Generation Study, August 2003.

As shown in Table 2, the proposed development is projected to generate approximately 1,576 daily vehicle trips in Passenger Car Equivalent's, 301 of which will occur during the morning peak hour in Passenger Car Equivalent's and 303 of which will occur during the evening peak hour in Passenger Car Equivalent's.

2. Trip Distribution

Figures 16 to 19 contain the directional distributions of the project trips for the proposed land use. To determine the trip distributions for the proposed project, peak hour traffic counts of the existing directional distribution of traffic for existing areas in the vicinity of the site and other additional information on future development and traffic impacts in the area were reviewed.

3. Trip Assignment

Based on the identified trip generation and distributions, project average daily traffic volumes have been calculated and shown on Figure 20. Morning and evening peak hour intersection turning movement volumes expected from the project are shown on Figures 21 and 22, respectively.

4. Modal Split

The traffic reducing potential of public transit has not been considered in this report. Essentially the traffic projections are conservative in that public transit might be able to reduce the traffic volumes.

Table 2

Project Trip Generation

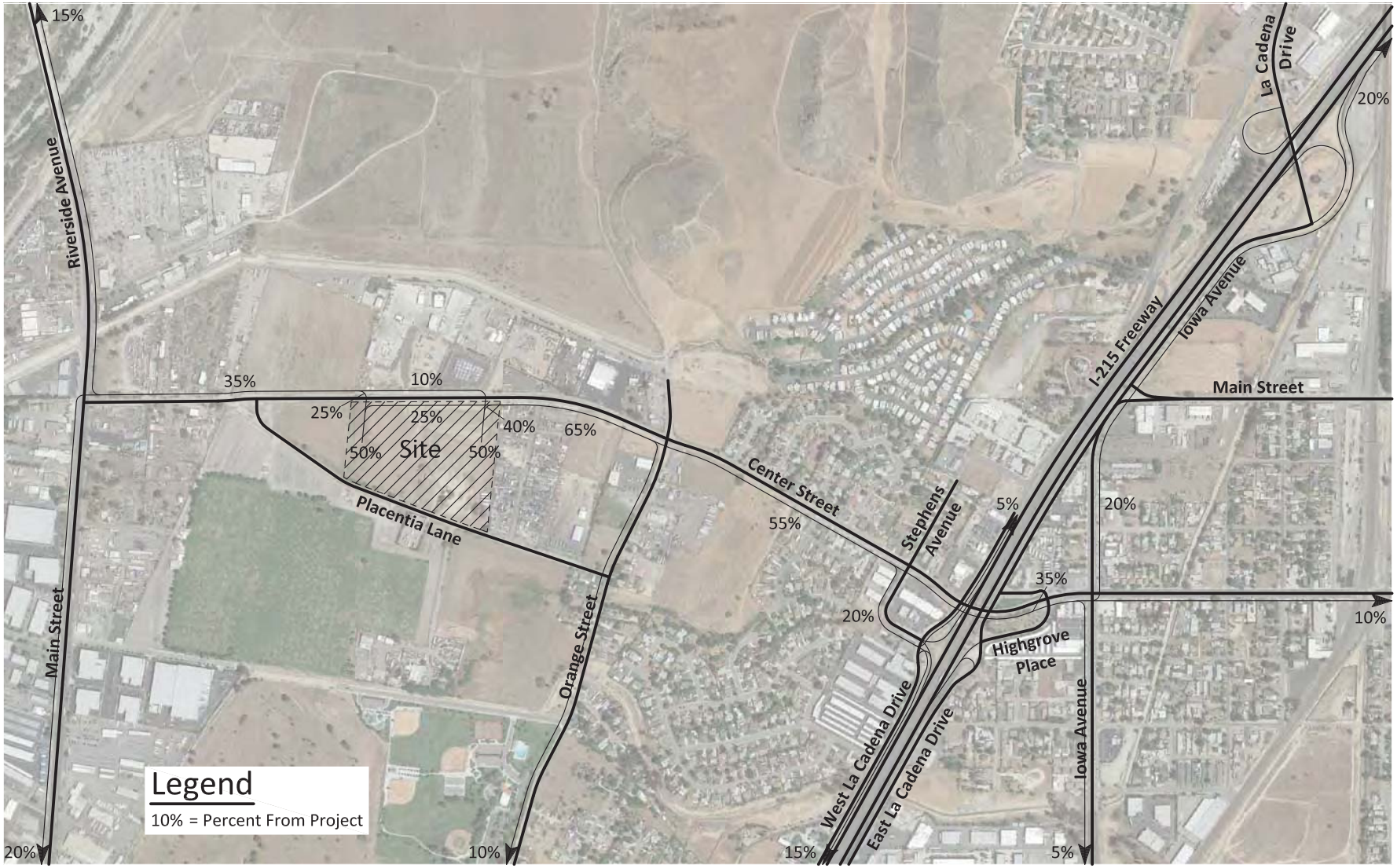
Descriptor		Quantity	Units[2]	Type of Vehicle					Total
				Passenger Car	2 Axle Truck	3 Axle Truck	4+ Axle Truck	Total Trucks	
Land Use: Manufacturing		308.000	TSF	74.4%	8.4%	4.6%	12.6%	25.6%	100%
Traffic Generation Rates in trips per TSF									
Daily				2.842	0.321	0.176	0.481	0.978	3.82
Morning Peak Hour				0.543	0.061	0.034	0.092	0.187	0.73
Evening Peak Hour				0.543	0.061	0.034	0.092	0.187	0.73
Traffic Generation in Vehicles									
Daily				875	99	54	148	301	1,176
Morning Peak Hour									
	Inbound			131	15	8	22	45	176
	Outbound			37	4	2	6	12	49
	Total			168	19	10	28	57	225
Evening Peak Hour									
	Inbound			60	7	4	10	21	81
	Outbound			108	12	7	18	37	145
	Total			168	19	11	28	58	226
Passenger Car Equivalent's (PCE'S) Factor[3]				1.00	1.50	2.00	3.00		
Traffic Generation in PCE's									
Daily				875	149	108	444	701	1,576
Morning Peak Hour									
	Inbound			131	23	16	66	105	236
	Outbound			37	6	4	18	28	65
	Total			168	29	20	84	133	301
Evening Peak Hour									
	Inbound			60	11	8	30	49	109
	Outbound			108	18	14	54	86	194
	Total			168	29	22	84	135	303

[1] Source: Institute of Transportation Engineers, Trip Generation Manual, 9th Edition, 2012, Land Use Category 140 and City of Fontana, Truck Trip Generation Study, August 2003.

[2] TSF = Thousand Square Feet

[3] Passenger Car Equivalent factors are recommended by San Bernardino Associated Governments.

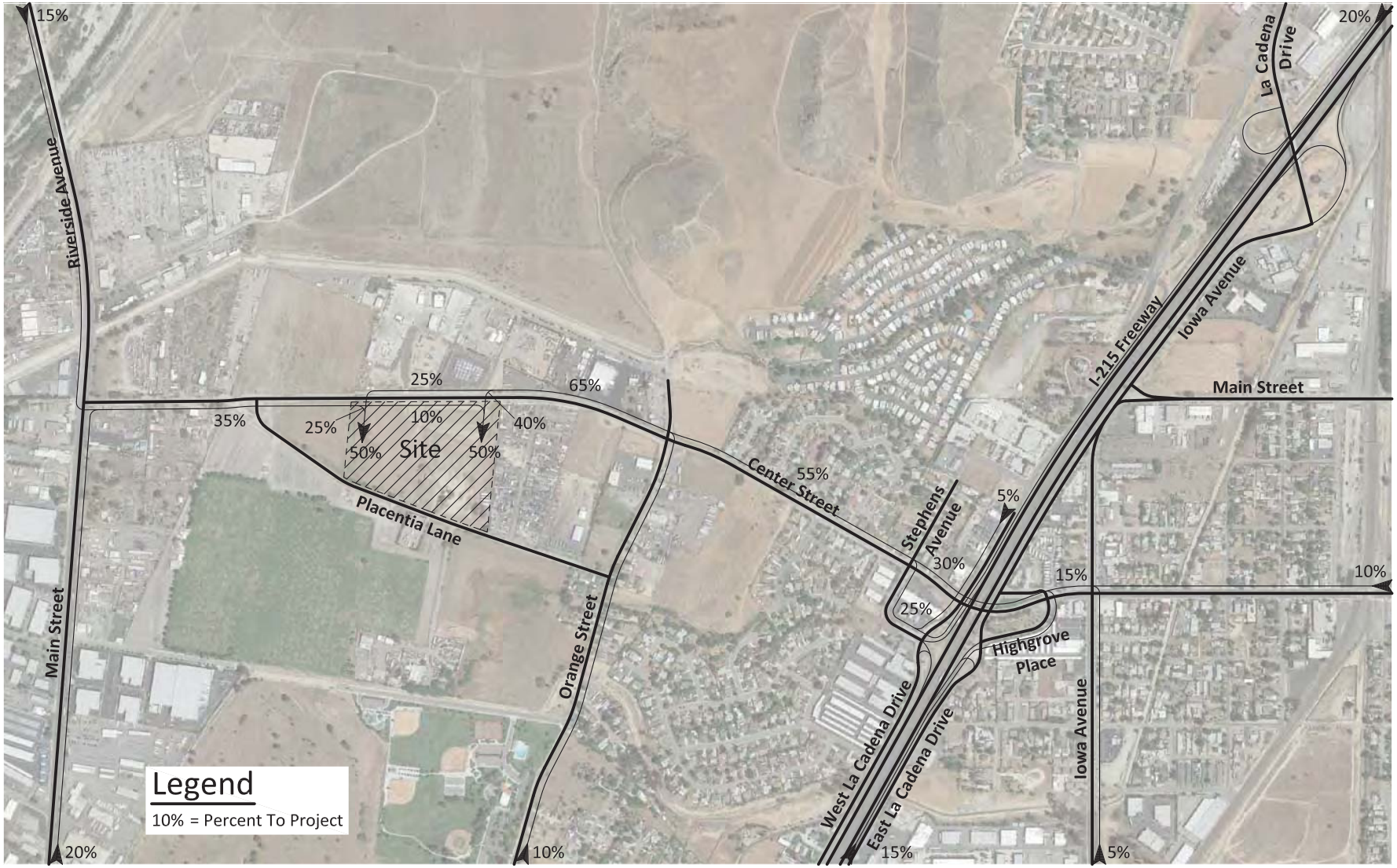
Figure 16
Project Outbound Trip Distribution - Cars



KUNZMAN ASSOCIATES, INC.
OVER 40 YEARS OF EXCELLENT SERVICE

JN 6055a

Figure 17
Project Inbound Trip Distribution - Cars



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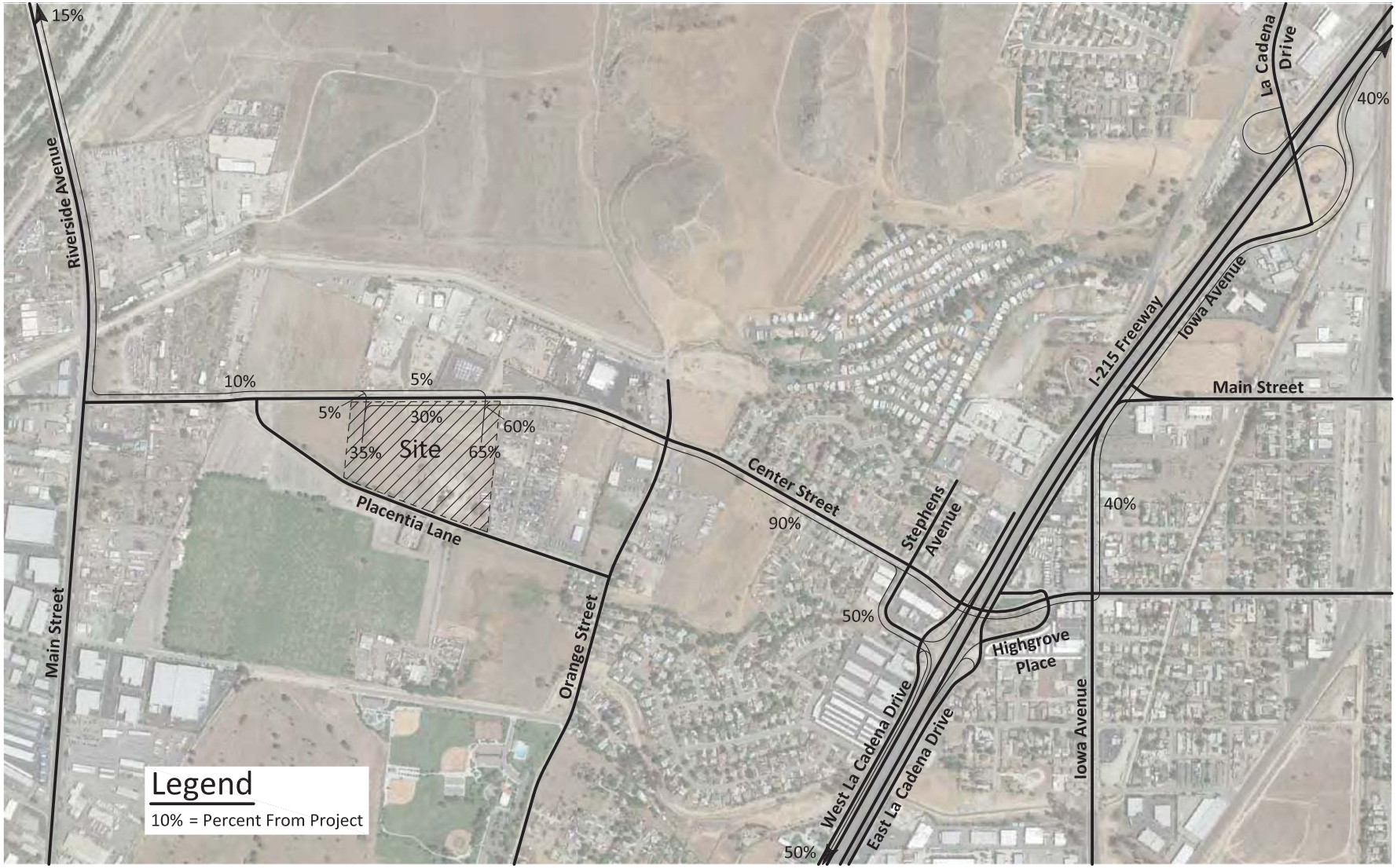
OVER 40 YEARS OF EXCELLENT SERVICE

JN 6055a

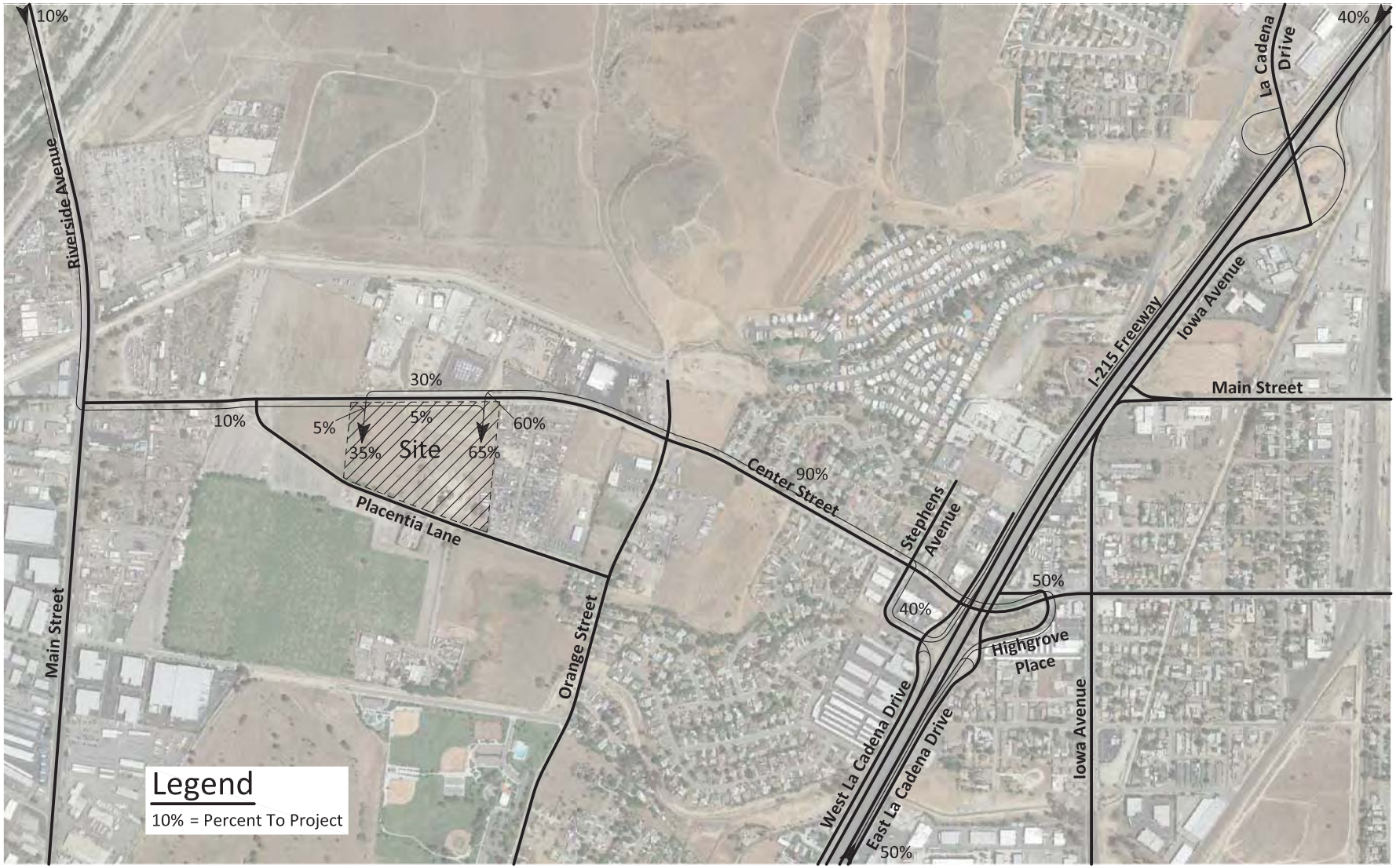
Figure 18
Project Outbound Trip Distribution - Trucks



KUNZMAN ASSOCIATES, INC.
OVER 40 YEARS OF EXCELLENT SERVICE

JN 6055a

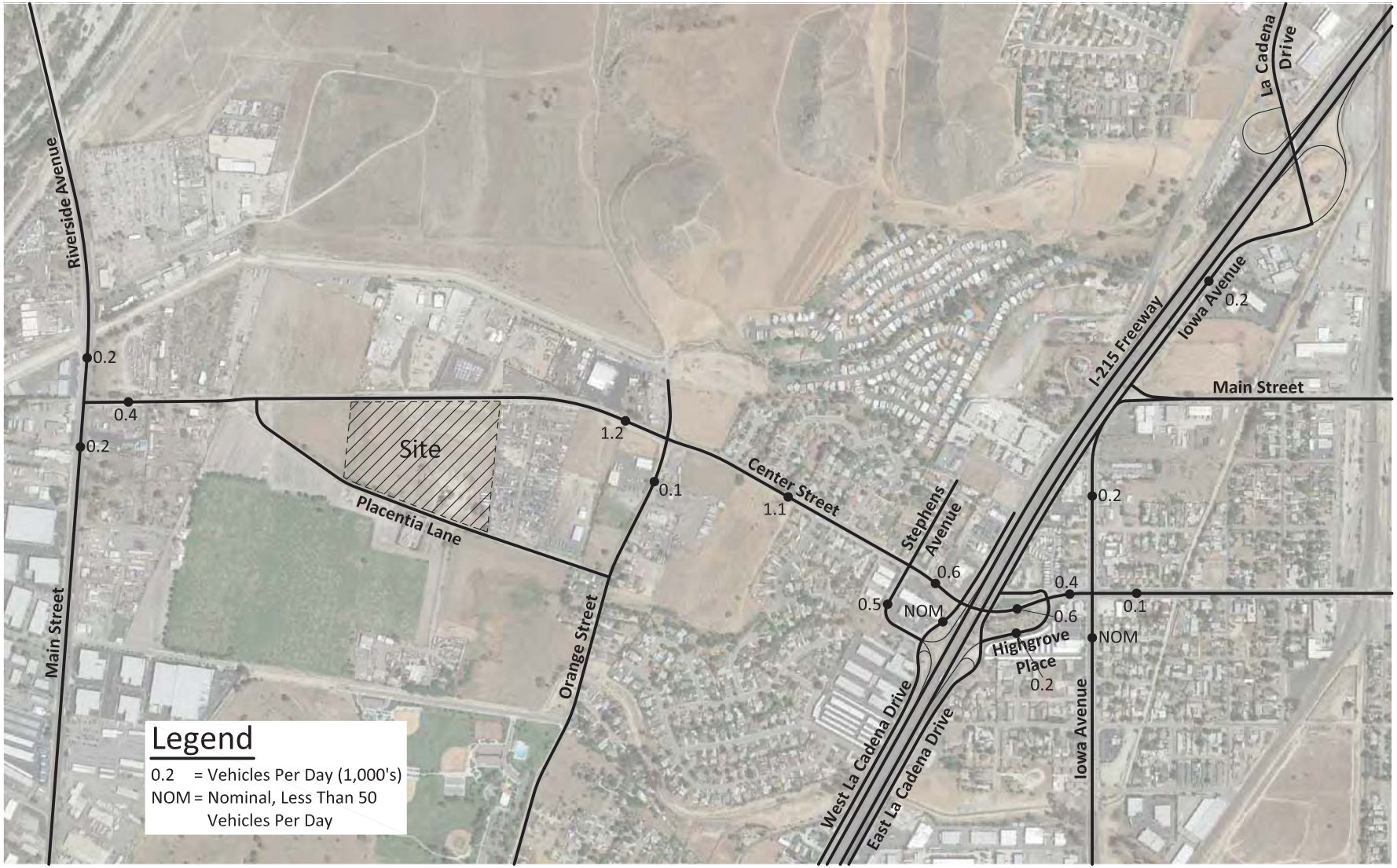
Figure 19
Project Inbound Trip Distribution - Trucks



KUNZMAN ASSOCIATES, INC.
OVER 40 YEARS OF EXCELLENT SERVICE

JN 6055a

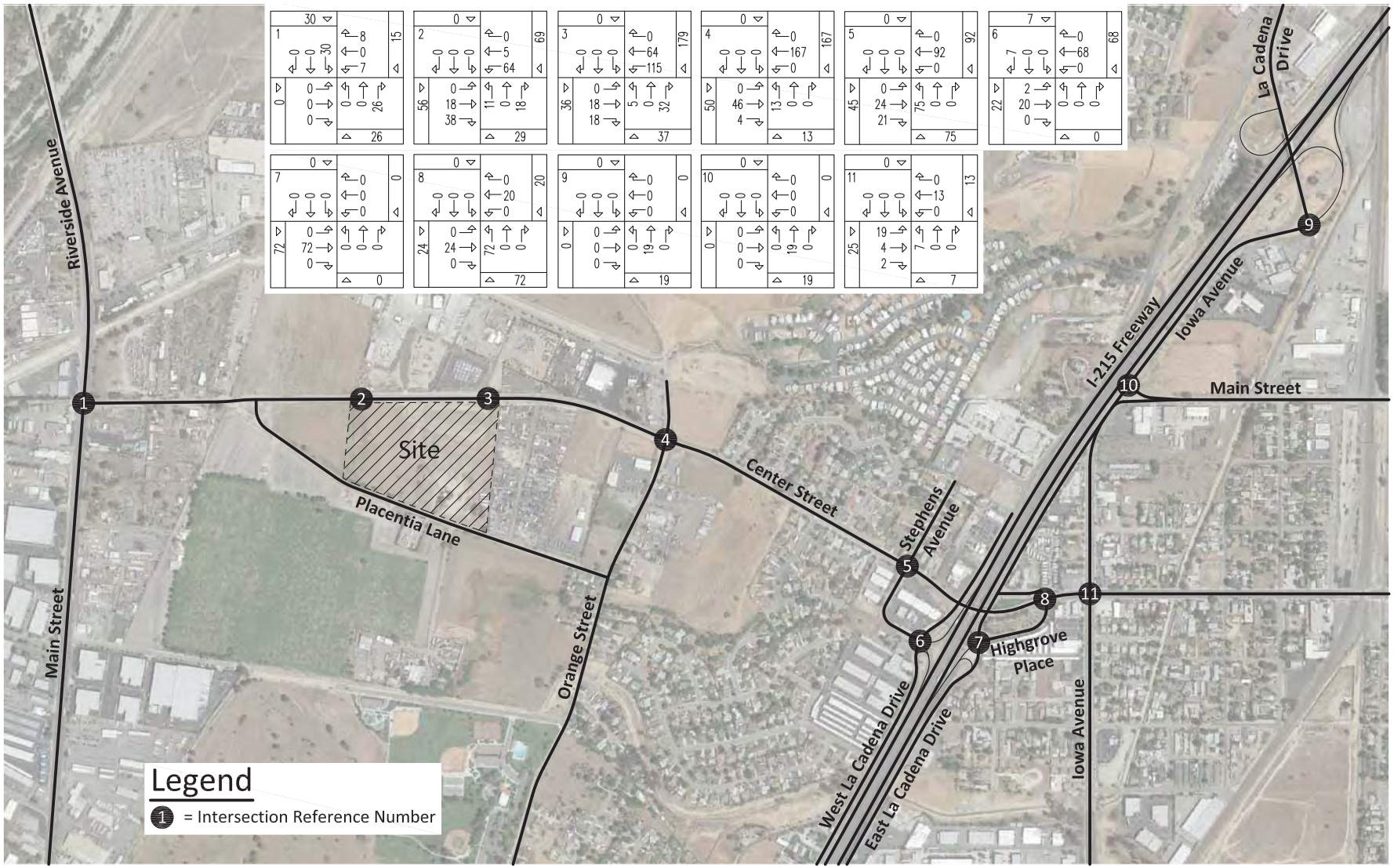
Figure 20
Project Average Daily Traffic Volumes



KUNZMAN ASSOCIATES, INC.
OVER 40 YEARS OF EXCELLENT SERVICE

JN 6055a

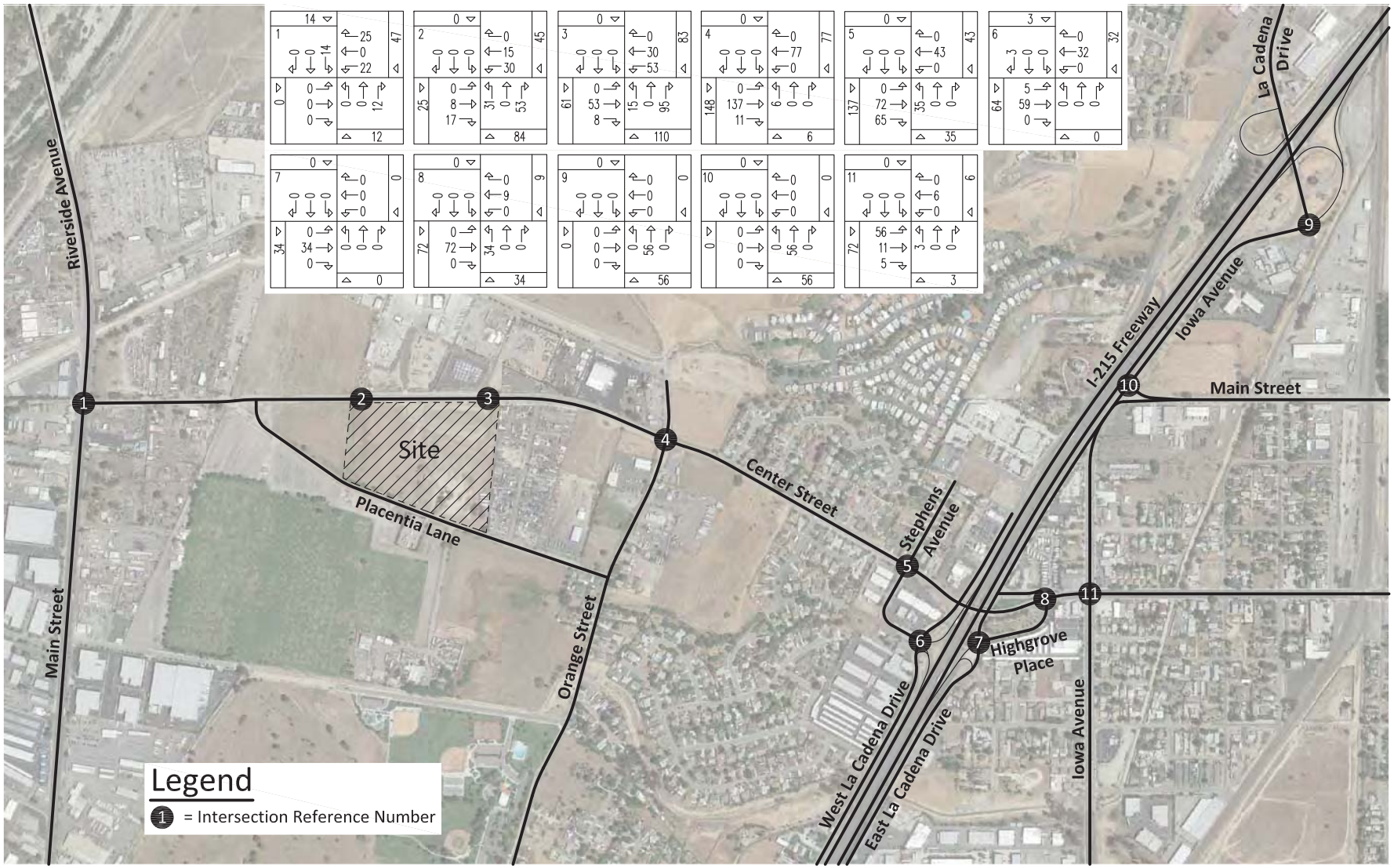
Figure 21
Project Morning Peak Hour Intersection Turning Movement Volumes



KUNZMAN ASSOCIATES, INC. Intersection reference numbers are in upper left corner of turning movement boxes. JN 6055a

OVER 40 YEARS OF EXCELLENT SERVICE

Figure 22
Project Evening Peak Hour Intersection Turning Movement Volumes



KUNZMAN ASSOCIATES, INC. Intersection reference numbers are in upper left corner of turning movement boxes. JN 6055a

OVER 40 YEARS OF EXCELLENT SERVICE

VI. EXISTING PLUS PROJECT TRAFFIC CONDITIONS

Once the project-related trips are assigned to the existing street network and added to existing volumes, the traffic impact can be assessed. Figures 23 to 25 illustrate the Existing Plus Project traffic conditions.

A. Method of Projection

To assess Existing Plus Project traffic conditions, project traffic is combined with existing traffic.

B. Existing Plus Project Average Daily Traffic Volumes

Upon project completion and occupancy, the Existing Plus Project average daily traffic volumes are as illustrated on Figure 23.

C. Existing Plus Project Intersection Delay

The technique used to assess the capacity needs of an intersection is known as the Intersection Delay Method (see Appendix D). To calculate delay, the volume of traffic using the intersection is compared with the capacity of the intersection.

The delay and Level of Service for Existing Plus Project traffic conditions have been calculated and are shown in Table 3. Existing Plus Project morning and evening peak hour intersection turning movement volumes are shown on Figures 24 and 25, respectively.

For Existing Plus Project traffic conditions, the study area intersections are projected to operate at acceptable Levels of Service during the peak hours, except for the following study area intersection that is projected to operate at unacceptable Levels of Service during the peak hours, without improvements:

Iowa Avenue/I-215 Freeway NB Ramps (NS) at:
La Cadena Drive (EW) - #9

For Existing Plus Project traffic conditions, the study area intersections are projected to operate within acceptable Levels of Service during the peak hours, with improvements. Existing Plus Project delay worksheets are provided in Appendix D.

Table 3

Existing Plus Project Intersection Delay and Level of Service

Intersection	Jurisdiction	Traffic Control[3]	Intersection Approach Lanes[1]												Peak Hour Delay-LOS[2]	
			Northbound			Southbound			Eastbound			Westbound				
			L	T	R	L	T	R	L	T	R	L	T	R	Morning	Evening
Main Street/Riverside Avenue (NS) at:																
Center Street (EW) - #1	Colton/Riverside															
- Without Improvements		CSS	0	2	d	1	2	0	0	0	0	0	1	0	15.2-C	19.6-C
- With Improvements		**TS**	0	2	d	1	2	0	0	0	0	0	1	0	11.5-B	10.6-B
Project West Access (NS) at:																
Center Street (EW) - #2	Colton/Riverside	**CSS**	**0.5**	0	**0.5**	0	0	0	0	1	**1**	**1**	1	0	10.4-B	11.2-B
Project East Access (NS) at:																
Center Street (EW) - #3	Colton/Riverside	**CSS**	**0.5**	0	**0.5**	0	0	0	0	1	**1**	**1**	1	0	10.0-A	11.4-B
Orange Street (NS) at:																
Center Street (EW) - #4	Riverside	AWS	0	1	0	0	1	0	0	1	0	0	1	0	10.7-B	13.8-B
Stephens Avenue (NS) at:																
Center Street (EW) - #5	Riverside County	TS	0	1	0	0	1	0	0.5	0.5	1	0.5	0.5	d	14.2-B	12.8-B
West La Cadena Drive (NS) at:																
Stephens Avenue/I-215 Freeway SB Ramps (EW) - #6	Caltrans															
- Without Improvements		AWS	0.5	0.5	1>>	0.5	0.5	d	0	1	0	0	1	0	19.2-C	24.3-C
- With Improvements		**TS**	0.5	0.5	1>>	0.5	0.5	d	0	1	0	0	1	0	15.5-B	17.8-B
East La Cadena Drive (NS) at:																
Highgrove Place/I-215 Freeway NB Ramps (EW) - #7	Caltrans	AWS	0	0.5	0.5	0.5	0.5	0	0.5	0.5	1>>	1	0	1>>	9.5-A	10.2-B
Highgrove Place (NS) at:																
Center Street (EW) - #8	Riverside County															
- Without Improvements		CSS	0.5	0.5	1	0	1	0	0.5	0.5	1>>	0	1	0	16.9-C	13.8-B
- With Improvements		**TS**	0.5	0.5	1	0	1	0	0.5	0.5	1>>	0	1	0	12.8-B	13.1-B
Iowa Avenue/I-215 Freeway NB Ramps (NS) at:																
La Cadena Drive (EW) - #9	Caltrans															
- Without Improvements		TS	1	1	0	0	0.5	0.5	0.5	0	0.5	0	0	0	78.1-E	99.9-F[4]
- With Improvements		TS	1	1	0	0	0.5	0.5	1	0	**1>**	0	0	0	21.4-C	26.3-C
Iowa Avenue (NS) at:																
Main Street (EW) - #10	Colton/Riverside County	TS	0	1	1>>	1	1	0	0	0	0	1	0	1	17.0-B	17.9-B
Center Street (EW) - #11	Riverside County	TS	1	2	d	1	2	d	1	1.5	0.5	1	1	1	18.9-B	18.2-B

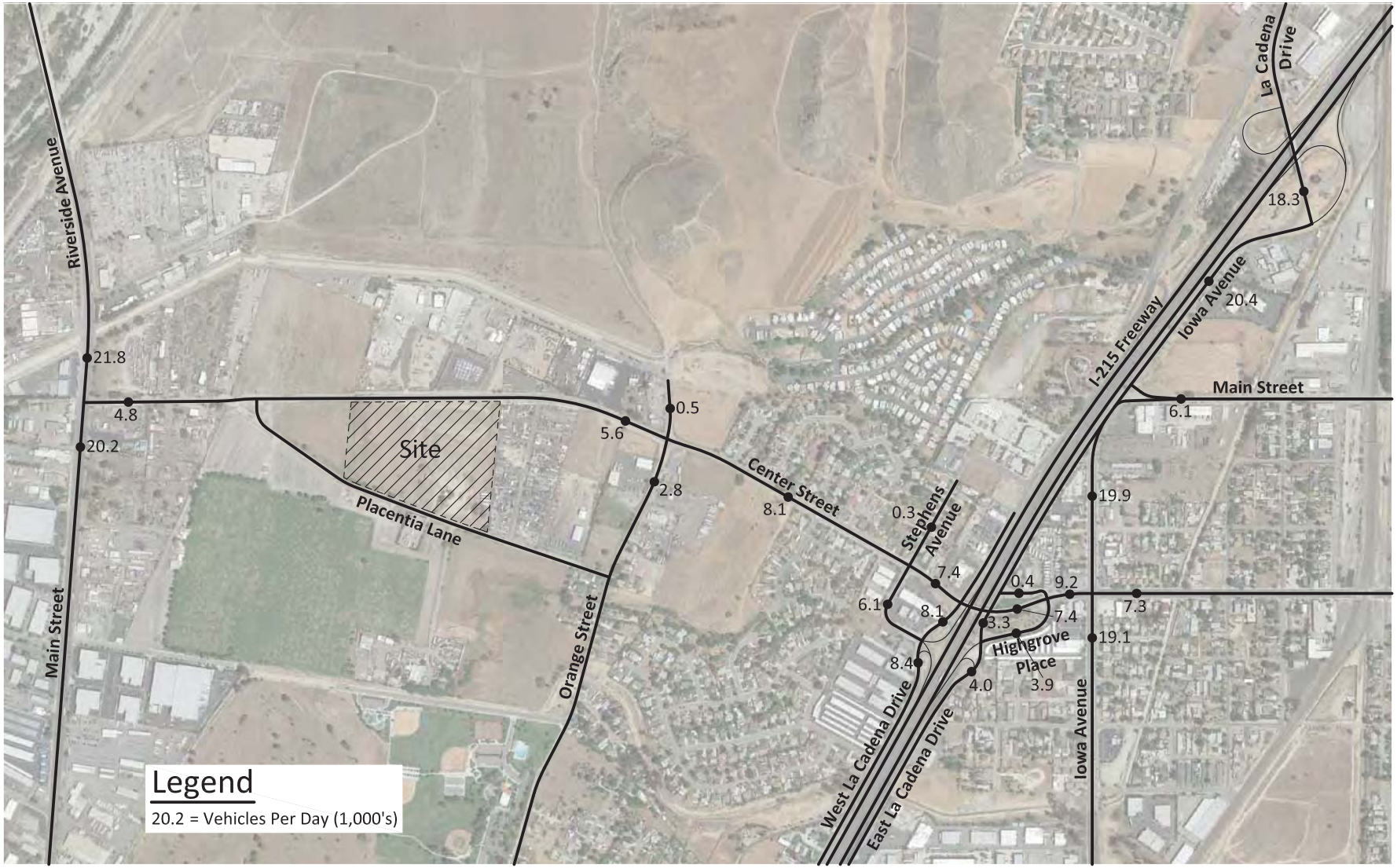
[1] When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicle to travel outside the through lanes. L = Left; T = Through; R = Right; d = De Facto Right Turn Lane; > = Right Turn Overlap; >> = Free Right Turn Lane; **BOLD** = Improvement

[2] Delay and level of service has been calculated using the following analysis software: Highway Capacity Software (2010). Per the Highway Capacity Manual, overall average for intersection delay and level of service are shown for intersections with traffic signal or all way stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] CSS = Cross Street Stop; AWS = All Way Stop; TS = Traffic Signal

[4] 99.9-F = Delay High, Intersection Unstable, Level of Service F

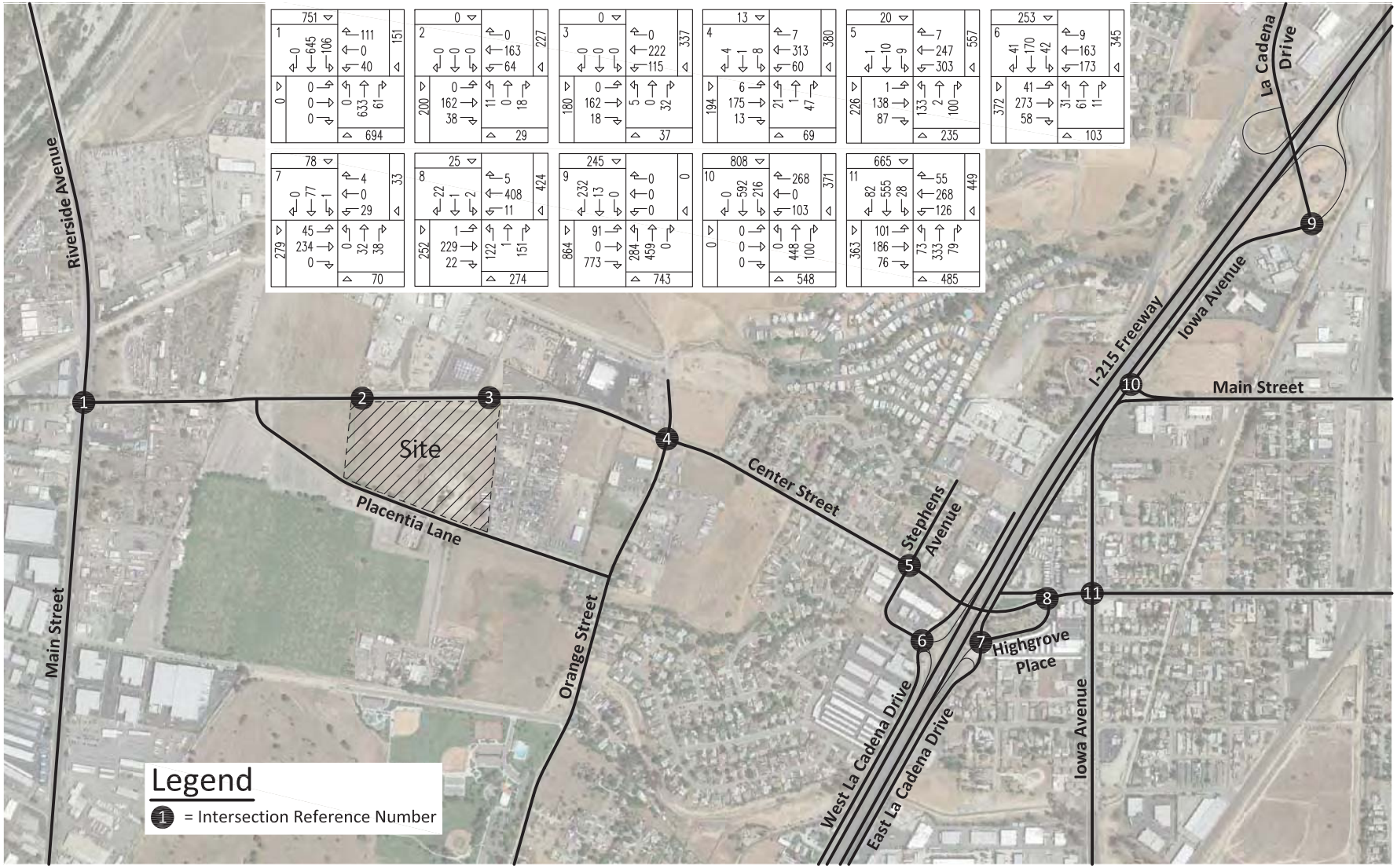
Figure 23
Existing Plus Project Average Daily Traffic Volumes



KUNZMAN ASSOCIATES, INC.
OVER 40 YEARS OF EXCELLENT SERVICE

JN 6055a

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

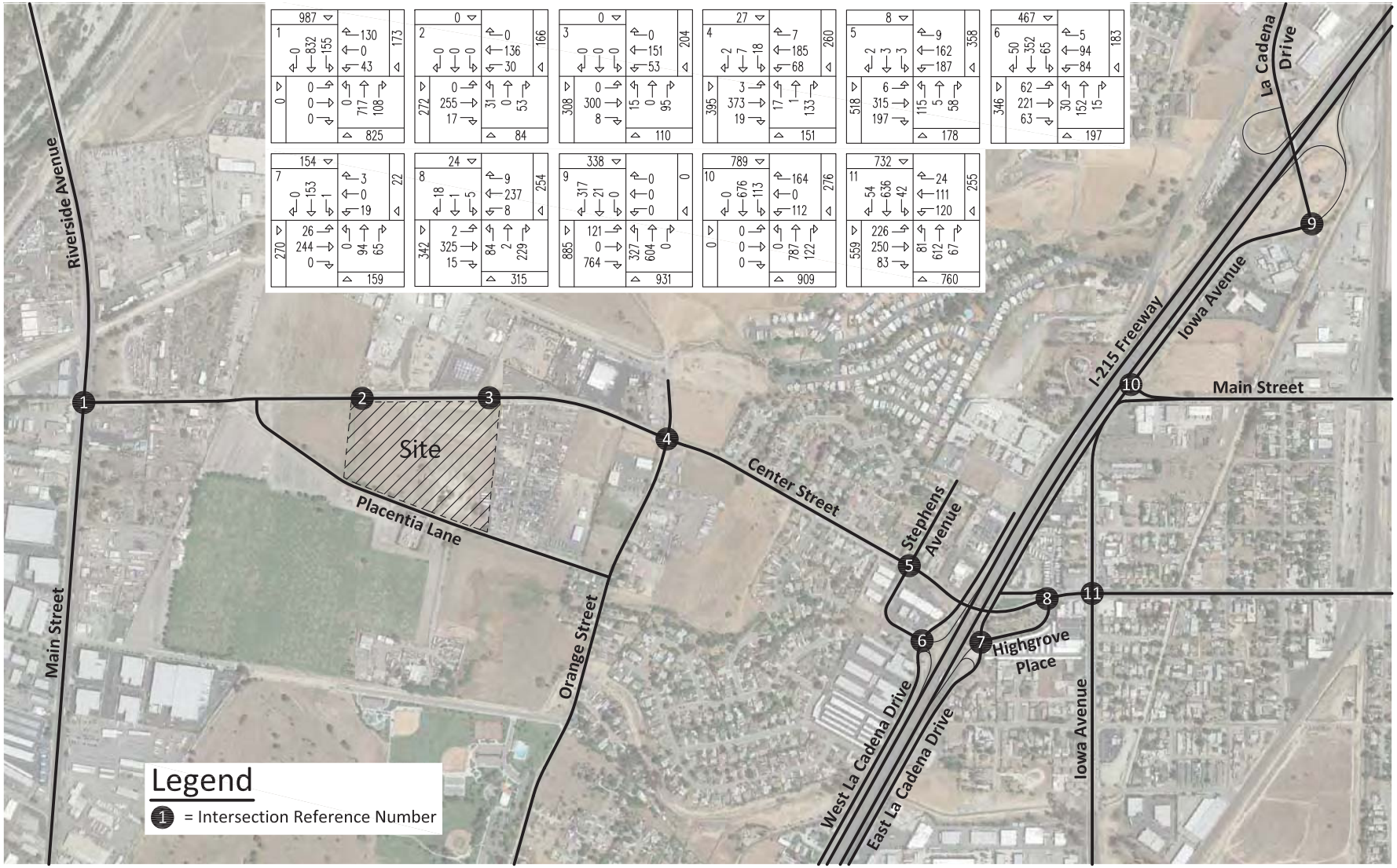


KUNZMAN ASSOCIATES, INC.
OVER 40 YEARS OF EXCELLENT SERVICE

Intersection reference numbers are in upper left corner of turning movement boxes.

JN 6055a

Figure 25
Existing Plus Project
Evening Peak Hour Intersection Turning Movement Volumes



KUNZMAN ASSOCIATES, INC.
OVER 40 YEARS OF EXCELLENT SERVICE

Intersection reference numbers are in upper left corner of turning movement boxes.

JN 6055a

VII. OPENING YEAR TRAFFIC CONDITIONS

Figures 26 to 44 illustrate the Opening Year traffic conditions.

A. Method of Projection

To assess Opening Year traffic conditions, existing traffic is combined with areawide growth. The Opening Year for analysis purposes in this report is 2017.

To account for areawide growth on roadways, traffic volumes have been calculated based on a "conservative" 2.0 percent annual growth rate of existing traffic volumes over the two (2) year period.

B. Other Development

Table 4 lists the proposed land uses for the other development (see Figure 26) and shows the daily and peak hour vehicle trips generated by each development in the study area. Lists of other potential developments within the study area have been provided by the planning departments of the Cities of Riverside, Colton, Grand Terrace, Jurupa Valley, and the County of Riverside. Potential developments within the study area are included in the analysis if they are not currently built, they are approved, their approval has not expired, and they would contribute trips to the study area intersections. Figures 27 through 35 contain the directional distribution and assignment of the other development trips.

Figure 36 shows the average daily traffic volumes that can be expected for the other development traffic conditions. Other development morning and evening peak hour intersection turning movement volumes are shown on Figures 37 and 38, respectively.

C. Opening Year (2017) Average Daily Traffic Volumes

The Opening Year (2017) Without Project average daily traffic volumes are as illustrated on Figure 39 and Opening Year (2015) With Project average daily traffic volumes are as illustrated on Figure 40.

D. Opening Year (2017) Intersection Delay

The technique used to assess the capacity needs of an intersection is known as the Intersection Delay Method (see Appendix D). To calculate delay, the volume of traffic using the intersection is compared with the capacity of the intersection.

The delay and Level of Service for Opening Year (2017) Without Project traffic conditions have been calculated and are shown in Table 5. Opening Year (2017) Without Project morning and evening peak hour intersection turning movement volumes are shown on Figures 41 and 42, respectively.

For Opening Year (2017) Without Project traffic conditions, the study area intersections are projected to operate at acceptable Levels of Service during the peak hours, except for the following study area intersection that is projected to operate at unacceptable Levels of Service during the peak hours, without improvements:

Iowa Avenue/I-215 Freeway NB Ramps (NS) at:
La Cadena Drive (EW) - #9

For Opening Year (2017) Without Project traffic conditions, the study area intersections are projected to operate within acceptable Levels of Service during the peak hours, with improvements. Opening Year (2017) Without Project delay worksheets are provided in Appendix D.

The delay and Level of Service for Opening Year (2017) With Project traffic conditions have been calculated and are shown in Table 6. Opening Year (2017) With Project morning and evening peak hour intersection turning movement volumes are shown on Figures 43 and 44, respectively.

For Opening Year (2017) With Project traffic conditions, the study area intersections are projected to operate at acceptable Levels of Service during the peak hours, except for the following study area intersection that is projected to operate at unacceptable Levels of Service during the peak hours, without improvements:

Iowa Avenue/I-215 Freeway NB Ramps (NS) at:
La Cadena Drive (EW) - #9

For Opening Year (2017) With Project traffic conditions, the study area intersections are projected to operate within acceptable Levels of Service during the peak hours, with improvements. Opening Year (2017) With Project delay worksheets are provided in Appendix D.

E. <u>Significant Transportation Impact</u>

The City of Riverside allows Level of Service D to be used as a maximum acceptable threshold for the study area intersections.

A significant impact occurs at a study intersection when the addition of project generated trips causes either peak hour Level of Service to degrade from acceptable Level of Service (A thru D) to unacceptable Level of Service (E or F) or peak hour delay to increase as follows:

Level of Service A/B	=	By 10.0 seconds
Level of Service C	=	By 8.0 seconds
Level of Service D	=	By 5.0 seconds
Level of Service E	=	By 2.0 seconds
Level of Service F	=	By 1.0 seconds

As shown in Table 7, the project site does <u>not</u> significantly impact the following study area intersections for Opening Year (2017) With Project traffic conditions.

Table 4

Other Development Trip Generation[1]

Traffic Analysis Zone	Name	Land Use	Quantity	Units[2]	Peak Hour						Daily
					Morning			Evening			
					Inbound	Outbound	Total	Inbound	Outbound	Total	
1	Agua Mansa Commerce Center Addendum[3]	High-Cube Distribution Warehouse - Cars	447.330	TSF	28	11	39	14	28	42	598
		High-Cube Distribution Warehouse - Trucks			18	8	26	10	18	28	388
	Agua Mansa Commerce Center[3]	High-Cube Distribution Warehouse - Cars	899.103	TSF	57	21	78	29	57	86	1,202
		High-Cube Distribution Warehouse - Trucks			36	13	49	18	38	56	776
2	Scannel Properties[3]	High-Cube Distribution Warehouse - Cars	320.000	TSF	20	8	28	10	20	30	428
		High-Cube Distribution Warehouse - Trucks			13	3	16	8	13	21	277
3	Crane[3]	Light Industrial	20.800	TSF	17	2	19	18	2	20	145
	Riverside Avenue Warehouse Project[3]	High-Cube Distribution Warehouse - Cars	300.773	TSF	19	7	26	10	19	29	402
		High-Cube Distribution Warehouse - Trucks			13	3	16	5	13	18	258
	PPD # 1966[3]	Concrete Batch Plant	47.000	TSF	26	26	52	24	26	50	1,122
		Office	0.800	TSF	1	1	2	1	1	2	9
4	El Rivino[3]	High-Cube Distribution Warehouse - Cars	269.000	TSF	17	6	23	9	17	26	360
		High-Cube Distribution Warehouse - Trucks			13	3	16	5	13	18	234
		Light Industrial	80.000	TSF	86	12	98	12	93	105	748
	Oakmont El Rivino[3]	High-Cube Distribution Warehouse - Cars	3,659.000	TSF	233	87	320	116	233	349	4,891
		High-Cube Distribution Warehouse - Trucks			151	58	209	76	151	227	3,164
5	Agua Mansa Logistics Center[4]	High-Cube Distribution Warehouse - Cars	808.500	TSF	51	19	70	26	51	77	1,081
		High-Cube Distribution Warehouse - Trucks			33	13	46	18	33	51	698
6	Tract Map 34908[3]	Single-Family Detached Residential	15	DU	3	8	11	9	6	15	143
7	P13-0956, P13-0959, P13-0960, P13-0964, P13-0965, P13-0966	High-Cube Distribution Warehouse - Cars	1,461.449	TSF	93	35	128	47	93	140	1,954
		High-Cube Distribution Warehouse - Trucks		TSF	58	22	80	30	58	88	1,265
Total					693	248	941	338	685	1,023	13,817

[1] Source: Institute of Transportation Engineers, Trip Generation Manual, 9th Edition, 2012, Land Use Category 152 and City of Fontana, Truck Trip Generation Study, August 2003.

[2] TSF = Thousand Square Feet; DU = Dwelling Unit

[3] Source: Agua Mansa Commerce Center Addendum Traffic Impact Analysis, Kunzman Associates, Inc., May 22, 2014.

[4] Source: Agua Mansa Logistics Center Traffic Impact Analysis, Kunzman Associates, Inc., October 9, 2013.

Table 5

Opening Year (2017) Without Project Intersection Delay and Level of Service

Intersection	Jurisdiction	Traffic Control[3]	Intersection Approach Lanes[1]												Peak Hour Delay-LOS[2]	
			Northbound			Southbound			Eastbound			Westbound				
			L	T	R	L	T	R	L	T	R	L	T	R	Morning	Evening
Main Street/Riverside Avenue (NS) at:																
Center Street (EW) - #1	Colton/Riverside															
- Without Improvements		CSS	0	2	d	1	2	0	0	0	0	0	1	0	15.8-C	16.9-C
- With Improvements		**TS**	0	2	d	1	2	0	0	0	0	0	1	0	11.7-B	10.6-B
Orange Street (NS) at:																
Center Street (EW) - #4	Riverside	AWS	0	1	0	0	1	0	0	1	0	0	1	0	8.9-A	10.5-B
Stephens Avenue (NS) at:																
Center Street (EW) - #5	Riverside County	TS	0	1	0	0	1	0	0.5	0.5	1	0.5	0.5	d	13.8-B	12.2-B
West La Cadena Drive (NS) at:																
Stephens Avenue/I-215 Freeway SB Ramps (EW) - #6	Caltrans															
- Without Improvements		AWS	0.5	0.5	1>>	0.5	0.5	d	0	1	0	0	1	0	15.2-C	23.3-C
- With Improvements		**TS**	0.5	0.5	1>>	0.5	0.5	d	0	1	0	0	1	0	16.8-B	17.7-B
East La Cadena Drive (NS) at:																
Highgrove Place/I-215 Freeway NB Ramps (EW) - #7	Caltrans	AWS	0	0.5	0.5	0.5	0.5	0	0.5	0.5	1>>	1	0	1>>	9.1-A	10.1-B
Highgrove Place (NS) at:																
Center Street (EW) - #8	Riverside County															
- Without Improvements		CSS	0.5	0.5	1	0	1	0	0.5	0.5	1>>	0	1	0	13.6-B	12.6-B
- With Improvements		**TS**	0.5	0.5	1	0	1	0	0.5	0.5	1>>	0	1	0	12.7-B	13.0-B
Iowa Avenue/I-215 Freeway NB Ramps (NS) at:																
La Cadena Drive (EW) - #9	Caltrans															
- Without Improvements		TS	1	1	0	0	0.5	0.5	0.5	0	0.5	0	0	0	99.0-F	99.9-F[4]
- With Improvements		TS	1	1	0	0	0.5	0.5	1	0	**1>**	0	0	0	23.4-C	31.7-C
Iowa Avenue (NS) at:																
Main Street (EW) - #10	Colton/Riverside County	TS	0	1	1>>	1	1	0	0	0	0	1	0	1	17.8-B	17.2-B
Center Street (EW) - #11	Riverside County	TS	1	2	d	1	2	d	1	1.5	0.5	1	1	1	18.9-B	17.8-B

[1] When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicle to travel outside the through lanes. L = Left; T = Through; R = Right; d = De Facto Right Turn Lane; > = Right Turn Overlap; >> = Free Right Turn Lane; **BOLD** = Improvement

[2] Delay and level of service has been calculated using the following analysis software: Highway Capacity Software (2010). Per the Highway Capacity Manual, overall average for intersection delay and level of service are shown for intersections with traffic signal or all way stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] CSS = Cross Street Stop; AWS = All Way Stop; TS = Traffic Signal

[4] 99.9-F = Delay High, Intersection Unstable, Level of Service F

Table 6

Opening Year (2017) With Project Intersection Delay and Level of Service

Intersection	Jurisdiction	Traffic Control[3]	Intersection Approach Lanes[1]												Peak Hour Delay-LOS[2]	
			Northbound			Southbound			Eastbound			Westbound				
			L	T	R	L	T	R	L	T	R	L	T	R	Morning	Evening
Main Street/Riverside Avenue (NS) at:																
Center Street (EW) - #1	Colton/Riverside															
- Without Improvements		CSS	0	2	d	1	2	0	0	0	0	0	1	0	17.5-C	24.5-C
- With Improvements		**TS**	0	2	d	1	2	0	0	0	0	0	1	0	12.1-B	10.9-B
Project West Access (NS) at:																
Center Street (EW) - #2	Colton/Riverside	**CSS**	**0.5**	0	**0.5**	0	0	0	0	1	**1**	**1**	1	0	10.7-B	11.7-B
Project East Access (NS) at:																
Center Street (EW) - #3	Colton/Riverside	**CSS**	**0.5**	0	**0.5**	0	0	0	0	1	**1**	**1**	1	0	10.2-B	11.8-B
Orange Street (NS) at:																
Center Street (EW) - #4	Riverside	AWS	0	1	0	0	1	0	0	1	0	0	1	0	11.5-B	15.7-C
Stephens Avenue (NS) at:																
Center Street (EW) - #5	Riverside County	TS	0	1	0	0	1	0	0.5	0.5	1	0.5	0.5	d	16.2-B	13.2-B
West La Cadena Drive (NS) at:																
Stephens Avenue/I-215 Freeway SB Ramps (EW) - #6	Caltrans															
- Without Improvements		AWS	0.5	0.5	1>>	0.5	0.5	d	0	1	0	0	1	0	18.1-C	30.8-D
- With Improvements		**TS**	0.5	0.5	1>>	0.5	0.5	d	0	1	0	0	1	0	17.3-B	18.7-B
East La Cadena Drive (NS) at:																
Highgrove Place/I-215 Freeway NB Ramps (EW) - #7	Caltrans	AWS	0	0.5	0.5	0.5	0.5	0	0.5	0.5	1>>	1	0	1>>	10.0-A	10.6-B
Highgrove Place (NS) at:																
Center Street (EW) - #8	Riverside County															
- Without Improvements		CSS	0.5	0.5	1	0	1	0	0.5	0.5	1>>	0	1	0	19.9-C	14.6-B
- With Improvements		**TS**	0.5	0.5	1	0	1	0	0.5	0.5	1>>	0	1	0	13.0-B	13.3-B
Iowa Avenue/I-215 Freeway NB Ramps (NS) at:																
La Cadena Drive (EW) - #9	Caltrans															
- Without Improvements		TS	1	1	0	0	0.5	0.5	0.5	0	0.5	0	0	0	99.8-F	99.9-F[4]
- With Improvements		TS	1	1	0	0	0.5	0.5	1	0	**1>**	0	0	0	23.4-C	31.7-C
Iowa Avenue (NS) at:																
Main Street (EW) - #10	Colton/Riverside County	TS	0	1	1>>	1	1	0	0	0	0	1	0	1	18.9-B	21.5-C
Center Street (EW) - #11	Riverside County	TS	1	2	d	1	2	d	1	1.5	0.5	1	1	1	20.0-B	18.7-B

[1] When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicle to travel outside the through lanes. L = Left; T = Through; R = Right; d = De Facto Right Turn Lane; > = Right Turn Overlap; >> = Free Right Turn Lane; **BOLD** = Improvement

[2] Delay and level of service has been calculated using the following analysis software: Highway Capacity Software (2010). Per the Highway Capacity Manual, overall average for intersection delay and level of service are shown for intersections with traffic signal or all way stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] CSS = Cross Street Stop; AWS = All Way Stop; TS = Traffic Signal

[4] 99.9-F = Delay High, Intersection Unstable, Level of Service F

Table 7

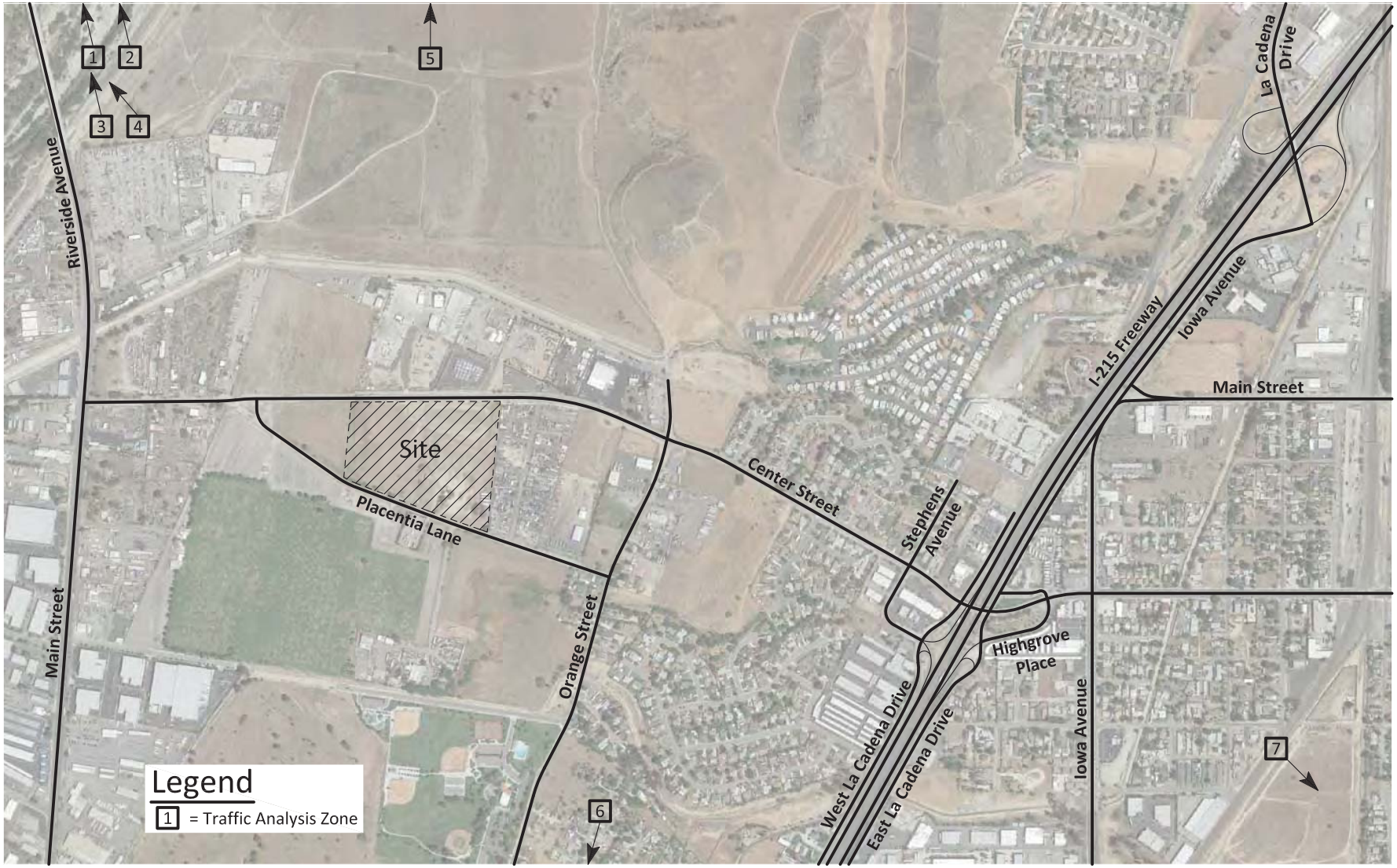
Opening Year (2015) With Project Traffic Contribution

Intersection	Jurisdiction	Peak Hour	Opening Year (2017) Without Project		Opening Year (2015) With Project			
			Delay	LOS[1]	Delay	LOS	Project Impact	Significant Impact[2]
Main Street/Riverside Avenue (NS) at:								
Center Street (EW) - #1	Colton/Riverside	Morning	15.8	C	17.5	C	1.7	No
		Evening	16.9	C	24.5	C	7.6	No
Orange Street (NS) at:								
Center Street (EW) - #4	Riverside	Morning	8.9	A	11.5	B	2.6	No
		Evening	10.5	B	15.7	C	5.2	No
Stephens Avenue (NS) at:								
Center Street (EW) - #5	Riverside County	Morning	13.8	B	16.2	B	2.4	No
		Evening	12.2	B	13.2	B	1.0	No
West La Cadena Drive (NS) at:								
Stephens Avenue/I-215 Freeway SB Ramps (EW) - #6	Caltrans	Morning	15.2	C	18.1	C	2.9	No
		Evening	23.3	C	30.8	D	7.5	No
East La Cadena Drive (NS) at:								
Highgrove Place/I-215 Freeway NB Ramps (EW) - #7	Caltrans	Morning	9.1	A	10.0	A	0.9	No
		Evening	10.1	B	10.6	B	0.5	No
Highgrove Place (NS) at:								
Center Street (EW) - #8	Riverside County	Morning	13.6	B	19.9	C	6.3	No
		Evening	12.6	B	14.6	B	2.0	No
Iowa Avenue/I-215 Freeway NB Ramps (NS) at:								
La Cadena Drive (EW) - #9	Caltrans	Morning	99.0	F	99.8	F	0.8	No
		Evening	155.7	F	156.2	F	0.5	No
Iowa Avenue (NS) at:								
Main Street (EW) - #10	Colton/Riverside County	Morning	17.8	B	18.9	B	1.1	No
		Evening	17.2	B	21.5	C	4.3	No
Center Street (EW) - #11	Riverside County	Morning	18.9	B	20.0	B	1.1	No
		Evening	17.8	B	18.7	B	0.9	No

[1] LOS = Level of Service

[2] A significant impact occurs at a study intersection when the addition of project generated trips adds 10.0 seconds of delay at an intersection operating at Level of Service A or B, 8.0 seconds of delay at an intersecti at Level of Service C, 5.0 seconds of delay at an intersection operating at Level of Service D, 2.0 seconds of delay at an intersection operating at Level of Service E, or 1.0 seconds of delay at an intersection operating Service F.

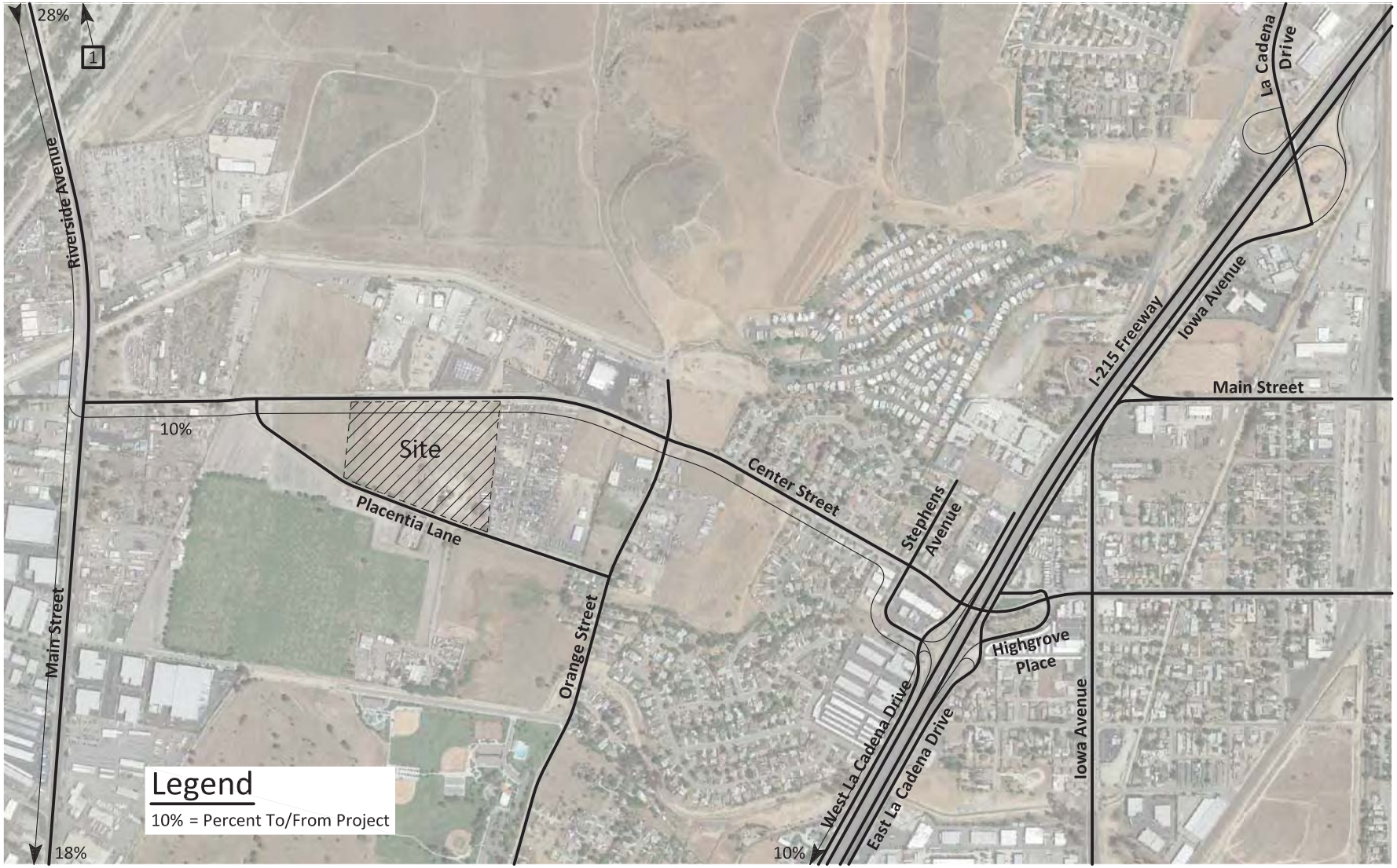
Figure 26
Other Development Traffic Analysis Zone Map



KUNZMAN ASSOCIATES, INC.
OVER 40 YEARS OF EXCELLENT SERVICE

JN 6055a

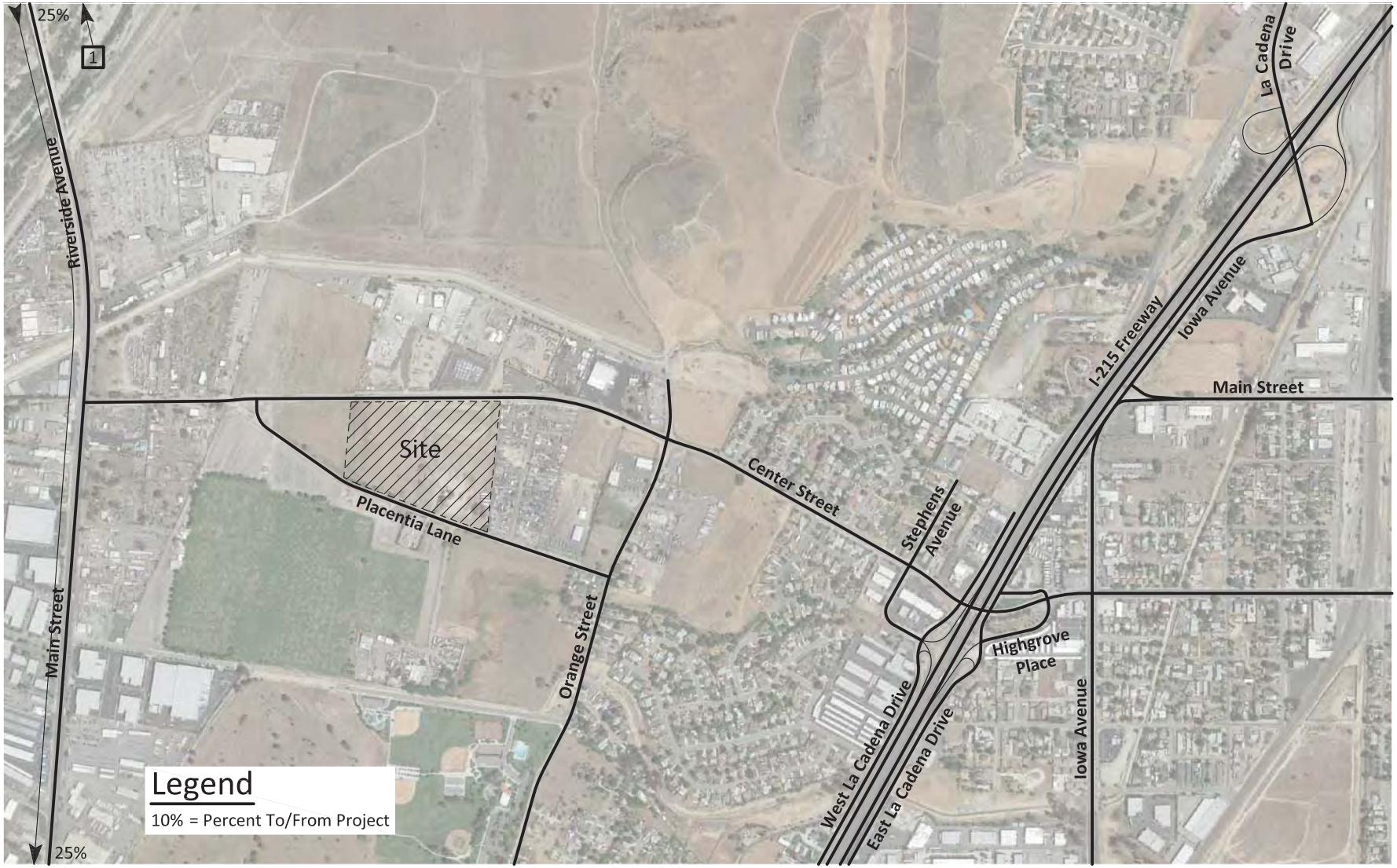
Figure 27
Other Development Traffic Analysis Zone 1 Trip Distribution - Cars



KUNZMAN ASSOCIATES, INC.
OVER 40 YEARS OF EXCELLENT SERVICE

JN 6055a

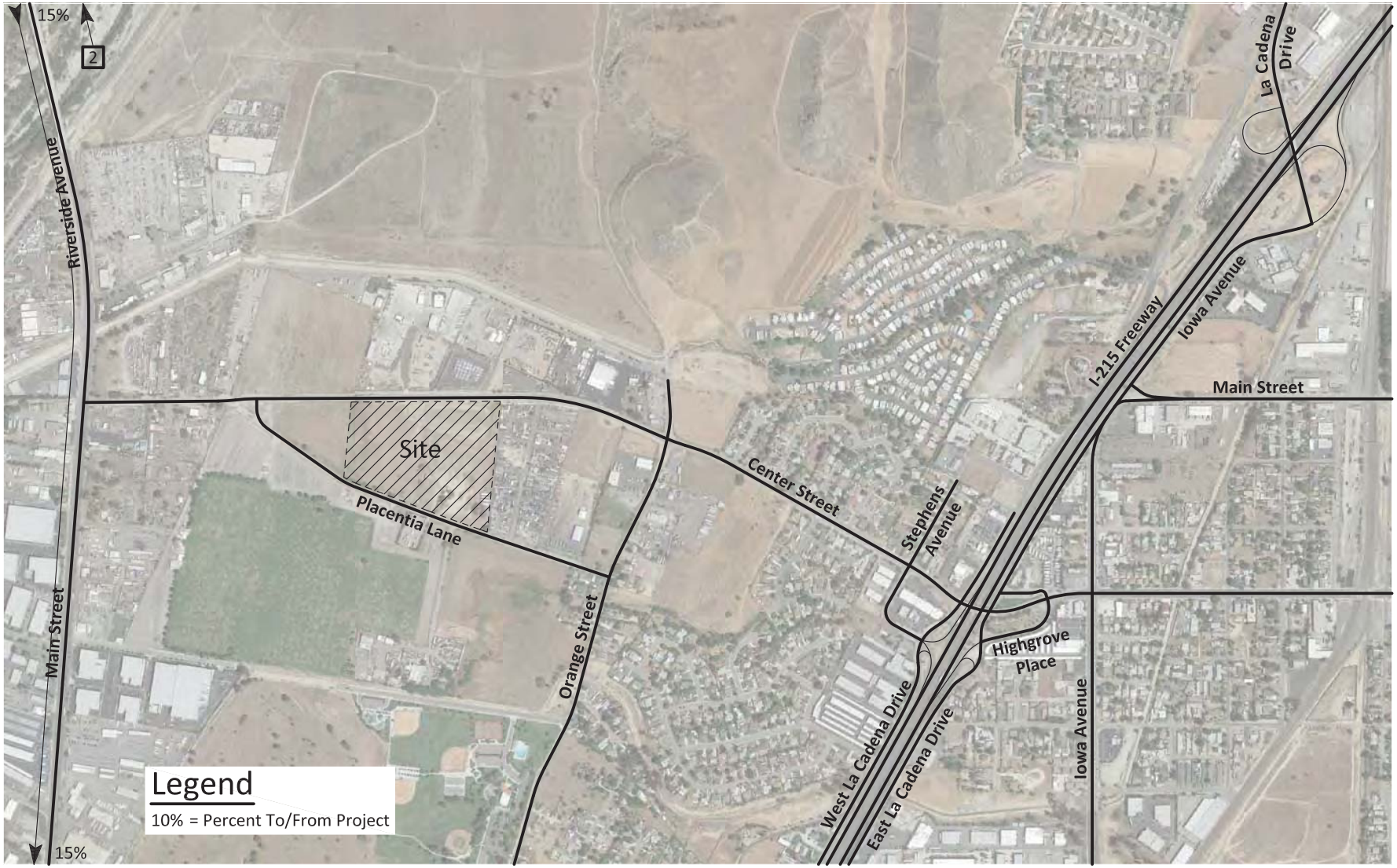
Figure 28
Other Development Traffic Analysis Zone 1 Trip Distribution - Trucks



KUNZMAN ASSOCIATES, INC.
OVER 40 YEARS OF EXCELLENT SERVICE

JN 6055a

Figure 29
Other Development Traffic Analysis Zone 2 Trip Distribution - Cars



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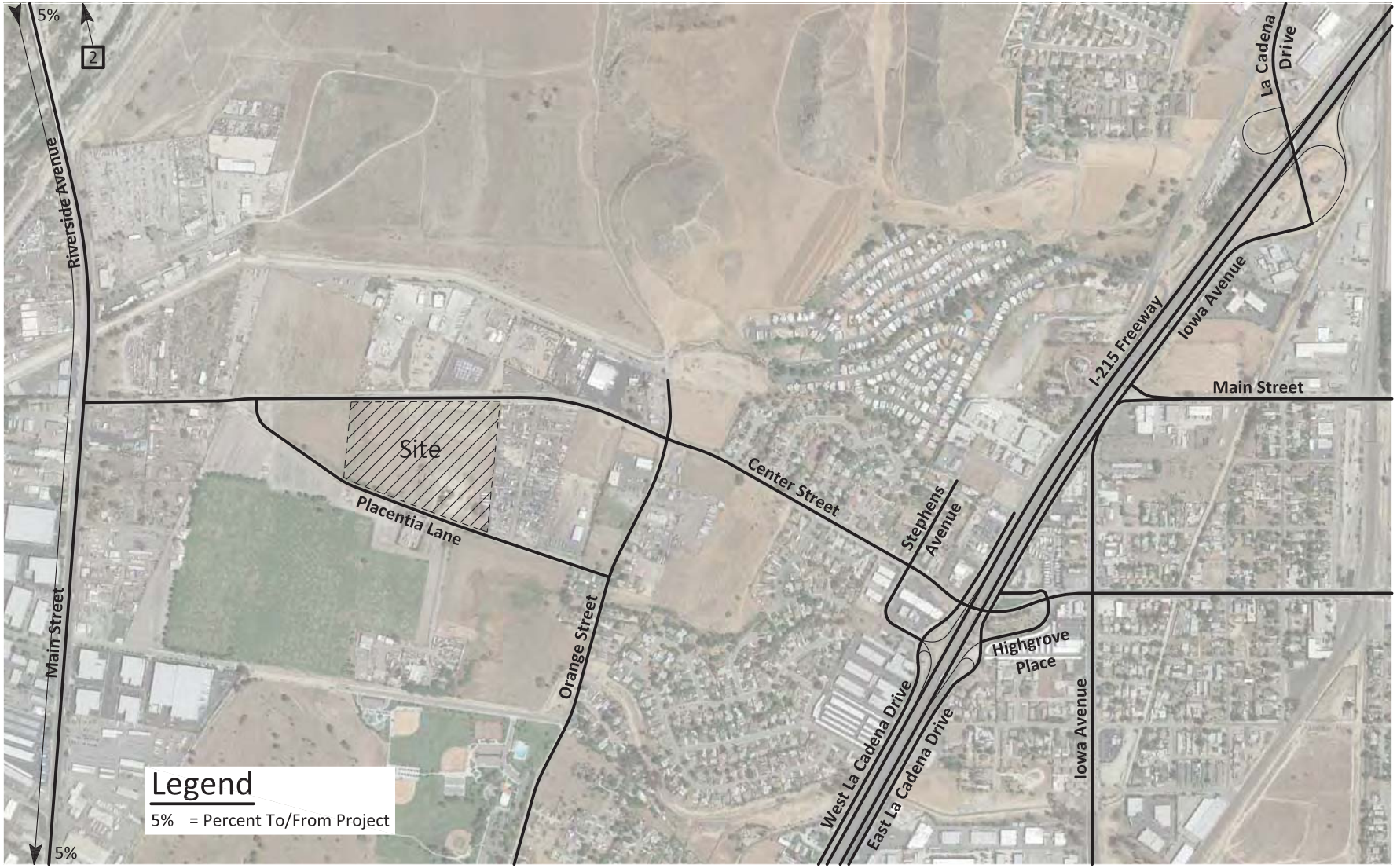
OVER 40 YEARS OF EXCELLENT SERVICE

JN 6055a

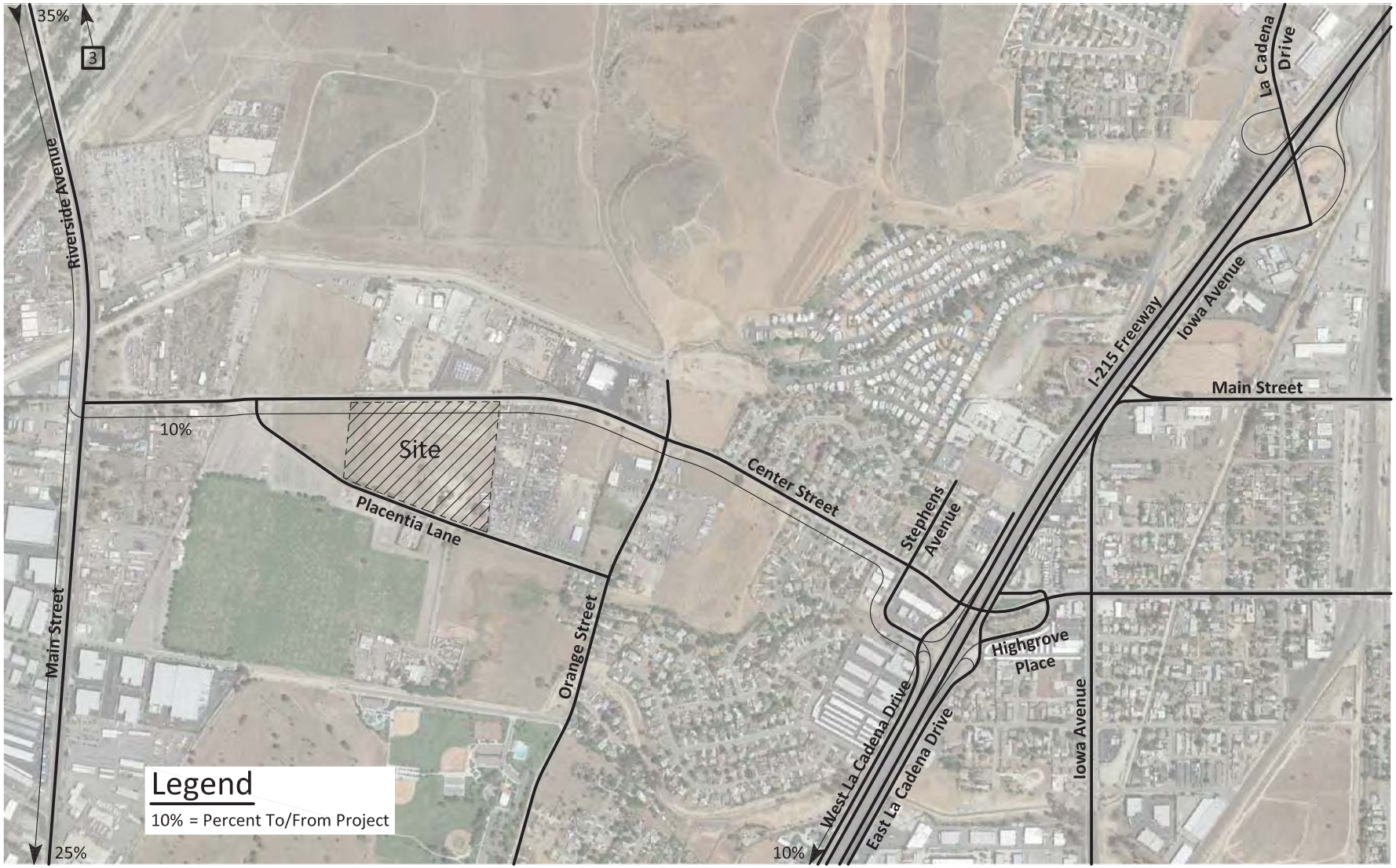
Figure 30
Other Development Traffic Analysis Zone 2 Trip Distribution - Trucks



KUNZMAN ASSOCIATES, INC.
OVER 40 YEARS OF EXCELLENT SERVICE

JN 6055a

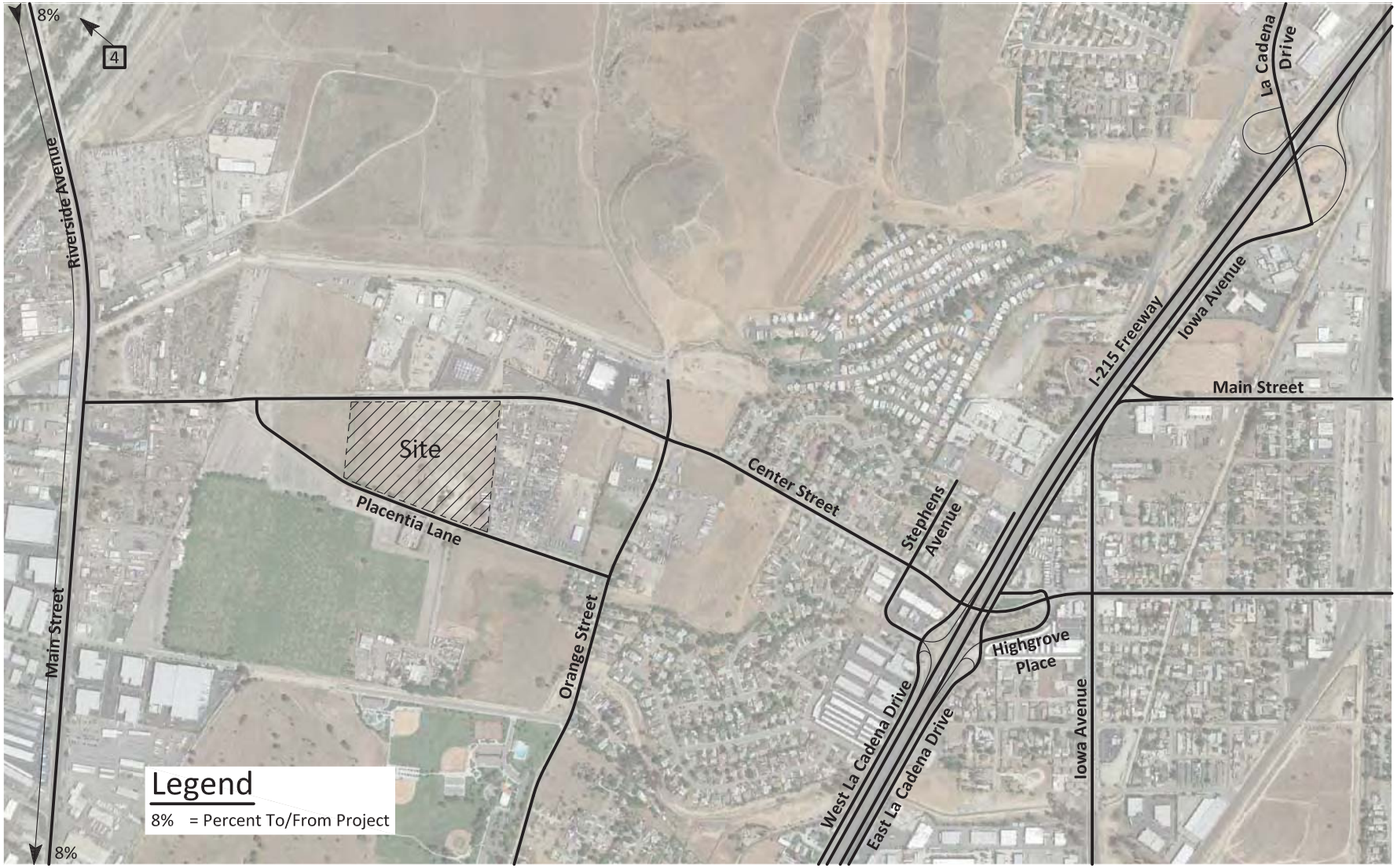
Figure 31
Other Development Traffic Analysis Zone 3 Trip Distribution



KUNZMAN ASSOCIATES, INC.
OVER 40 YEARS OF EXCELLENT SERVICE

JN 6055a

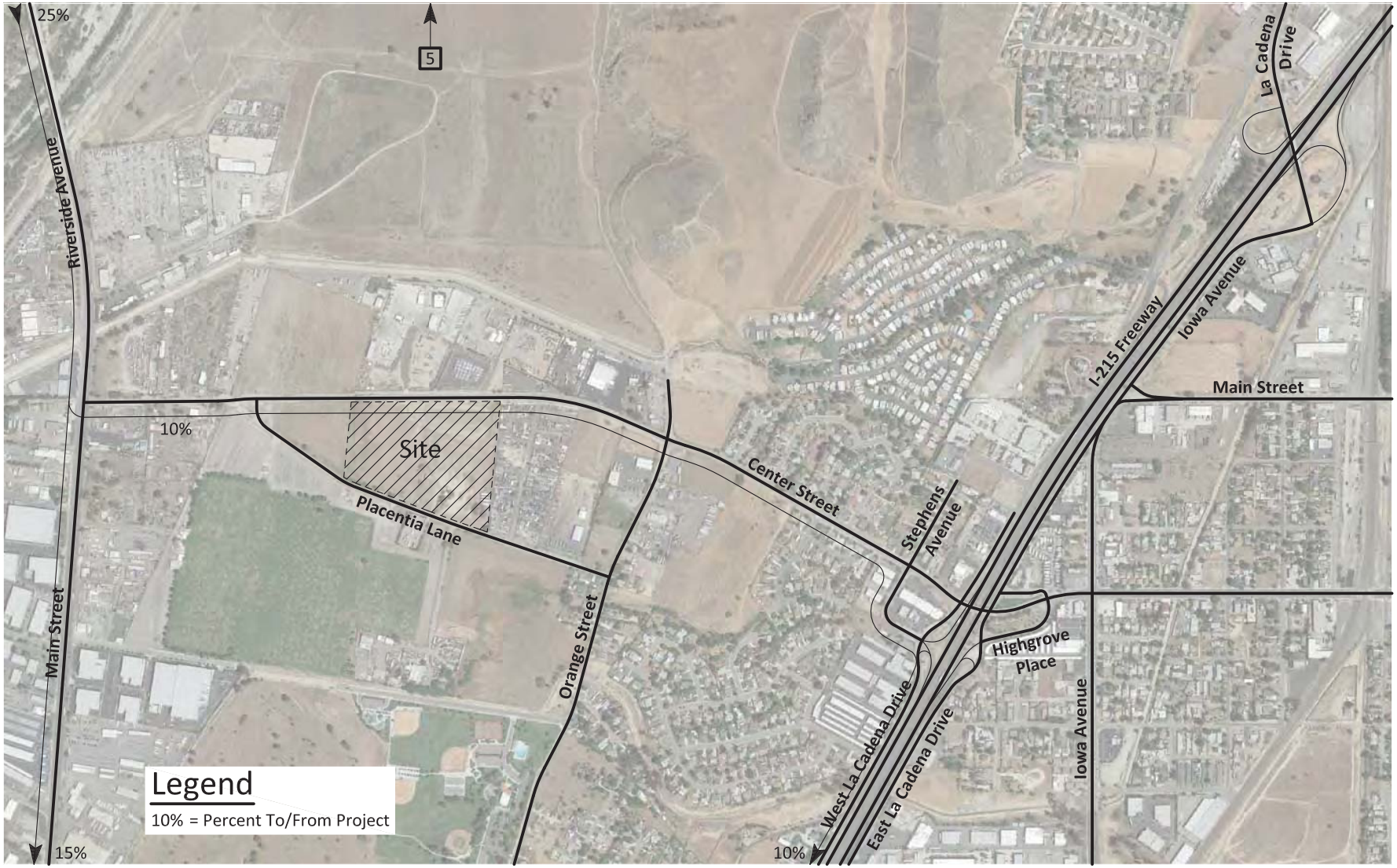
Figure 32
Other Development Traffic Analysis Zone 4 Trip Distribution - Cars



KUNZMAN ASSOCIATES, INC.
OVER 40 YEARS OF EXCELLENT SERVICE

JN 6055a

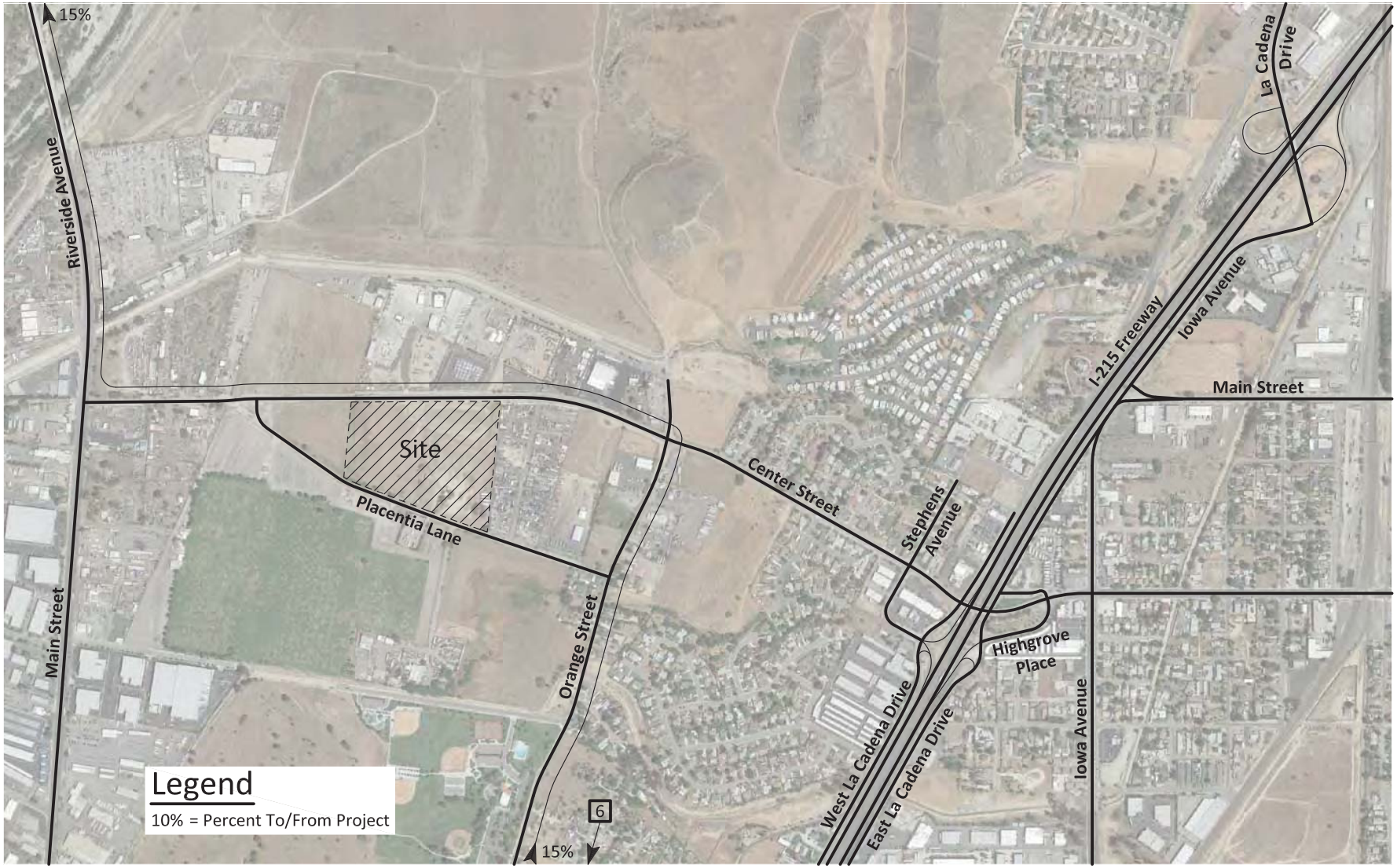
Figure 33
Other Development Traffic Analysis Zone 5 Trip Distribution - Cars



KUNZMAN ASSOCIATES, INC.
OVER 40 YEARS OF EXCELLENT SERVICE

JN 6055a

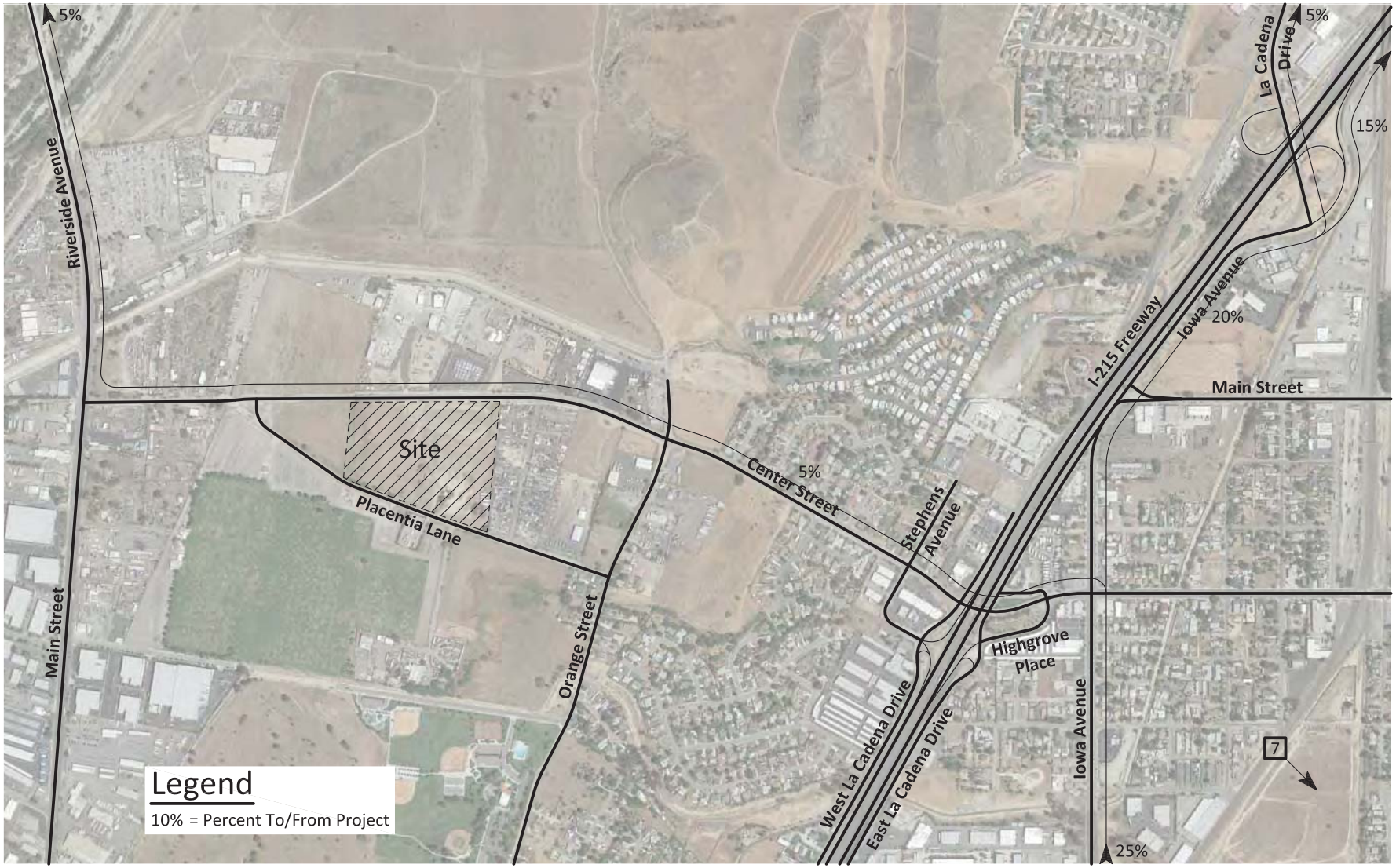
Figure 34
Other Development Traffic Analysis Zone 6 Trip Distribution



KUNZMAN ASSOCIATES, INC.
OVER 40 YEARS OF EXCELLENT SERVICE

JN 6055a

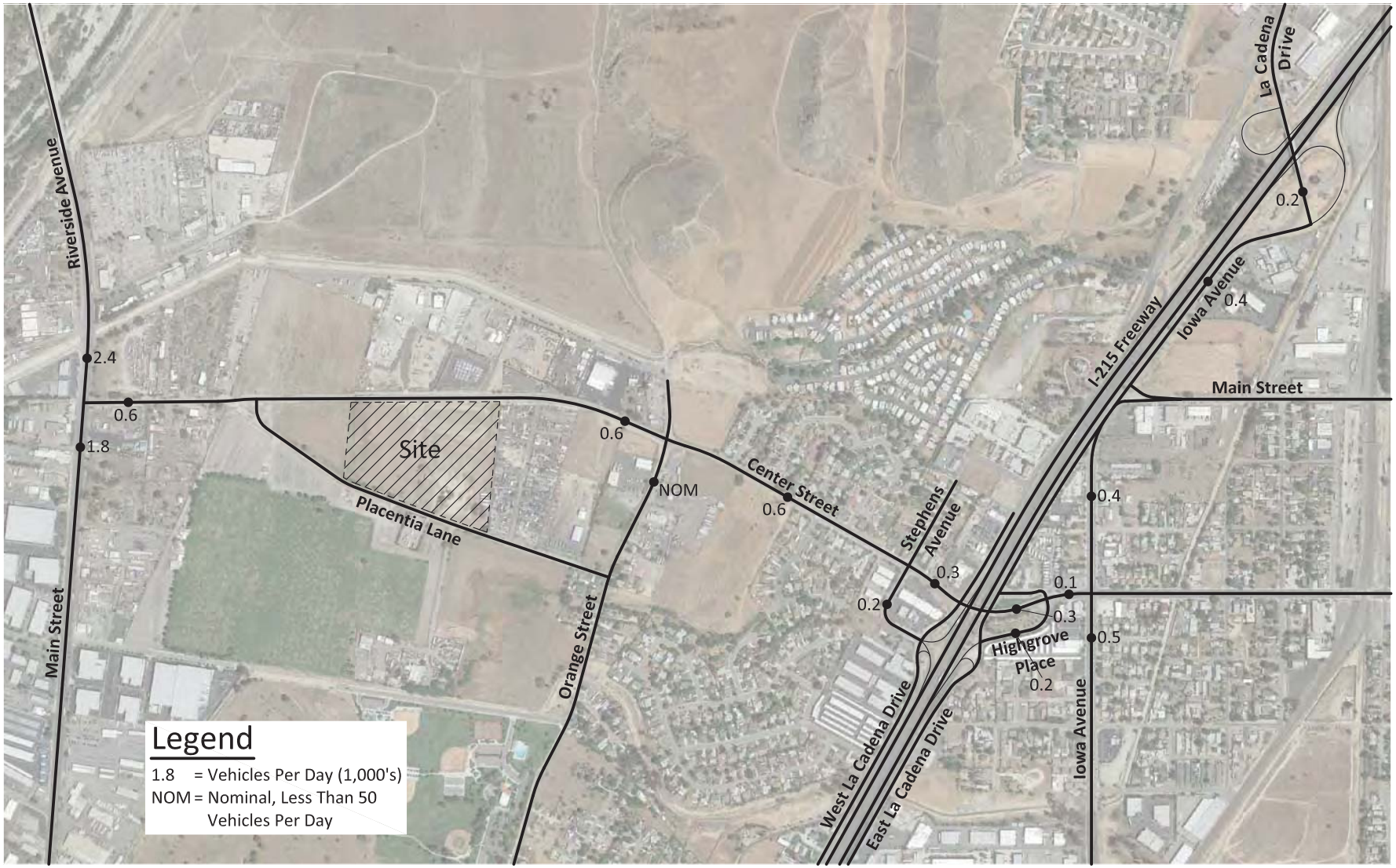
Figure 35
Other Development Traffic Analysis Zone 7 Trip Distribution - Cars



KUNZMAN ASSOCIATES, INC.
OVER 40 YEARS OF EXCELLENT SERVICE

JN 6055a

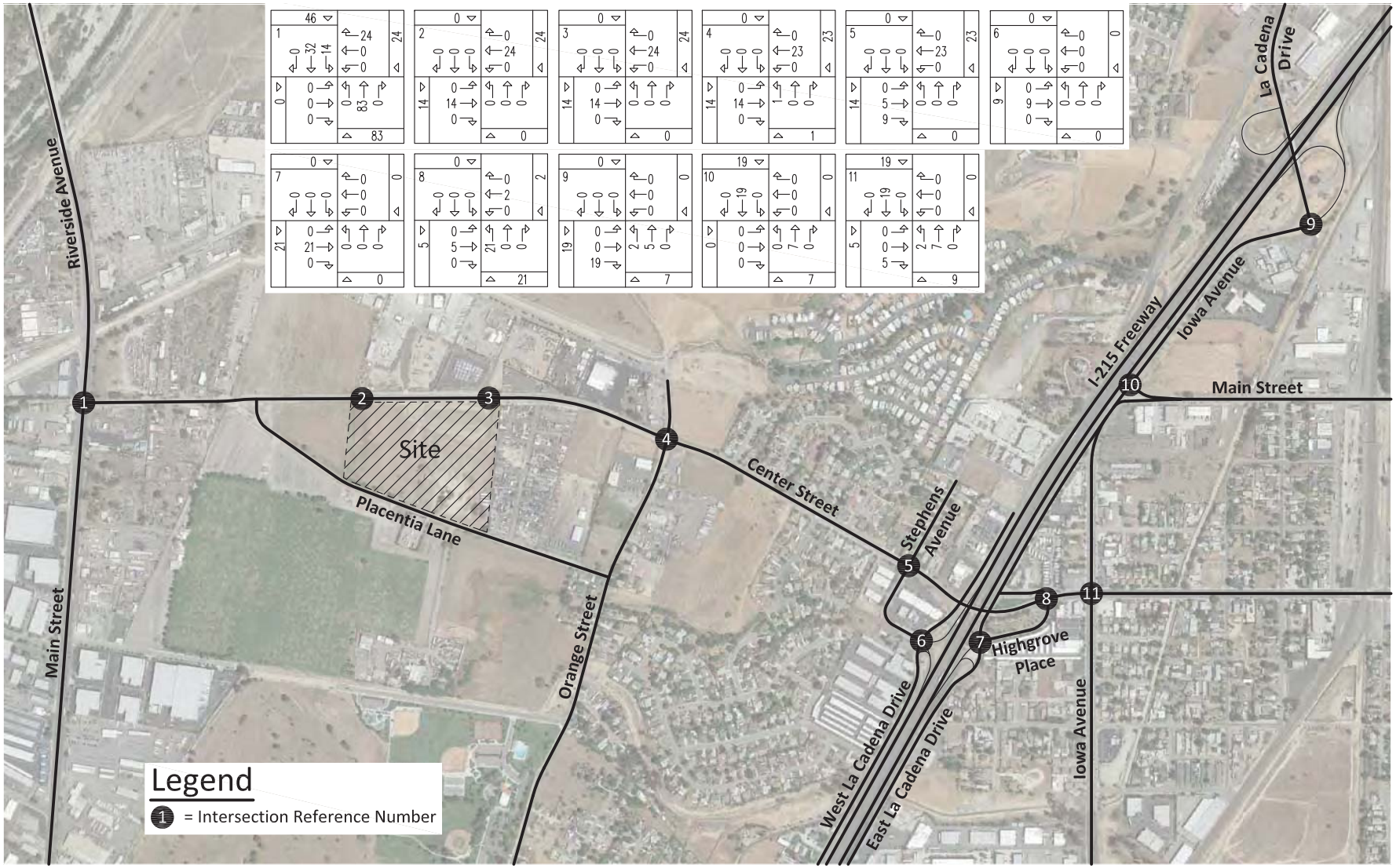
Figure 36
Other Development Average Daily Traffic Volumes



KUNZMAN ASSOCIATES, INC.
OVER 40 YEARS OF EXCELLENT SERVICE

JN 6055a

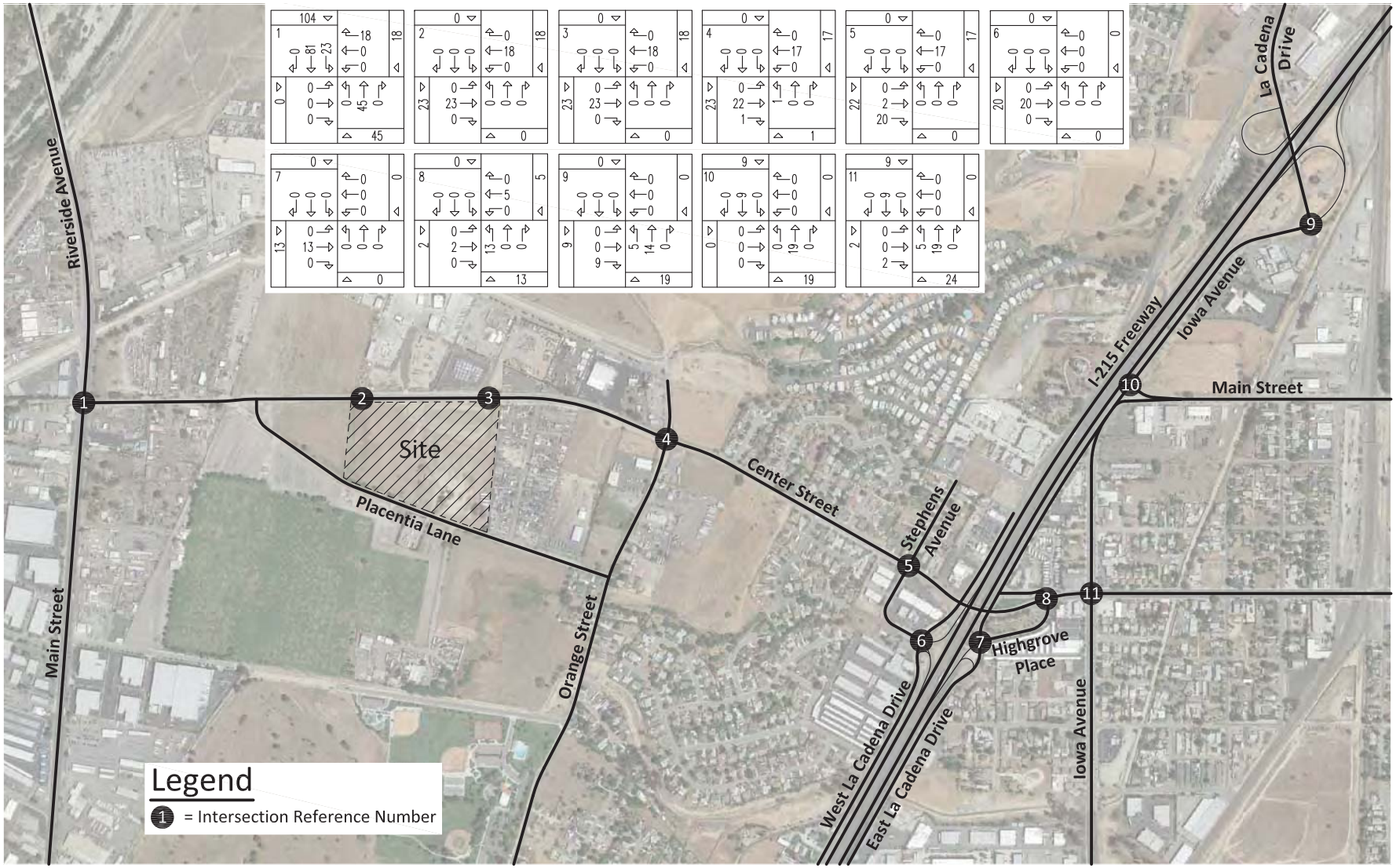
Figure 37
Other Development
Morning Peak Hour Intersection Turning Movement Volumes



KUNZMAN ASSOCIATES, INC. Intersection reference numbers are in upper left corner of turning movement boxes. JN 6055a

OVER 40 YEARS OF EXCELLENT SERVICE

Figure 38
Other Development
Evening Peak Hour Intersection Turning Movement Volumes

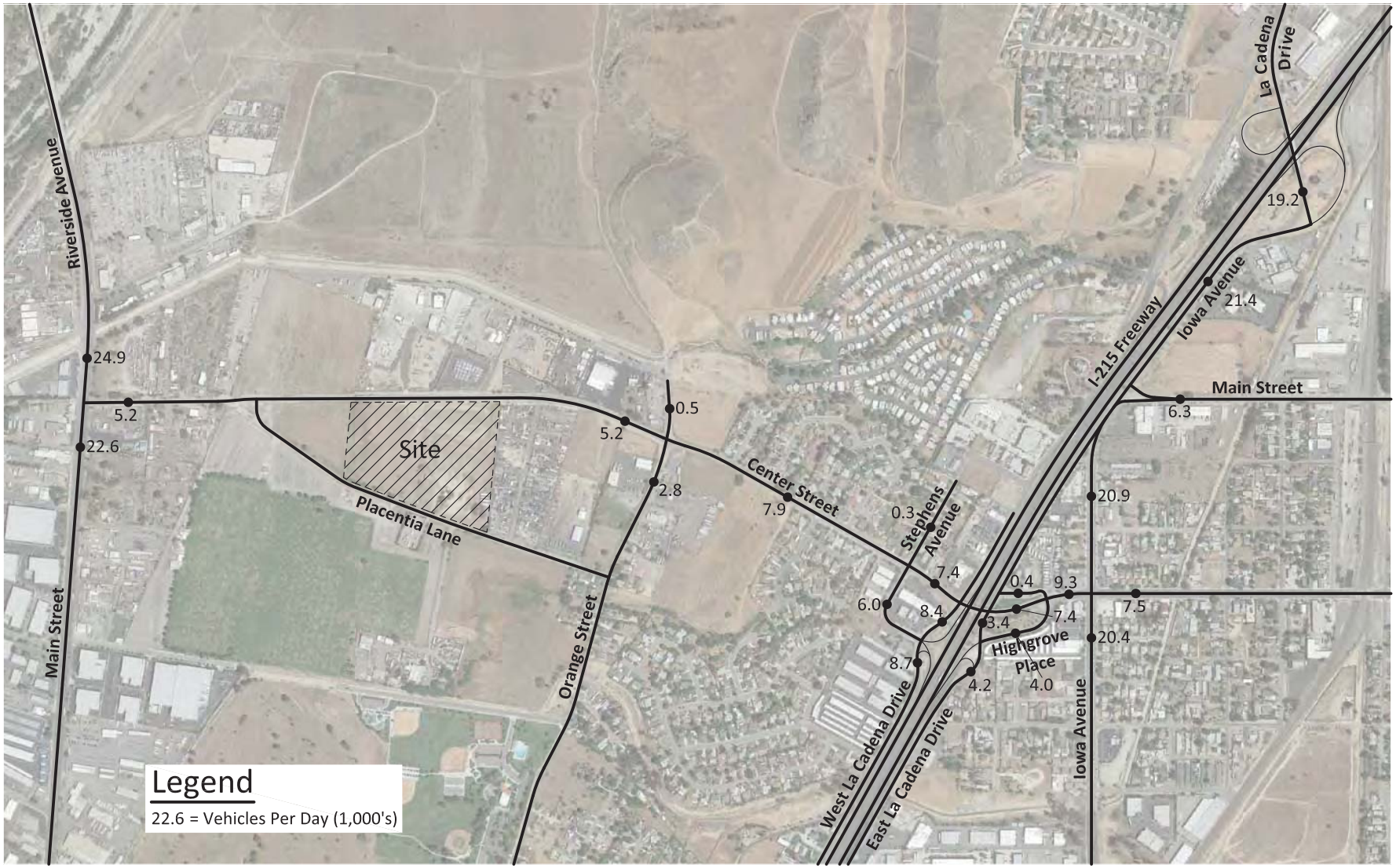


KUNZMAN ASSOCIATES, INC.
OVER 40 YEARS OF EXCELLENT SERVICE

Intersection reference numbers are in upper left corner of turning movement boxes.

JN 6055a

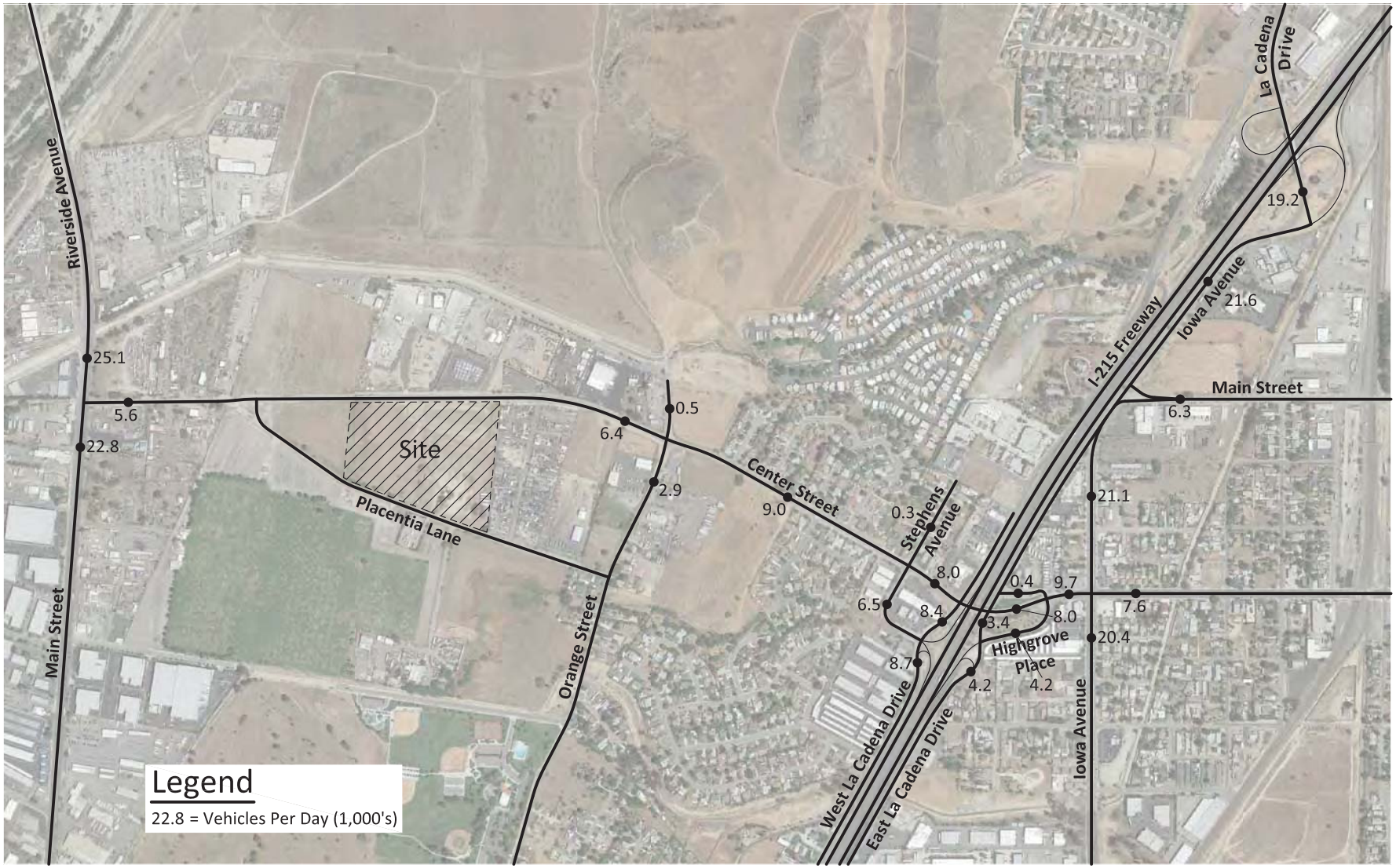
Figure 39
Opening Year (2017) Without Project Average Daily Traffic Volumes



KUNZMAN ASSOCIATES, INC.
OVER 40 YEARS OF EXCELLENT SERVICE

JN 6055a

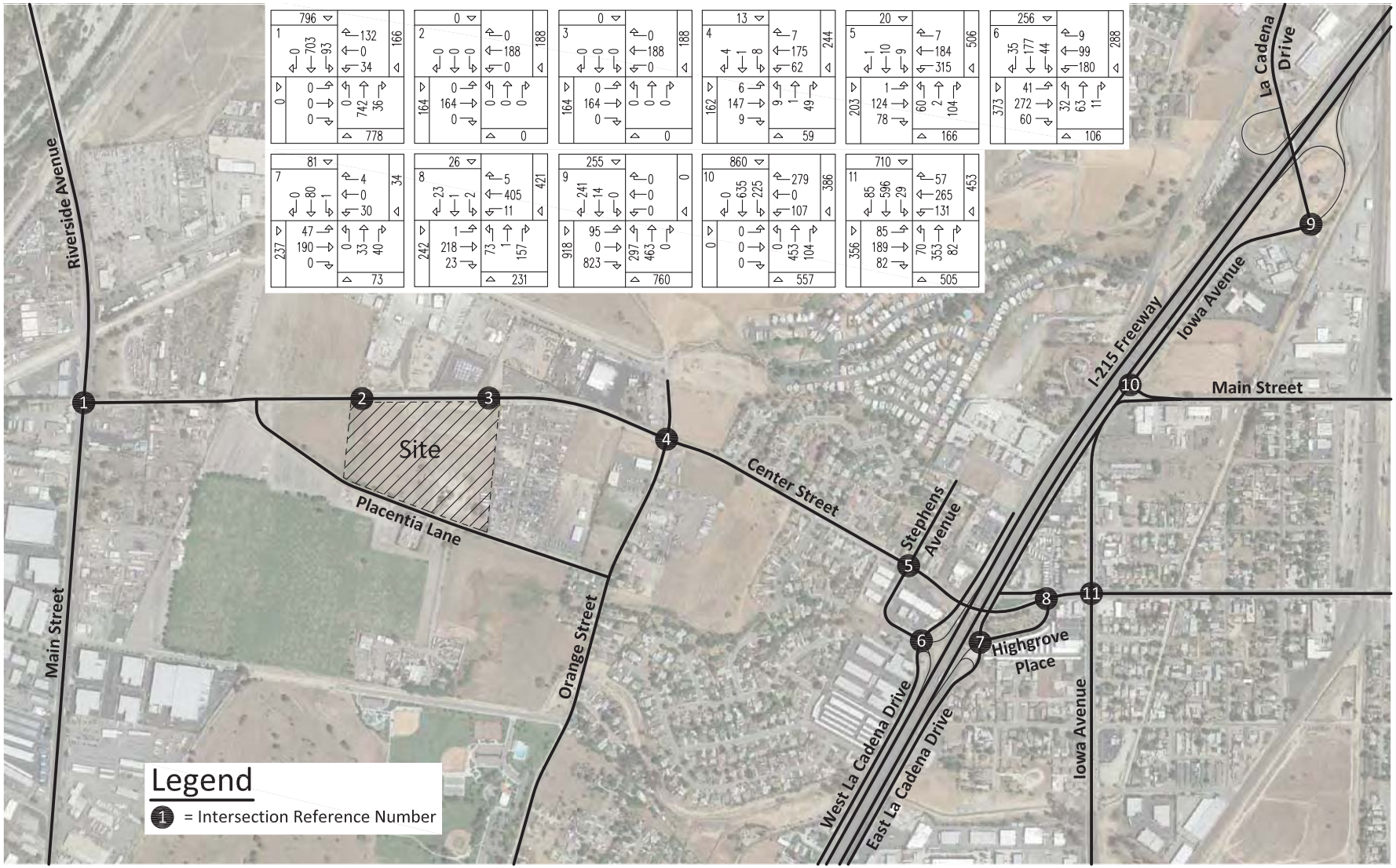
Figure 40
Opening Year (2017) With Project Average Daily Traffic Volumes



KUNZMAN ASSOCIATES, INC.
OVER 40 YEARS OF EXCELLENT SERVICE

JN 6055a

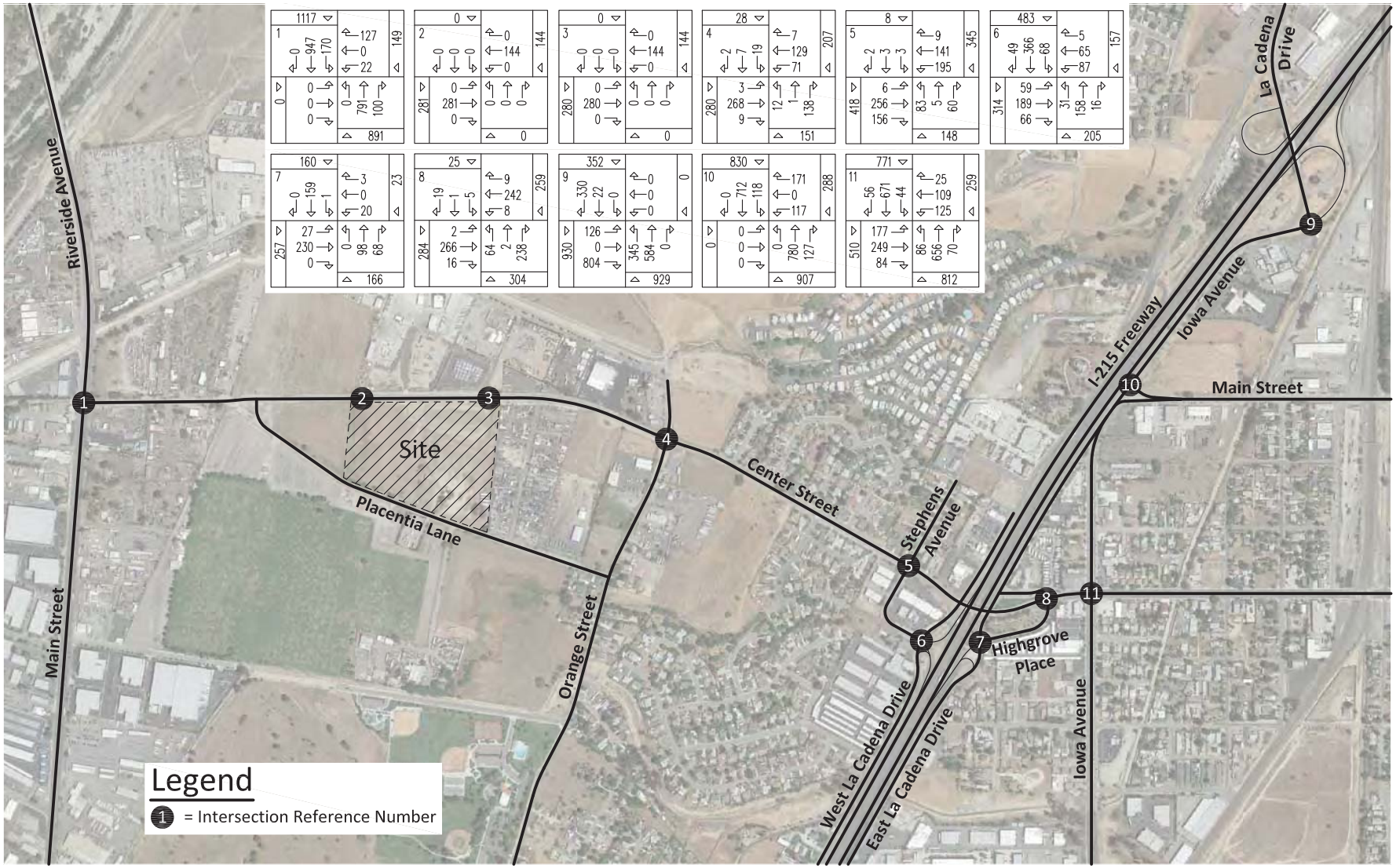
Figure 41
Opening Year (2017) Without Project
Morning Peak Hour Intersection Turning Movement Volumes



KUNZMAN ASSOCIATES, INC. Intersection reference numbers are in upper left corner of turning movement boxes. JN 6055a

OVER 40 YEARS OF EXCELLENT SERVICE

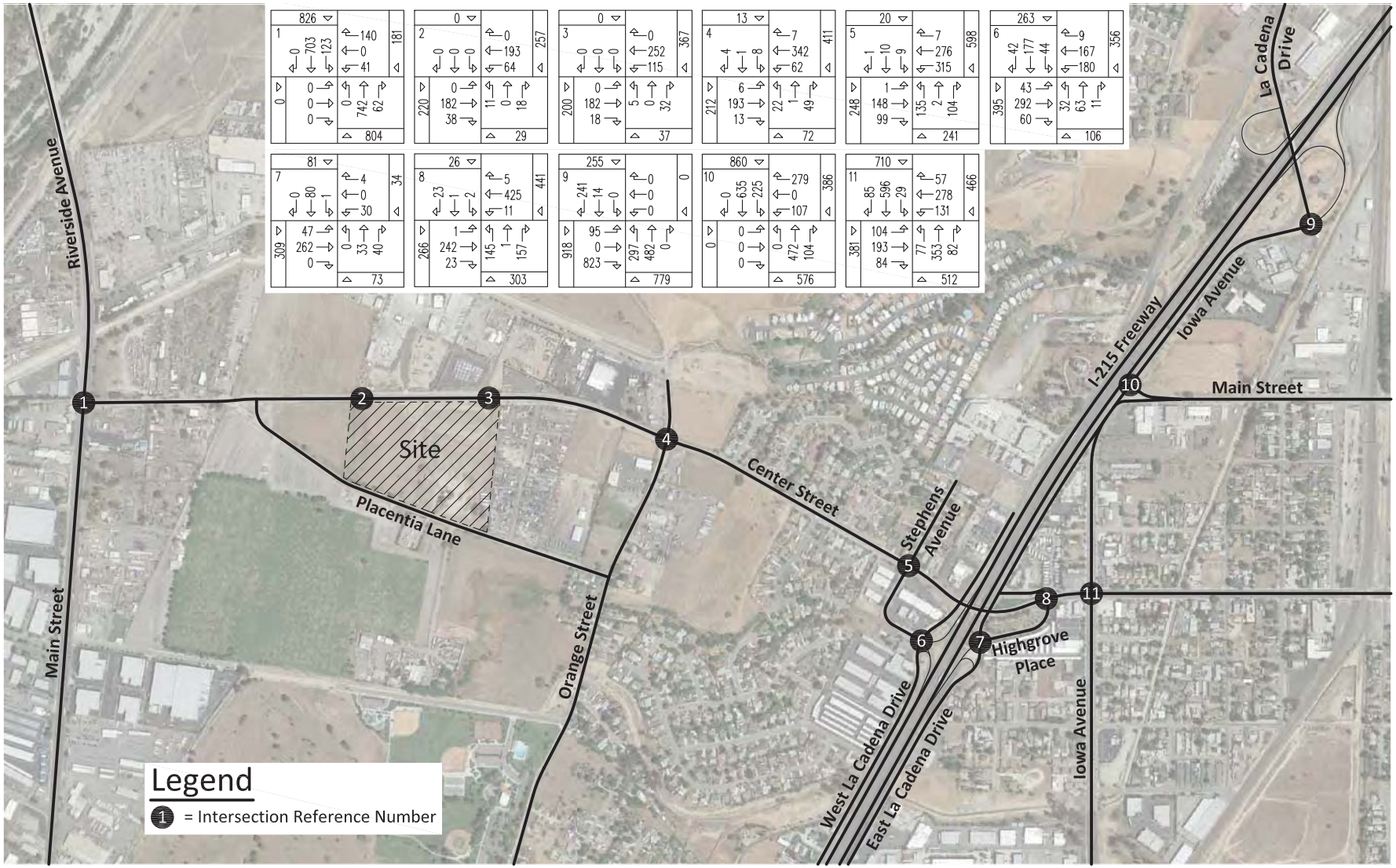
Figure 42
Opening Year (2017) Without Project
Evening Peak Hour Intersection Turning Movement Volumes



KUNZMAN ASSOCIATES, INC. Intersection reference numbers are in upper left corner of turning movement boxes. JN 6055a

OVER 40 YEARS OF EXCELLENT SERVICE

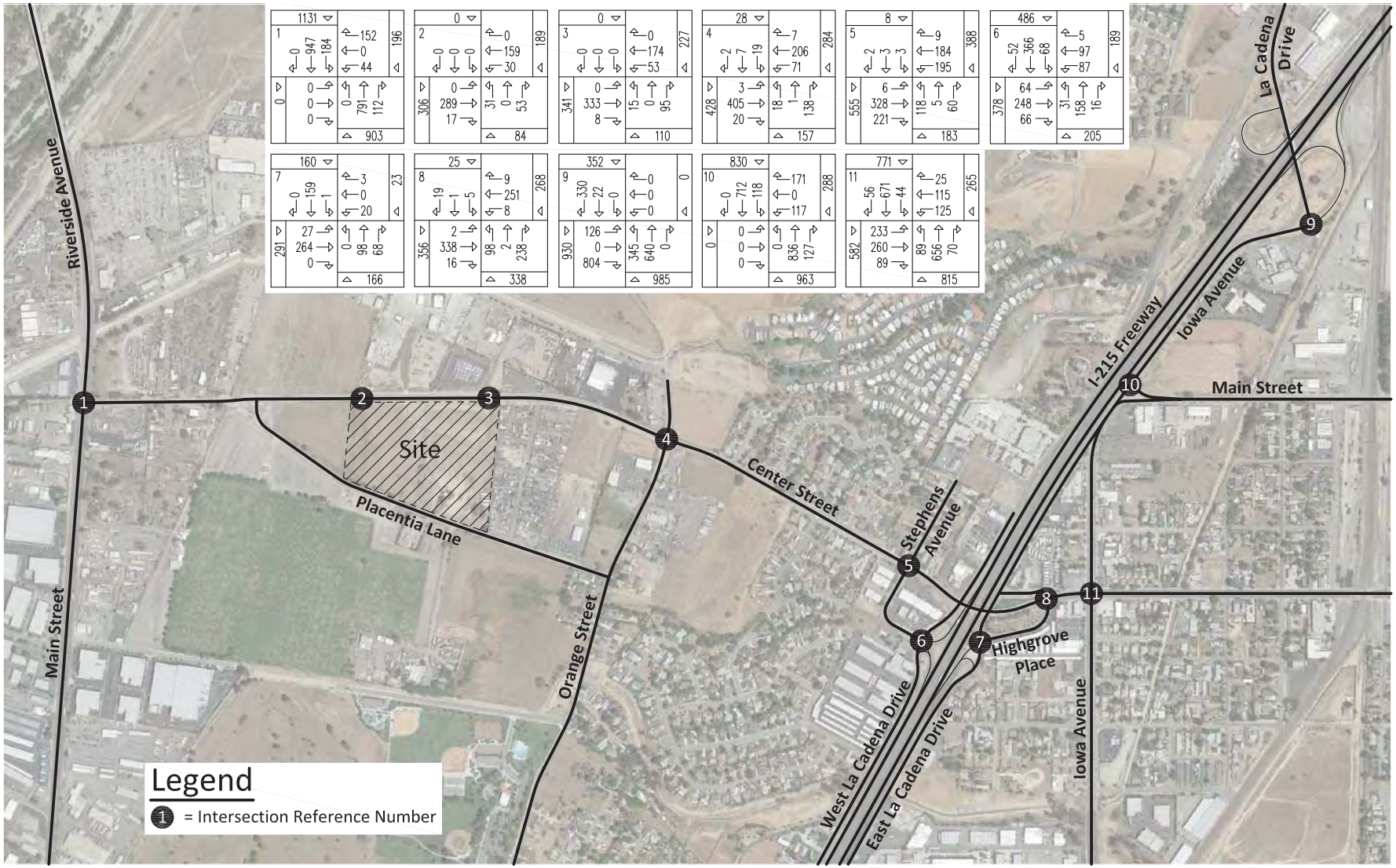
Figure 43
Opening Year (2017) With Project
Morning Peak Hour Intersection Turning Movement Volumes



KUNZMAN ASSOCIATES, INC. Intersection reference numbers are in upper left corner of turning movement boxes. JN 6055a

OVER 40 YEARS OF EXCELLENT SERVICE

Figure 44
Opening Year (2017) With Project
Evening Peak Hour Intersection Turning Movement Volumes



KUNZMAN ASSOCIATES, INC. Intersection reference numbers are in upper left corner of turning movement boxes. JN 6055a

OVER 40 YEARS OF EXCELLENT SERVICE

VIII. RECOMMENDATIONS

A. Site Access

The proposed project will have access to Center Street.

B. Roadway Improvements

1. On- Site

Site-specific circulation and access recommendations are depicted on Figure 45.

Construct Center Street from the west project boundary to the east project boundary at its ultimate half-section width including landscaping and parkway improvements in conjunction with development, as necessary.

Construct Placentia Lane from the west project boundary to the east project boundary at its ultimate half-section width including landscaping and parkway improvements in conjunction with development, as necessary.

Sufficient on-site parking should be provided to meet City of Riverside parking code requirements.

Sight distance at the project accesses shall comply with standard California Department of Transportation and City of Riverside sight distance standards. The final grading, landscaping, and street improvement plans shall demonstrate that sight distance standards are met. Such plans must be reviewed by the City and approved as consistent with this measure prior to issue of grading permits.

On-site traffic signing and striping should be implemented in conjunction with detailed construction plans for the project.

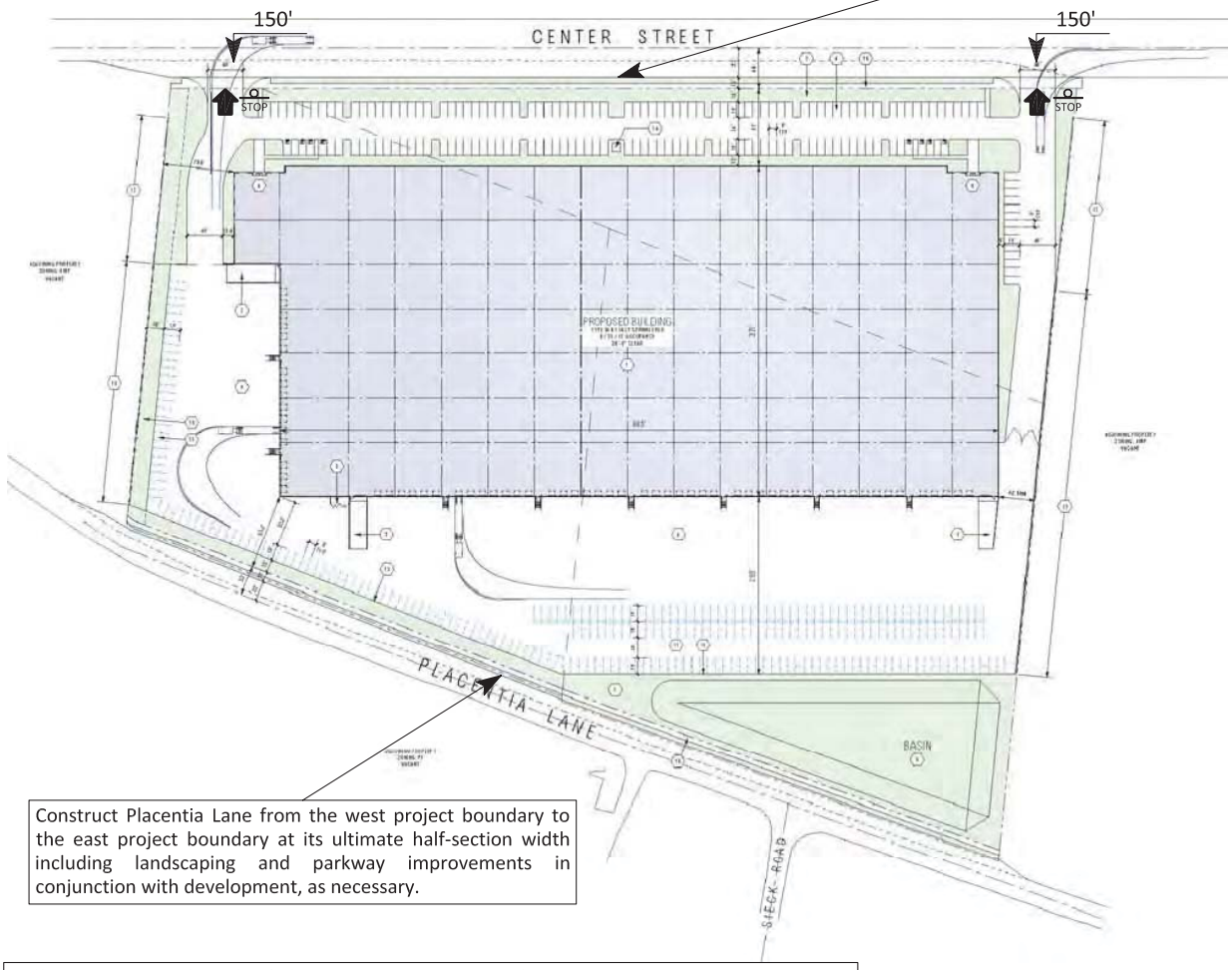
2. Off-Site

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

Participate in the phased construction of off-site traffic signals through payment of traffic signal mitigation fees. The traffic signals within the study area at buildout should specifically include an interconnect of the traffic signals to function in a coordinated system.

Figure 45
Circulation Recommendations

Construct Center Street from the west project boundary to the east project boundary at its ultimate half-section width including landscaping and parkway improvements in conjunction with development, as necessary.



Construct Placentia Lane from the west project boundary to the east project boundary at its ultimate half-section width including landscaping and parkway improvements in conjunction with development, as necessary.

Sufficient on-site parking should be provided to meet City of Riverside parking code requirements.

On-site traffic signing and striping should be implemented in conjunction with detailed construction plans for the project.

Sight distance at project accesses shall comply with standard California Department of Transportation and City of Riverside sight distance standards. The final grading, landscaping, and street improvement plans shall demonstrate that sight distance standards are met. Such plans must be reviewed by the City and approved as consistent with this measure prior to issue of grading permits.

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

Participate in the phased construction of off-site traffic signals though payment of traffic signal mitigation fees. the traffic signals within the study area at buildout should specifically include an interconnect of the traffic signals to function in a coordinated system.

Legend

STOP = Stop Sign
= Full Access Driveway
150' = Left Turn Pocket Length

KUNZMAN ASSOCIATES, INC.

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APPENDICES

Appendix A – Glossary of Transportation Terms

Appendix B – City of Riverside Scoping Agreement

Appendix C – Traffic Count Worksheets

Appendix D – Explanation and Calculation of Intersection Delay

Appendix E – Traffic Signal Warrant Worksheets