

## Appendix I

### *Redlands Avenue East Industrial Project DPR20-00021 Traffic Impact Analysis*

Ganddini Group

March 8, 2022

# **REDLANDS AVENUE EAST INDUSTRIAL PROJECT (DPR 20-000-21) TRAFFIC IMPACT ANALYSIS**

City of Perris

March 8, 2022



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

# REDLANDS AVENUE EAST INDUSTRIAL PROJECT (DPR 20-000-21) TRAFFIC IMPACT ANALYSIS

City of Perris

March 8, 2022

*prepared by*

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Project No. 19371

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## EXECUTIVE SUMMARY

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The purpose of this study is to evaluate the potential for transportation impacts resulting from development of the proposed project both in the context of the City of Perris' discretionary authority for conformance with locally established operational standards and the California Environmental Quality Act (CEQA). Although this is a technical report, effort has been made to write the report clearly and concisely. A glossary is provided in Appendix A to assist the reader with terms related to transportation engineering.

This study was prepared in consultation with City of Perris staff and in accordance with the procedures and methodologies for assessing transportation impacts established by the City of Perris. To assess the project's conformance with local operational standards, this study evaluates the project's effect on traffic operations and, if necessary, identifies recommended improvements or corrective measures to alleviate operational deficiencies substantially caused or worsened by the proposed project. For CEQA purposes, this study also evaluates the significance of project-related transportation impacts as measured by vehicle miles traveled (VMT) relative to thresholds established by the City of Perris as the lead agency and, if necessary, identifies any feasible mitigation measures to mitigate any significant impacts.

### *Project Description*

The approximately 12.59-acre project site is located east of Redlands Avenue, south of Rider Street, and north of Placentia Avenue in the City of Perris, California.

The currently vacant site is proposed to be developed with 250,511 square feet of warehouse building with an additional 4,000 square foot mezzanine totaling 254,511 square feet of gross floor area. The project proposes three access driveways on Redlands Avenue. The north and south driveways will serve truck traffic only and the central driveway will serve passenger cars only. For purposes of this analysis, the proposed project is anticipated to be constructed and fully operational by year 2023.

### *Existing Conditions*

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

### *Project Trips*

The proposed project is forecast to generate approximately 461 daily vehicle trips, including 40 vehicle trips during the AM peak hour and 40 vehicle trips during the PM peak hour. The proposed project is forecast to generate approximately 654 daily PCE trips, including 48 PCE trips during the AM peak hour and 44 PCE trips during the PM peak hour.

### *Levels of Service/Operational Analysis Findings (Non-CEQA)*

The study intersections are forecast to operate within acceptable Levels of Service (D or better) during the peak hours for Existing Plus Project conditions. Therefore, the proposed project is forecast to result in no substantial operational deficiencies at the study intersections for Existing Plus Project conditions and no off-site improvements or corrective measures are recommended.

The study intersections are projected to operate within acceptable Levels of Service (D or better) during the peak hours for Opening Year (2023) With Project conditions. Therefore, the proposed project is forecast to result in no substantial operational deficiencies at the study intersections for Opening Year (2023) With Project conditions and no off-site improvements or corrective measures are recommended.

#### *VMT Analysis Findings (CEQA)*

The proposed project is presumed to have a less than significant impact on VMT since it satisfies one or more of the VMT screening criteria established by the City of Perris (the project site is in a low VMT area). No additional VMT modeling or mitigation measures are required.

# 1. INTRODUCTION

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This section introduces the proposed project and the general scope of the analysis.

## PROJECT DESCRIPTION

The approximately 12.59-acre project site is located east of Redlands Avenue, south of Rider Street, and north of Placentia Avenue in the City of Perris, California. Figure 1 shows the project location map.

The currently vacant site is proposed to be developed with 250,511 square feet of warehouse building with an additional 4,000 square foot mezzanine totaling 254,511 square feet of gross floor area. The project proposes three access driveways on Redlands Avenue. The north and south driveways will serve truck traffic only and the central driveway will serve passenger cars only. For purposes of this analysis, the proposed project is anticipated to be constructed and fully operational by year 2023. Figure 2 illustrates the project site plan.

## SCOPE OF ANALYSIS

The scope of this analysis was determined in consultation with City of Perris staff as documented in the City-approved scoping agreement provided in Appendix B.

### Study Area

Based on the study intersections identified in the approved scoping agreement (Appendix B), the study area consists of the following study intersections within City of Perris jurisdiction:

Study Intersections <sup>1</sup>	Jurisdiction
1. Redlands Avenue (NS) at Rider Street (EW)	City of Perris
2. Redlands Avenue (NS) at Project North Driveway (EW)	City of Perris
3. Redlands Avenue (NS) at Project Central Driveway (EW)	City of Perris
4. Redlands Avenue (NS) at Project South Driveway (EW)	City of Perris
5. Redlands Avenue (NS) at Placentia Avenue (EW)	City of Perris

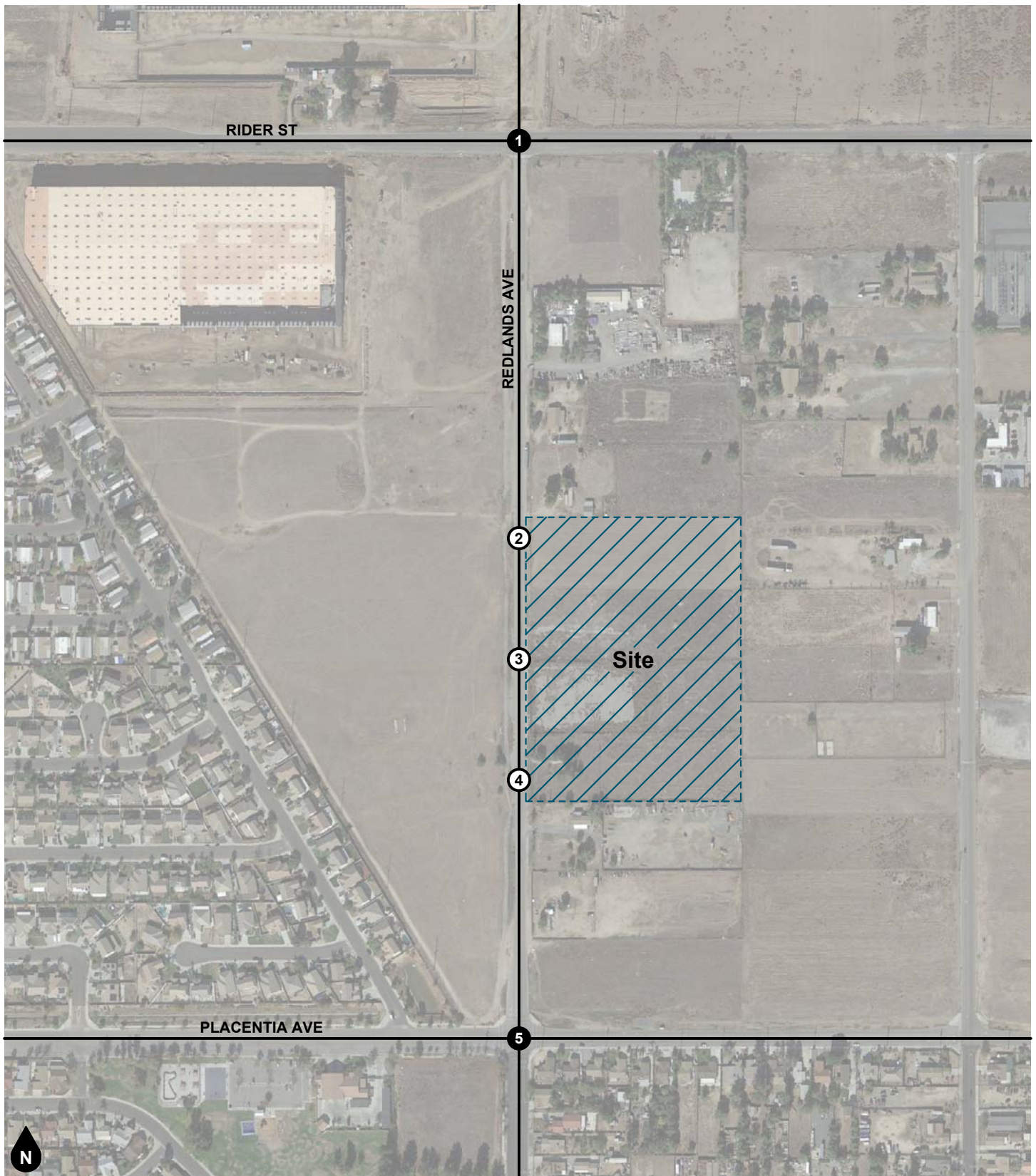
Notes:

1. (NS) = North-South roadway; (EW) = East-West roadway

### Analysis Scenarios

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

- Existing Conditions
- Existing Plus Project Conditions
- Opening Year (2023) Without Project Conditions
- Opening Year (2023) With Project Conditions

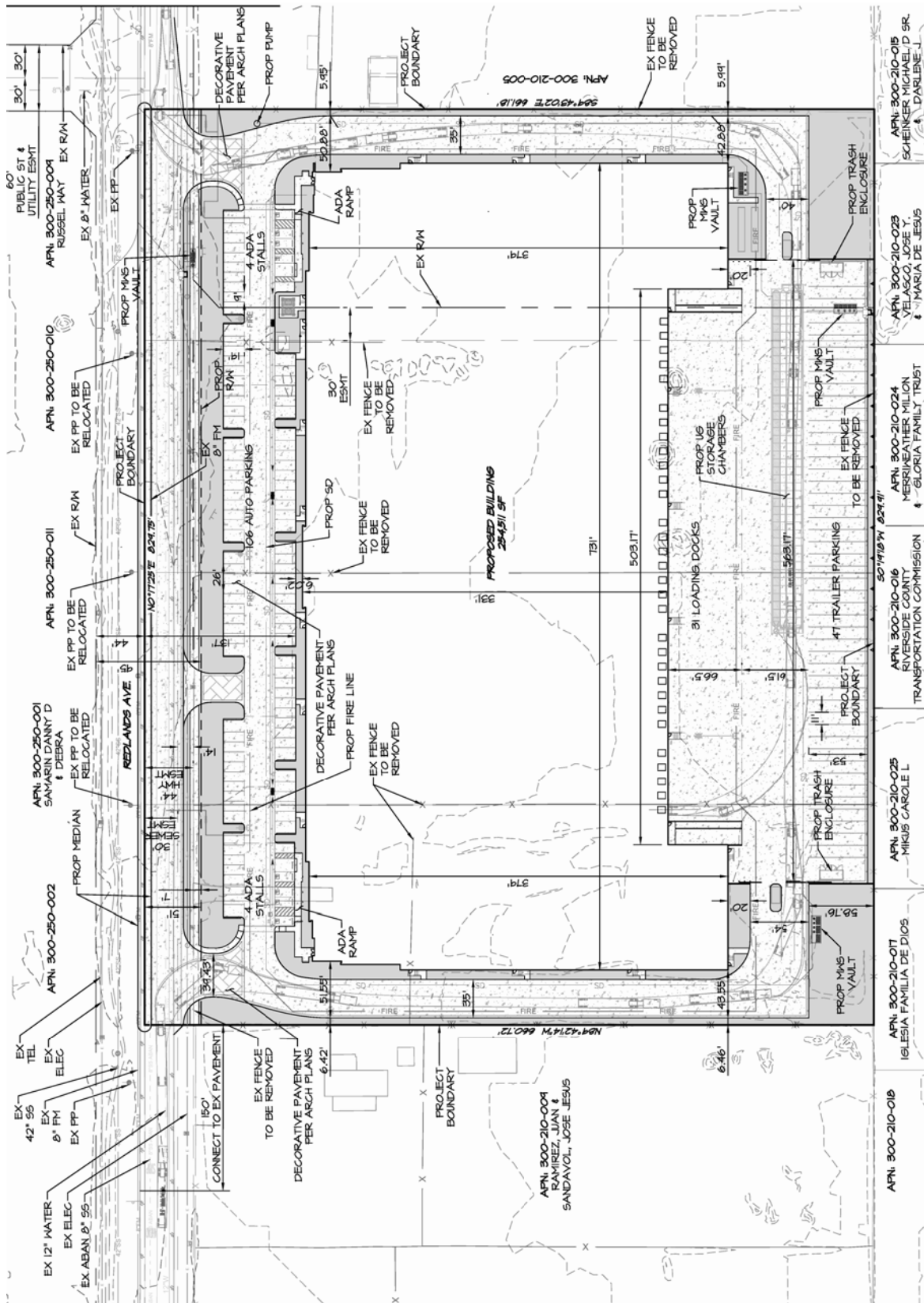


Legend

- # Study Intersection
- # Project Driveway

**Figure 1**  
**Project Location Map**





**Figure 2**  
**Site Plan**

## 2. METHODOLOGY

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

### LEVEL OF SERVICE ANALYTICAL METHODOLOGY (Non-CEQA)

Level of Service analysis is performed for assessing conformance with General Plan and operational standards established by the applicable agencies. In accordance with current CEQA provisions, a project's effect on automobile delay (as measured by Level of Service) shall not constitute a significant environmental impact.

#### Intersection Delay Methodology

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

Level of Service	Intersection Control Delay (Seconds / Vehicle)	
	Signalized Intersection	Unsignalized Intersection
A	≤ 10.0	≤ 10.0
B	> 10.0 to ≤ 20.0	> 10.0 to ≤ 15.0
C	> 20.0 to ≤ 35.0	> 15.0 to ≤ 25.0
D	> 35.0 to ≤ 55.0	> 25.0 to ≤ 35.0
E	> 55.0 to ≤ 80.0	> 35.0 to ≤ 50.0
F	> 80.0	> 50.0

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

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

#### Performance Standards

The City of Perris has established Level of Service D as the minimum acceptable Level of Service along all City maintained roads (including intersections) and Level of Service D along I-215 and SR-74 (including intersections with local streets and roads). An exception to the local road standard is Level of Service E at intersections of any Arterials and Expressways with SR-74, the Ramona-Cajalco Expressway, or at I-215 freeway ramps. Level of Service E may be allowed within the boundaries of the Downtown Specific Plan Area



to the extent that it would support transit-oriented development and walkable communities. Increased congestion in this area will facilitate an increase in transit ridership and encourage development of a complementary mix of land uses within a comfortable walking distance from light rail stations.

### **Substantial Operational Deficiency Criteria**

The following criteria are used to determine whether a project causes a substantial operational deficiency and should be required to provide improvements or corrective measures.

In the City of Perris, a project is considered to result in a substantial operational deficiency at a study intersection if one or more of the following conditions are satisfied:

- The addition of 50 or more peak hour project generated trips is forecast to cause an intersection to deteriorate from acceptable Level of Service (D or better) to unacceptable Level of Service (E or F); or,
- The addition of 50 or more peak hour project generated trips worsens the delay by 2 seconds or more at an intersection operating at an unacceptable Level of Service (E or F) in the baseline condition.
- A cumulative impact is considered significant when a study intersection is forecast to operate at an unacceptable Level of Service (E or F) with the addition of cumulative/background traffic and 50 or more peak hour project trips.

If a project is forecast to result in a substantial operational deficiency, recommended corrective measures are identified that would reduce the project's effect to a level that does not exceed the specified deficiency criteria. Corrective measures can be in many forms, including the construction of physical improvements (e.g., addition of travel lanes, traffic control modifications, etc.) or the implementation of transportation demand management measures.

### **VEHICLE MILES TRAVELED ANALYTICAL METHODOLOGY (CEQA)**

The metric used to evaluate the transportation impact of land use and transportation projects under CEQA is known as vehicle miles traveled (VMT). In general terms, VMT quantifies the amount and distance of automobile travel attributable to a project or region. Additional information and a detailed project assessment is provided in the Vehicle Miles Traveled section presented later in this report.

### 3. EXISTING CONDITIONS

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#### EXISTING ROADWAY SYSTEM

Figure 3 identifies the lane geometry and intersection traffic controls for Existing conditions based on a field survey of the study area. Regional access to the project site is provided by the I-215 Freeway located approximately 1.5 miles west of the project site. Key roadways providing local circulation include Redlands Avenue, Rider Street, and Placentia Avenue.

#### GENERAL PLAN CONTEXT

Figure 4 shows the City of Perris General Plan Circulation Element roadway classifications map. This figure shows the nature and extent of arterial and collector highways that are needed to adequately serve the ultimate development depicted by the Land Use Element of the General Plan. The City of Perris standard roadway cross-sections are illustrated on Figure 5.

#### TRUCK ROUTES

The City of Perris General Plan truck routes are illustrated on Figure 6. Existing truck routes in the project vicinity are shown on Figure 6. There are currently designated truck routes along Redlands Avenue adjacent to the project site. The truck routes have recently changed, and this figure represents the preliminary truck routes.

#### TRANSIT SERVICE

Figure 7 shows Existing public transit facilities and routes in the project vicinity. As shown on Figure 7, the study area is currently served by the Riverside Transit Agency bus service. Route 41 runs along Rider Street.

#### BICYCLE AND PEDESTRIAN FACILITIES

The City of Perris Active Transportation Plan bikeways are illustrated on Figure 8. There are currently no existing bicycle lanes along Redlands Avenue adjacent to the project site. It is noted that the City of Perris General Plan bike routes has not been updated to reflect the recent adoption of the Active Transportation Plan. The City of Perris General Plan shows a proposed Class II bicycle lane on Redlands Avenue along the project site frontage and the Active Transportation Plan, as shown on Figure 8, identifies a Class I shared-use path. The proposed site plan includes a Class I shared-use path on the street frontage and is dedicating an additional four feet of right-of-way beyond what is required by the General Plan.

Existing pedestrian facilities in the project vicinity are shown on Figure 9. Sidewalks are not currently provided on Redlands Avenue along the project site frontage.

#### EXISTING ROADWAY VOLUMES

Figure 10 shows estimated existing average daily traffic volumes. The existing average daily traffic volumes were factored from peak hour intersection volumes using the following formula for each intersection leg:

$$\text{PM Peak Hour (Approach Volume + Exit Volume)} \times 12 = \text{Leg Volume.}$$

Figure 11 and Figure 12 show the Existing AM and PM peak hour intersection turning movement volumes. Existing peak hour intersection volumes are based upon AM peak period and PM peak period intersection turning movement counts obtained in May 2021 during typical weekday conditions. The weekday AM peak period was counted between 7:00 AM and 9:00 AM and the weekday PM peak period was counted between

4:00 PM and 6:00 PM; these periods generally capture the peak times for commuter traffic when the roadway system is typically experiencing peak demand. The actual peak hour within each two-hour count period is determined based on the sum of the four consecutive 15-minute periods with the highest total volume. Thus, the weekday PM peak hour at one intersection may be 4:45 PM to 5:45 PM if those four consecutive 15-minute periods have the highest total volume and may vary at other intersections. Intersection turning movement count worksheets are provided in Appendix C.

## **EXISTING LEVELS OF SERVICE**

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

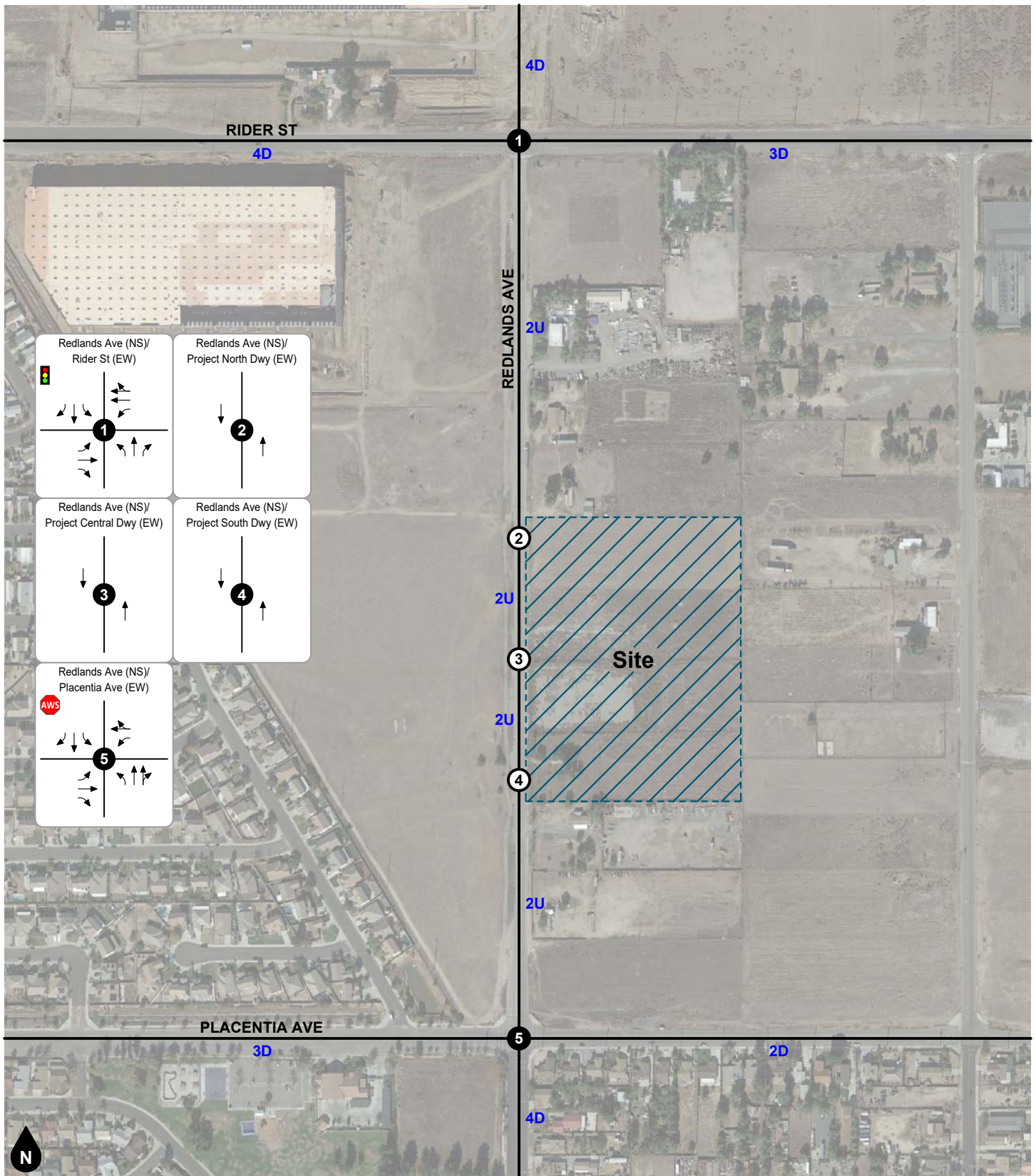
As shown in Table 1, the study intersections currently operate within acceptable Levels of Service (D or better) during the peak hours for Existing conditions.

**Table 1**  
**Existing Intersection Levels of Service**





Study Intersection	Traffic Control <sup>1</sup>	AM Peak Hour		PM Peak Hour	
		Delay <sup>2</sup>	LOS <sup>3</sup>	Delay <sup>2</sup>	LOS <sup>3</sup>
1. Redlands Avenue at Rider Street	TS	26.5	C	23.7	C
5. Redlands Avenue at Placentia Avenue	AWS	8.2	A	9.0	A

Notes:

- (1) TS = Traffic Signal; AWS = All Way Stop
- (2) Delay is shown in seconds/vehicle. For intersections with traffic signal or all way stop control, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst individual lane (or movements sharing a lane).
- (3) LOS = Level of Service

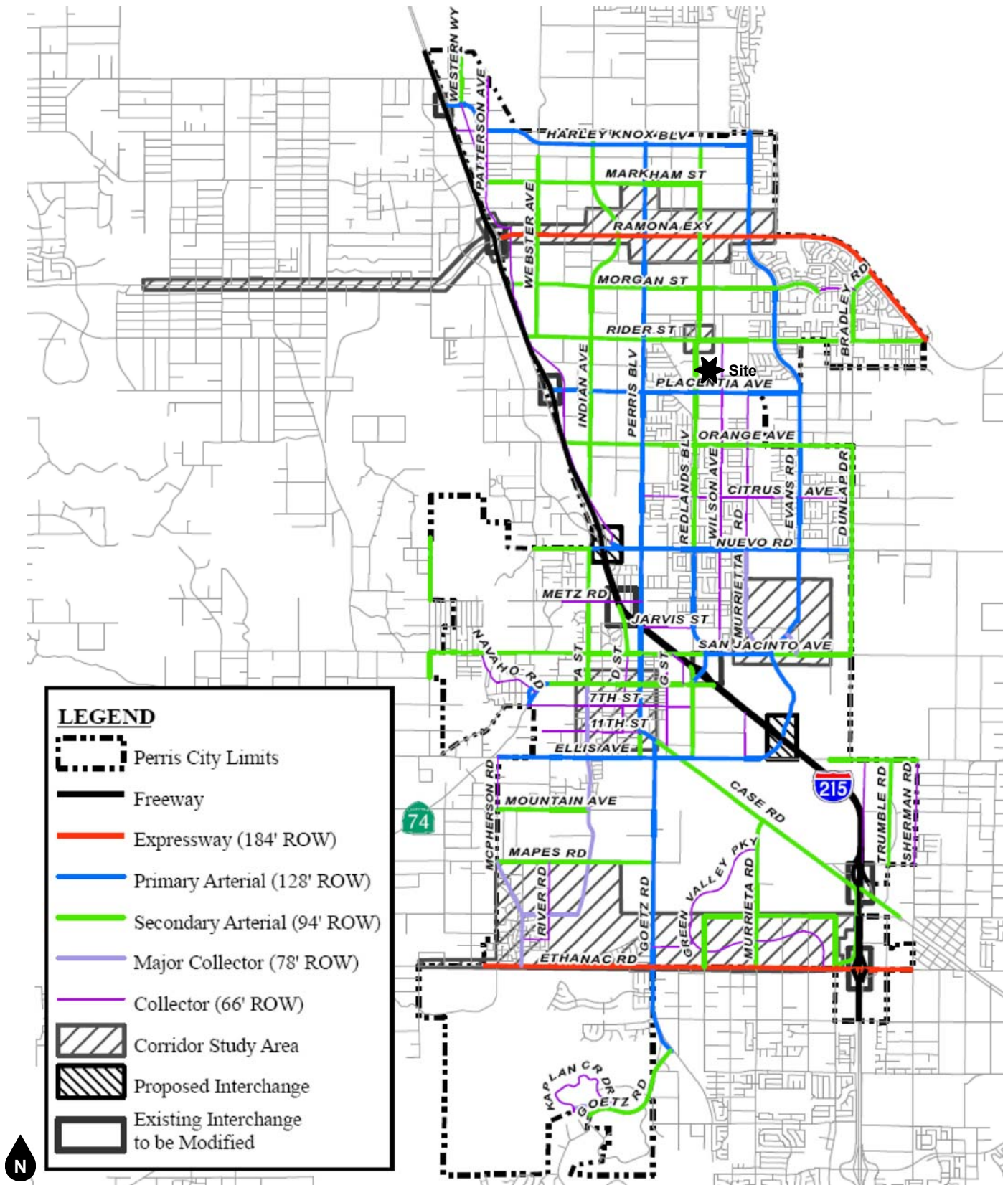


Legend

-  Traffic Signal
-  All Way Stop
-  #D #Lane Divided Roadway
-  #U #Lane Undivided Roadway
-  Existing Lane

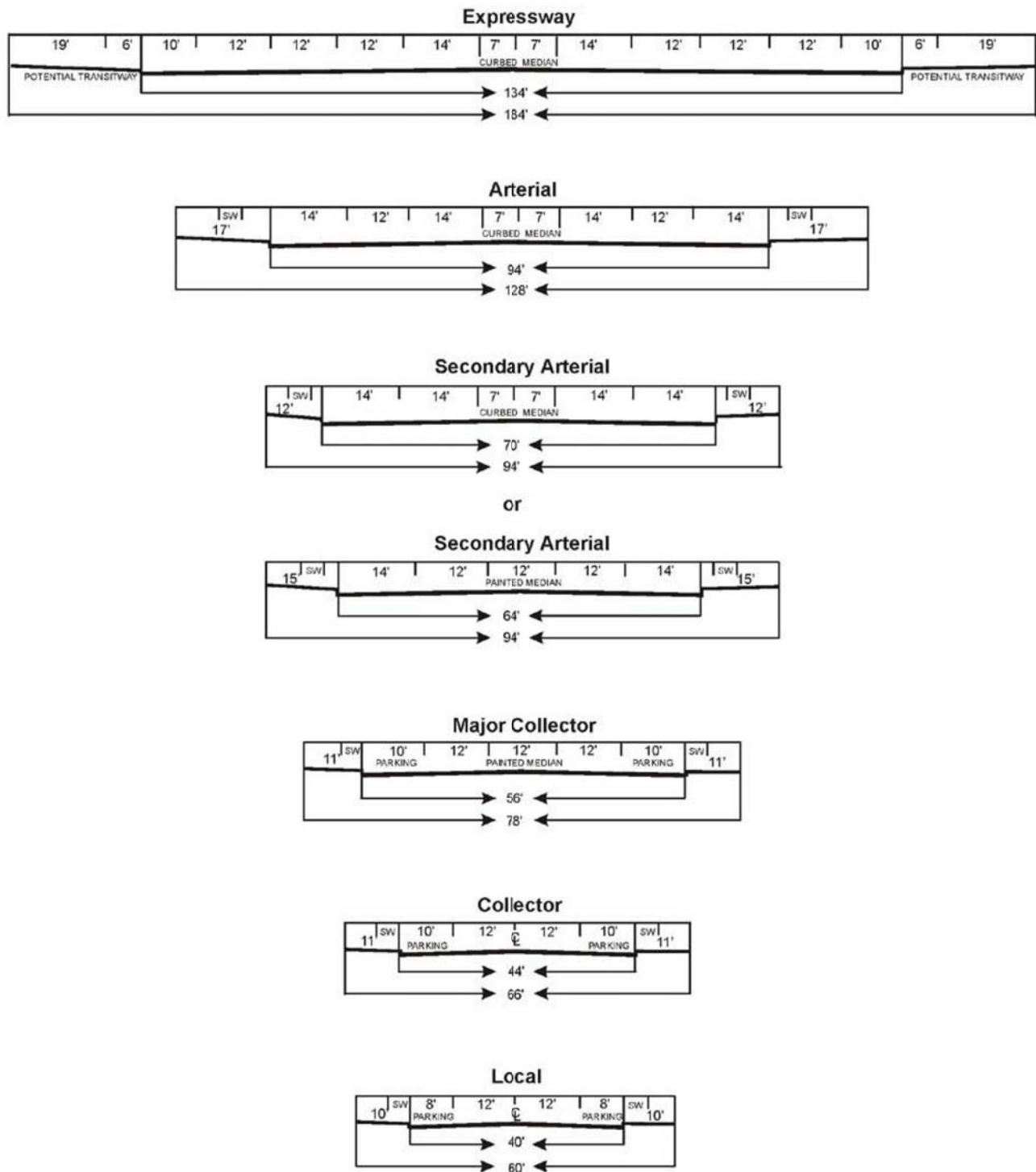
**Figure 3**  
**Existing Lane Geometry and Intersection Traffic Controls**





**Figure 4**  
**City of Perris General Plan Circulation Element**

Source: City of Perris



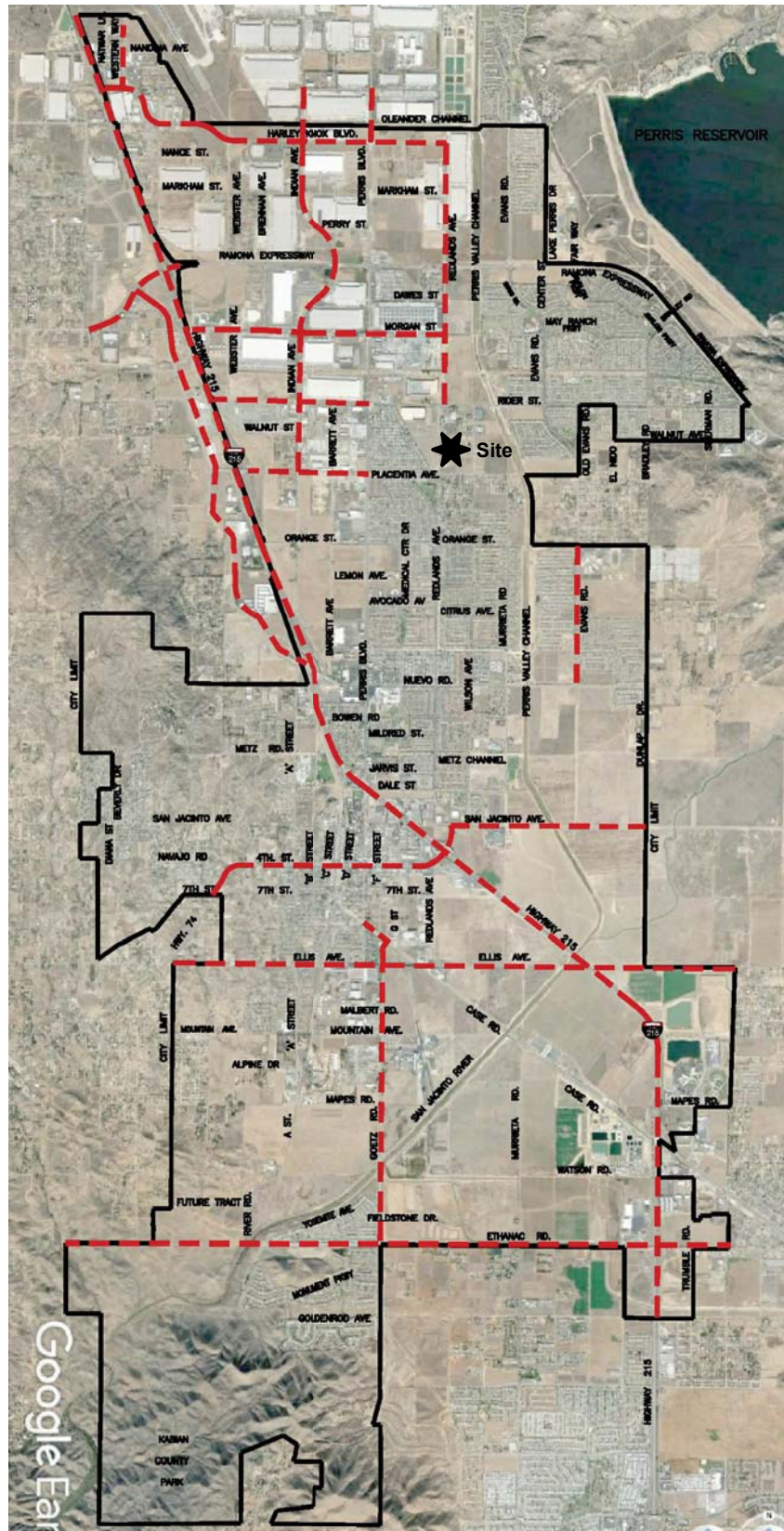
Specific details for each cross-section follow in Figures 4.1 A - 4.1 F

### Legend

SW	Sidewalk or Trail (at least 4 feet)	CURBED MEDIAN	Landscaped Center Median
PARKING	Parking or Bike Lane		
PAINTED MEDIAN	Center Median and/or Continuous Left Turning Lane		

**Figure 5**  
**City of Perris General Plan Roadway Cross-Sections**





#### Legend

- TRUCK ROUTES
- PERRIS CITY LIMITS

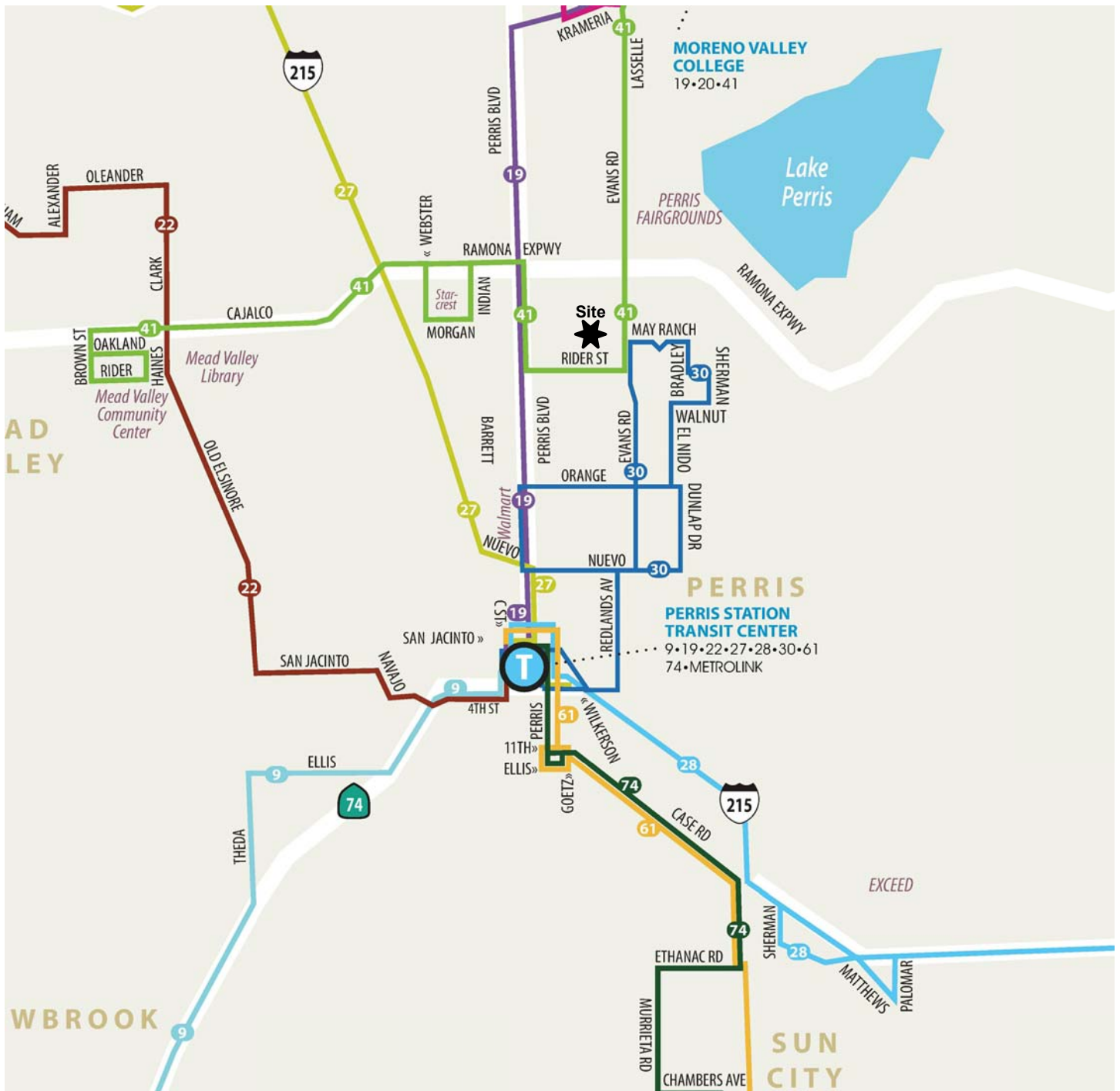
Source: City of Perris



**Figure 6**  
**City of Perris General Plan Truck Routes**

Redlands Avenue East Industrial Project  
Traffic Impact Analysis  
19371





- |                        |                   |                   |               |
|------------------------|-------------------|-------------------|---------------|
| <b>41</b> Route Number | Alternate Routing | Transfer Point    | State Highway |
| Route Path             | Point of Interest | Metrolink Station | Main Road     |
| Commuter Routing       | Medical Facility  | Interstate        | Water         |



**Figure 7**  
**Existing Transit Routes**

Source: Riverside Transit Agency



Redlands Avenue East Industrial Project  
Traffic Impact Analysis  
19371



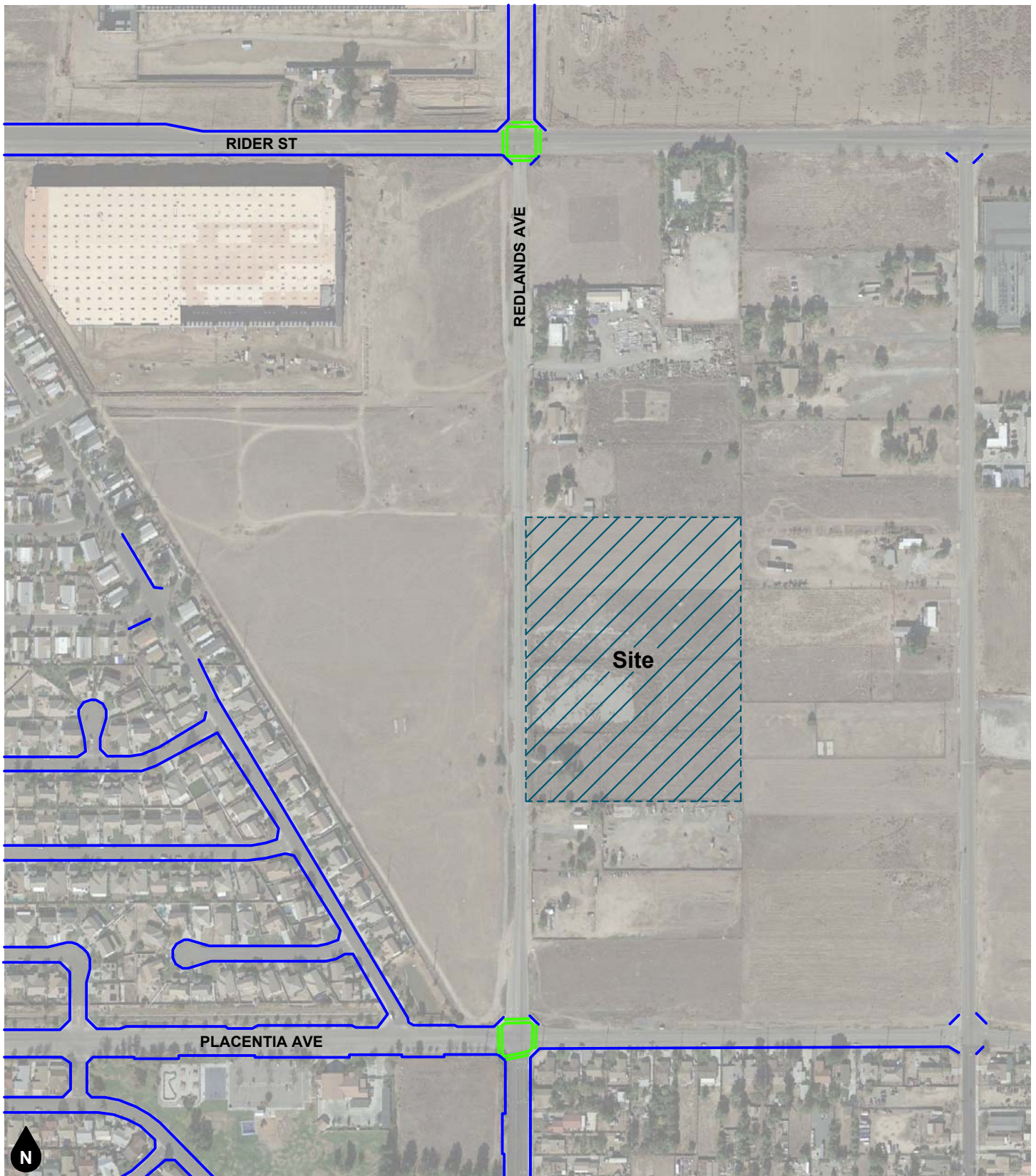
### Existing / Recommended Bikeways

- Shared-Use Path (Class I)
- - - Bicycle Lane (Class II)
- - - Buffered Bike Lane (Class IIB)
- - - Bicycle Route (Class III)
- - - Bicycle Boulevard (Class IIIB)
- - - Separated Bikeway (Class IV)
- Walking Trail

Source: City of Perris

**Figure 8**  
**City of Perris Active Transportation Plan Bikeways**



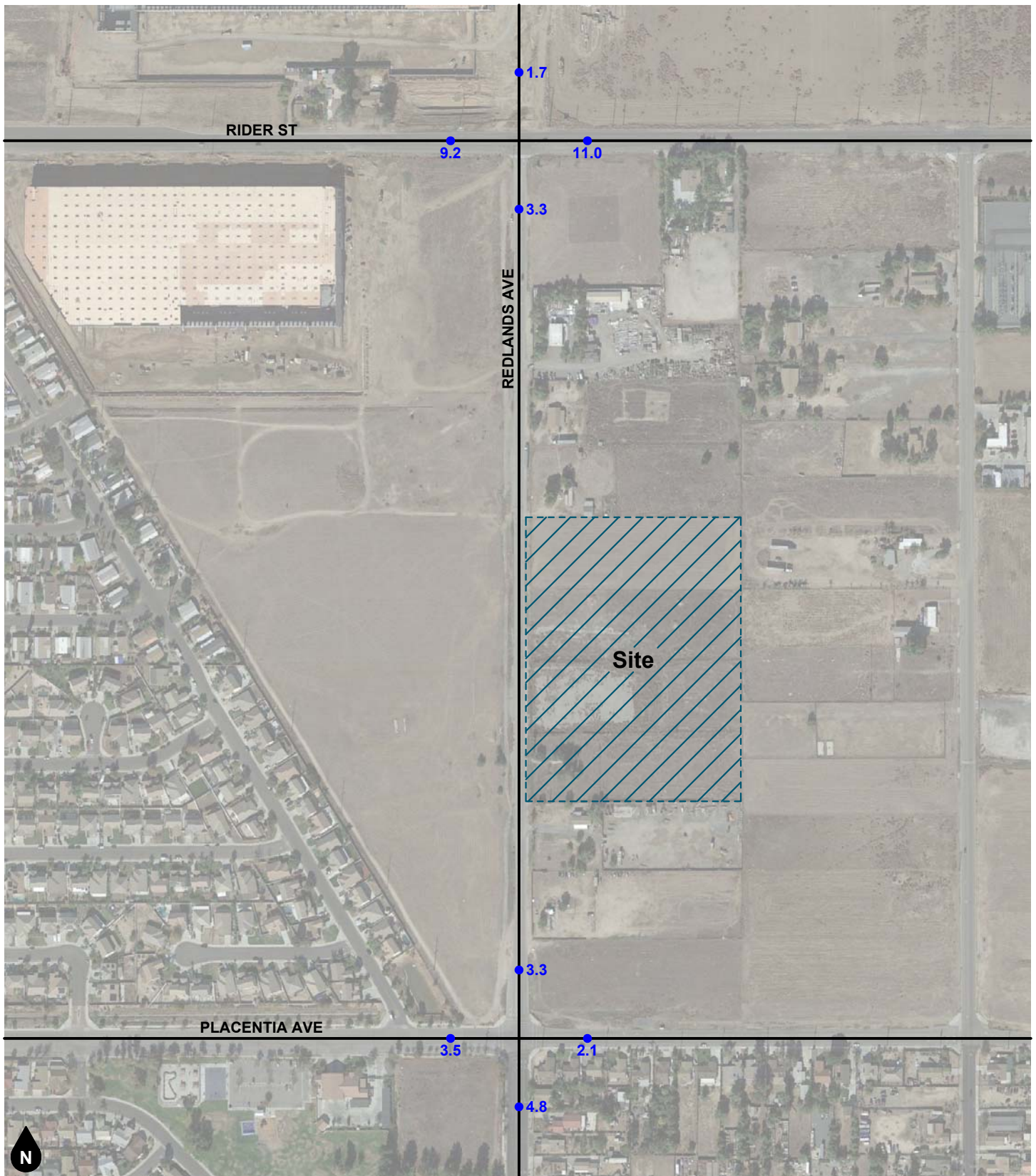


**Legend**

- Sidewalk
- Cross Walk

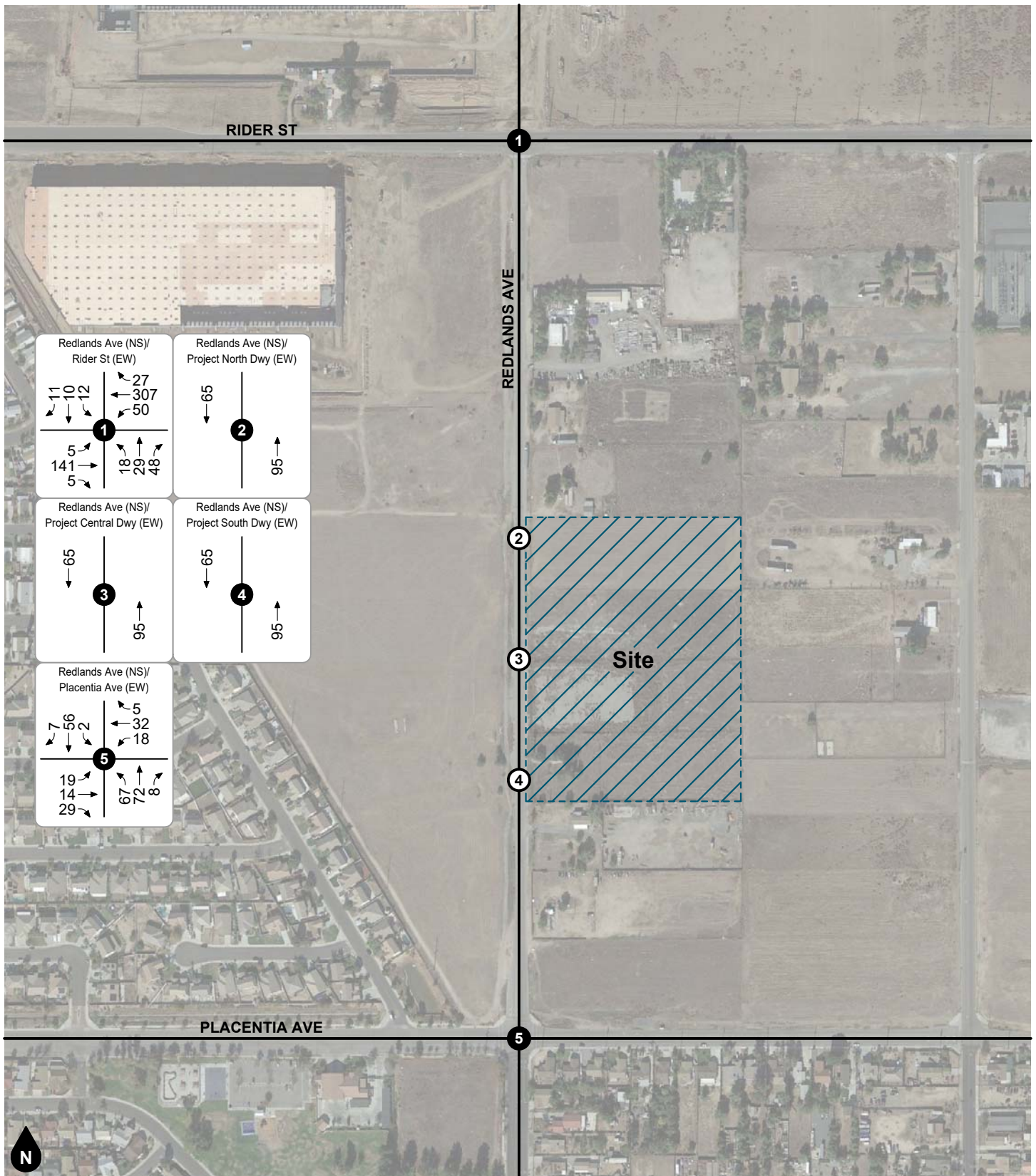
**Figure 9**  
**Existing Pedestrian Facilities**





**Figure 10**  
Existing Average Daily Traffic Volumes

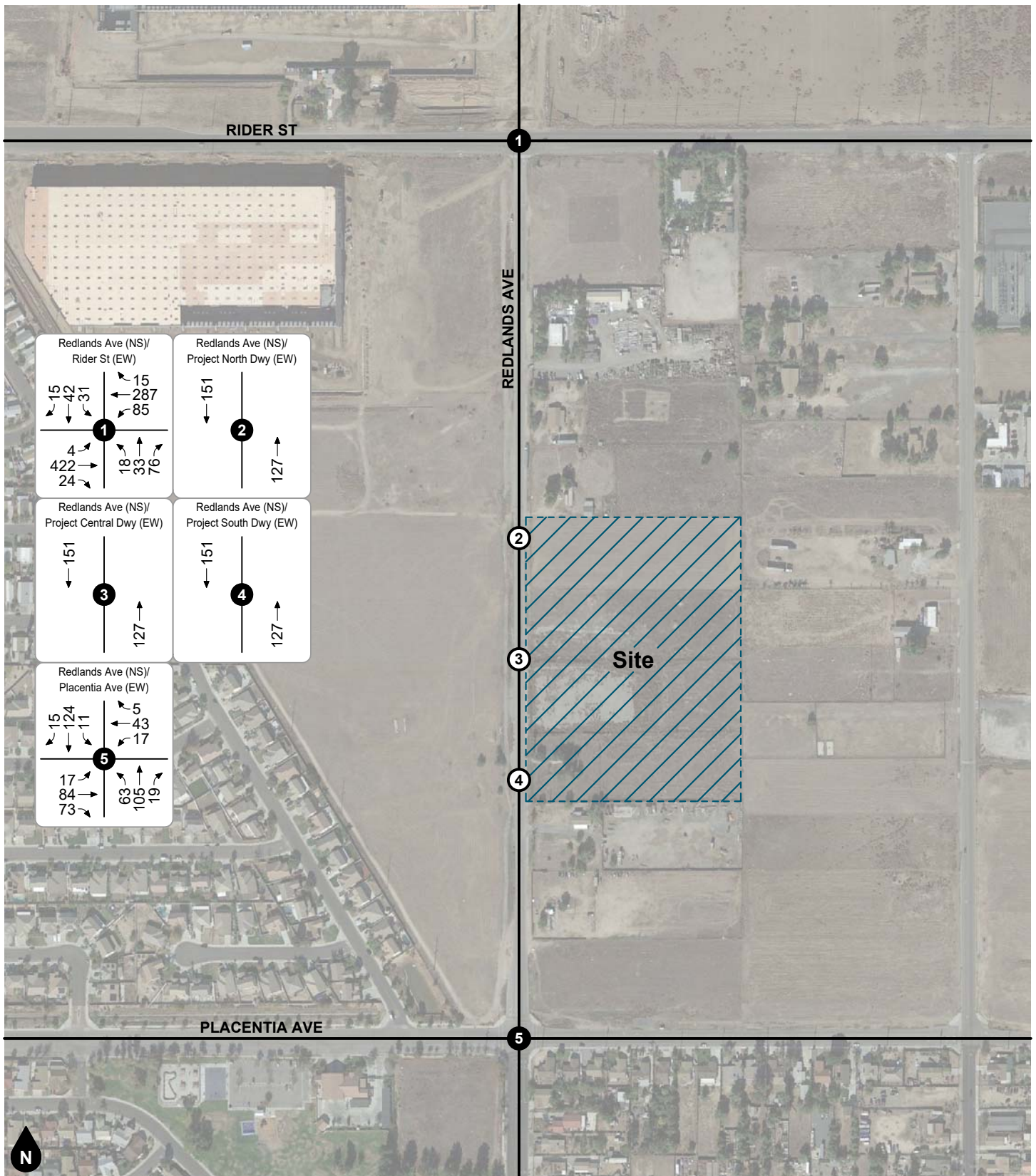




**Legend**

- # Study Intersection
- # Project Driveway

**Figure 11**  
**Existing AM Peak Hour Intersection Turning Movement Volumes**



**Legend**

- # Study Intersection
- # Project Driveway

**Figure 12**  
Existing PM Peak Hour Intersection Turning Movement Volumes



## 4. PROJECT TRIP FORECASTS

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

### PROJECT TRIP GENERATION

Table 2 shows the project trip generation forecast based on rates obtained from the Institute of Transportation Engineers (ITE) *Trip Generation Manual Supplement* (10th Edition, 2020). Based on review of the ITE land use description, trip generation rates for ITE Land Use Code 155 - High-Cube Warehouse Fulfillment Center Warehouse (Non-Sort) were determined to adequately represent the proposed use and were selected for calculation of the project trip generation forecast. The number of trips generated is determined by multiplying the trip generation rates and directional distributions by the land use quantity.

As shown in Table 2, the proposed project is forecast to generate approximately 461 daily vehicle trips, including 40 vehicle trips during the AM peak hour and 40 vehicle trips during the PM peak hour.

### Truck Trips

The project trip generation was also calculated in terms of Passenger Car Equivalent (PCE) trips. The percentage of truck trips was obtained from the ITE *Trip Generation Manual Supplement* (10th Edition, 2020). The truck mix by axle type was determined based on South Coast Air Quality Management District (SCAQMD) recommendations for high-cube warehousing facilities without cold-storage. Truck trips were converted to PCE trips based on the following factors: 1.5 for 2-axle trucks, 2.0 for 3-axle trucks, and 3.0 for trucks with four or more axles.

As also shown in Table 2, the proposed project is forecast to generate approximately 654 daily PCE trips, including 48 PCE trips during the AM peak hour and 44 PCE trips during the PM peak hour.

### Review of High-Cube Warehouse Rates

ITE provides the following land use description for Land Use Code 155 - High-Cube Warehouse Fulfillment Center Warehouse (Non-Sort):

*A high-cube warehouse (HCW) is a building that typically has at least 200,000 gross square feet of floor area, has a ceiling height of 24 feet or more, and is used primarily for the storage and/or consolidation of manufactured goods (and to a lesser extent, raw materials) prior to their distribution to retail locations or other warehouses. A typical HCW has a high level of on-site automation and logistics management. The automation and logistics enable highly-efficient processing of goods through the HCW. High-cube fulfillment center warehouses include warehouses characterized by a significant storage function and direct distribution of ecommerce product to end users. These facilities typically handle smaller packages and quantities than other types of HCWs and often contain multiple mezzanine levels.*

The ITE database further categorizes high-cube fulfillment center warehousing into sort or non-sort facilities. A sorting facility is defined as a fulfillment center that ships out smaller items, requiring extensive manual sorting, whereas a non-sorting facility ships out large box items that are processed primarily through automation. The trip generation rates for sorting facilities are substantially greater than rates for non-sorting facilities; however, they are based on a limited sample size and may not necessarily represent typical operations. Other types of high-cube warehouses include high-cube parcel hub and cold-storage warehouses, neither of which are currently contemplated uses for the proposed project.

Based on review of the available ITE data, ITE Land Use Code 155 - High-Cube Warehouse Fulfillment Center Warehouse (Non-Sort) was determined to best represent a typical user for the type of building proposed, while still providing a more conservative daily trip estimate compared to a standard warehouse (ITE Land Use Code 150). To avoid grossly overestimating potential impacts and constructing unnecessary improvements, the project trip generation was calculated based on ITE Land Use Code 155 - High-Cube Warehouse Fulfillment Center Warehouse (Non-Sort). *Should a future potential tenant intend to occupy the building for use as a high-cube fulfillment center sorting facility, parcel hub, or cold-storage warehouse, preparation of a transportation demand management plan and/or further traffic analysis may be necessary to verify consistency with the trip estimates and findings of this study.*

## PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

Figure 13 to Figure 14 show the forecast directional distribution patterns for the project generated passenger car and truck trips. The project trip distribution patterns are based on review of existing volume data, surrounding land uses, designated truck routes, and the local and regional roadway facilities in the project vicinity.

Based on the identified project trip generation and distributions, project average daily traffic volumes have been calculated and shown on Figure 15. Project AM and PM peak hour intersection turning movement volumes expected from the project are depicted on Figure 16 and Figure 17, respectively.

## SITE ACCESS

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

- Redlands Avenue (NS) at Project North Driveway (EW) [Study Intersection #2]
  - Truck access only
  - Construct one inbound lane and one outbound lane with a westbound stop control
  - Northbound: one through lane and one shared through/right turn lane
  - Southbound: two through lanes
  - Westbound: one right turn only lane
- Redlands Avenue (NS) at Project Central Driveway (EW) [Study Intersection #3]
  - Passenger car access only
  - Construct one inbound lane and one outbound lane with a westbound stop-control
  - Northbound: one through lane and one shared through/right turn lane
  - Southbound: two through lanes
  - Westbound: one shared left/right turn lane
- Redlands Avenue (NS) at Project South Driveway (EW) [Study Intersection #4]
  - Truck access only
  - Construct one inbound lane and one outbound lane with a westbound stop-control
  - Northbound: one through lane and one shared through/right turn lane
  - Southbound: two through lanes and one left turn lane
  - Westbound: one right turn only lane

A conceptual striping plan along Redlands Avenue including the Redlands Avenue West Industrial Project located across Redlands Avenue is shown on Figure 18. This figure shows the lane configurations and geometrics for the project driveways along Redlands Avenue.



**Table 2**  
**Project Trip Generation**

Land Use: High-Cube Fulfillment Center Warehouse (Non-Sort)

Size: 254,511 TSF

TRIP GENERATION RATES PER TSF <sup>1</sup>								
Vehicle Type	Source <sup>2</sup>	AM Peak Hour			PM Peak Hour			Daily Rate
		In	Out	Rate	In	Out	Rate	
All Vehicles	TGMS 155	81%	19%	0.150	39%	61%	0.160	1.810
Passenger Cars (91.0% AM, 93.0% PM, 73.0% Daily)	TGMS 155	0.111	0.026	0.137	0.058	0.091	0.149	1.321
Trucks (9.0% AM, 7.0% PM, 27.0% Daily)	TGMS 155*	0.011	0.003	0.014	0.004	0.007	0.011	0.489
Truck Mix:	SCAQMD							
2-Axle Trucks (16.7%)		0.002	0.000	0.002	0.001	0.001	0.002	0.082
3-Axle Trucks (20.7%)		0.002	0.001	0.003	0.001	0.001	0.002	0.101
4+ Axle Trucks (62.6%)		0.007	0.002	0.009	0.003	0.004	0.007	0.306

VEHICLE TRIPS GENERATED							
Vehicle Type	AM Peak Hour			PM Peak Hour			Daily
	In	Out	Total	In	Out	Total	
Passenger Cars	28	7	35	15	23	38	336
Trucks							
2-Axle Trucks	1	0	1	0	0	0	21
3-Axle Trucks	1	0	1	0	0	0	26
4+ Axle Trucks	2	1	3	1	1	2	78
Subtotal	4	1	5	1	1	2	125
<b>Total Vehicle Trips Generated</b>	<b>32</b>	<b>8</b>	<b>40</b>	<b>16</b>	<b>24</b>	<b>40</b>	<b>461</b>

PCE <sup>3</sup> TRIPS GENERATED								
Vehicle Type	PCE Factor <sup>4</sup>	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	
Passenger Cars	1.0	28	7	35	15	23	38	336
Trucks								
2-Axle Trucks	1.5	2	0	2	0	0	0	32
3-Axle Trucks	2.0	2	0	2	0	0	0	52
4+ Axle Trucks	3.0	6	3	9	3	3	6	234
Subtotal		10	3	13	3	3	6	318
Total PCE Trips Generated		38	10	48	18	26	44	654

Notes:

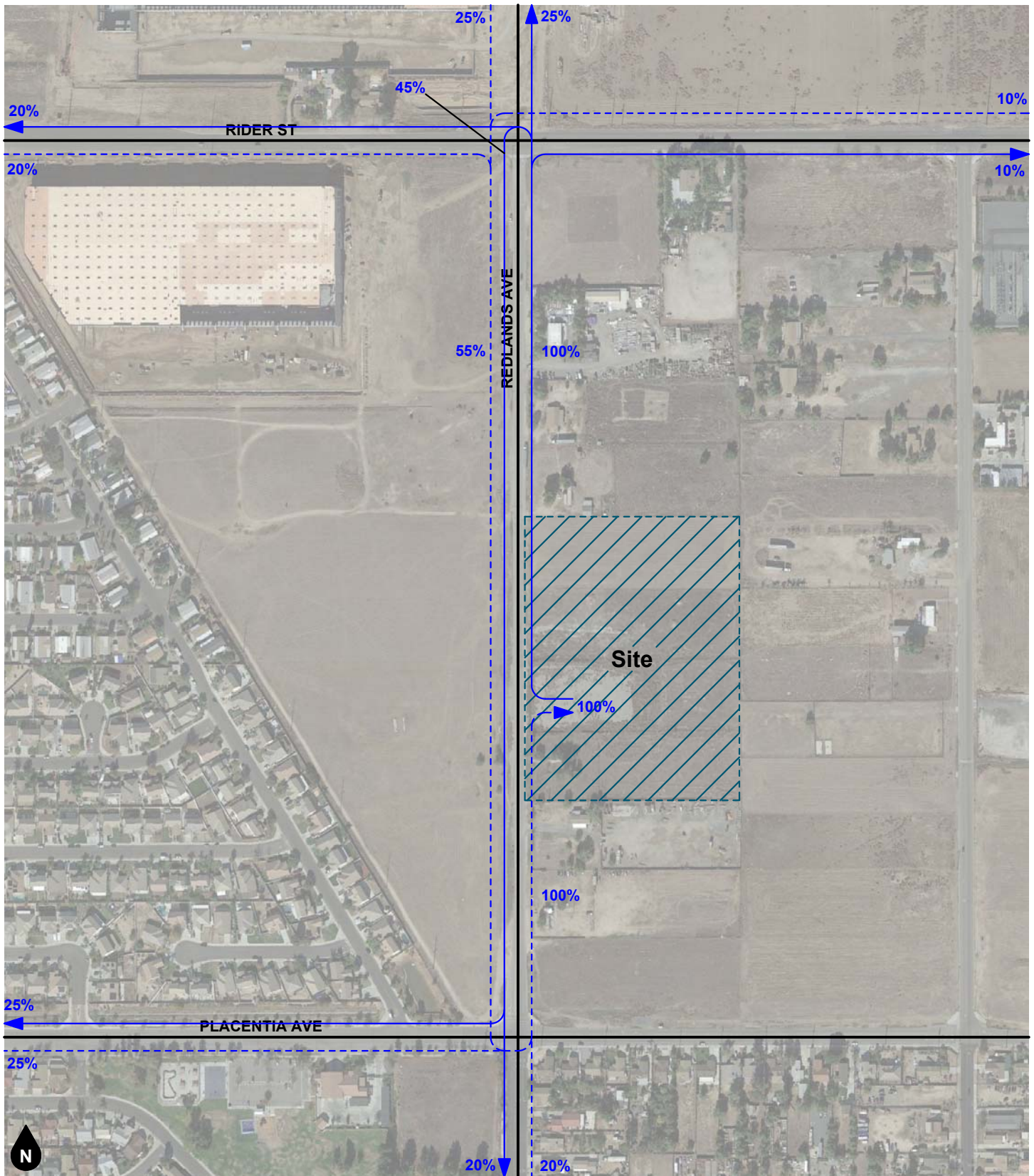
(1) TSF = Thousand Square Feet

(2) TGMS = [Trip Generation Manual Supplement](#) (Institute of Transportation Engineers (ITE), February 2020); ### = ITE Land Use Code.

\* = Daily truck percent based on ITE 150 (Warehousing) since it is not available for ITE 155 (Non-Sort).

(3) PCE = Passenger Car Equivalent

(4) Source: San Bernardino County Congestion Management Program (2016), Appendix B.

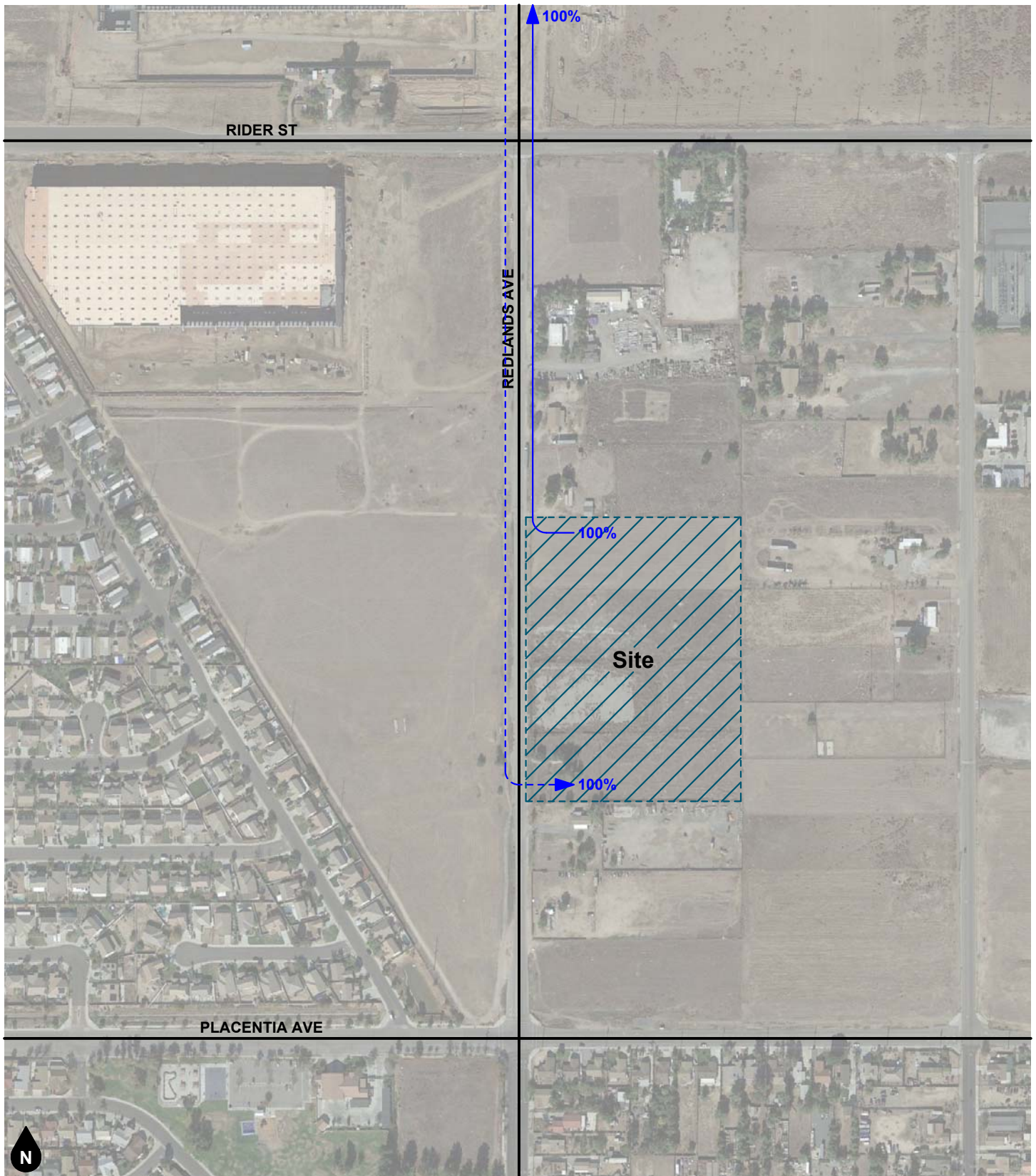


**Legend**

- 10% Percent From Project
- 10% Percent To Project

**Figure 13**  
**Project Passenger Car Trip Distribution**



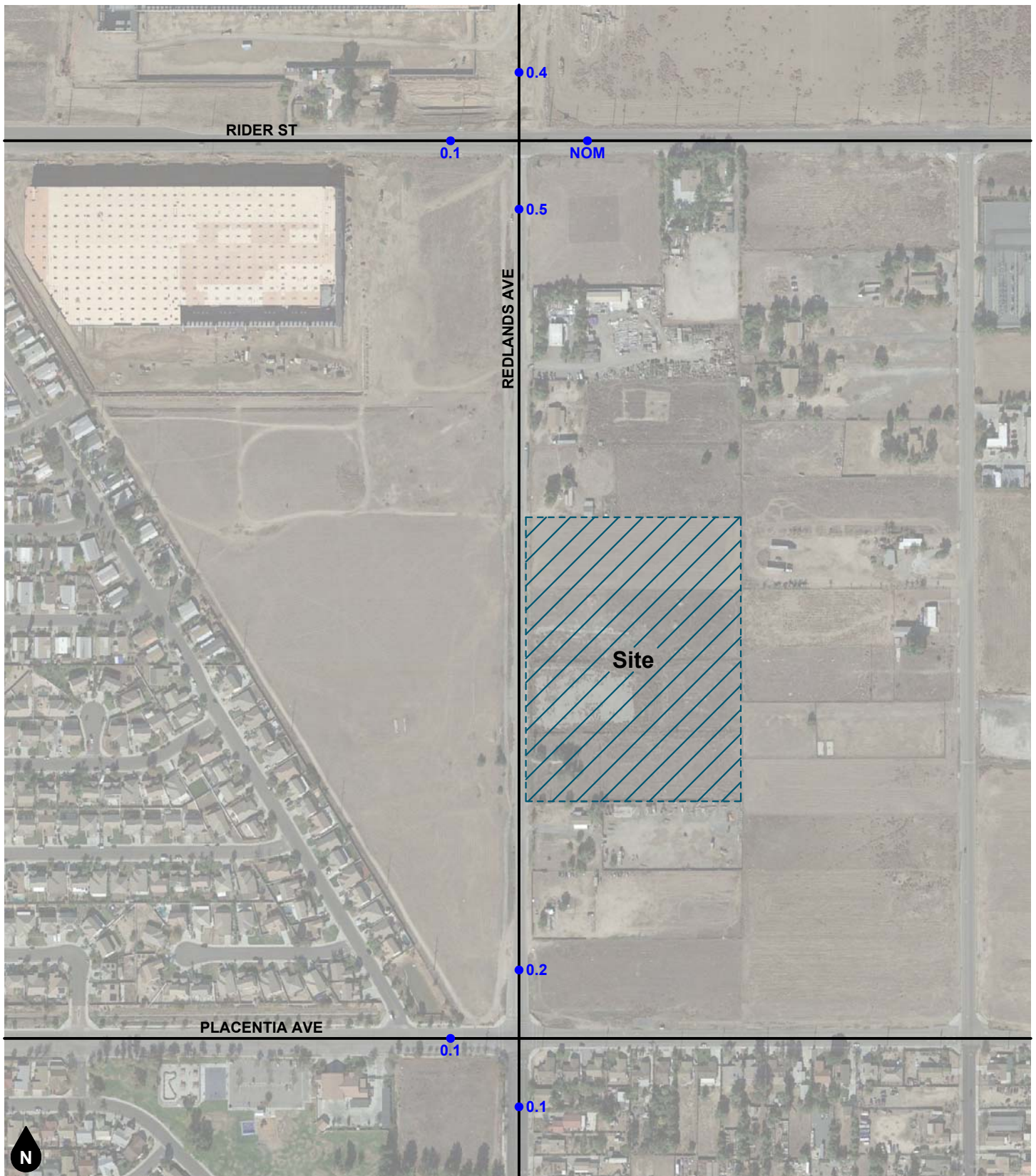


**Legend**

- 10% Percent From Project
- 10% Percent To Project

**Figure 14**  
**Project Truck Trip Distribution**



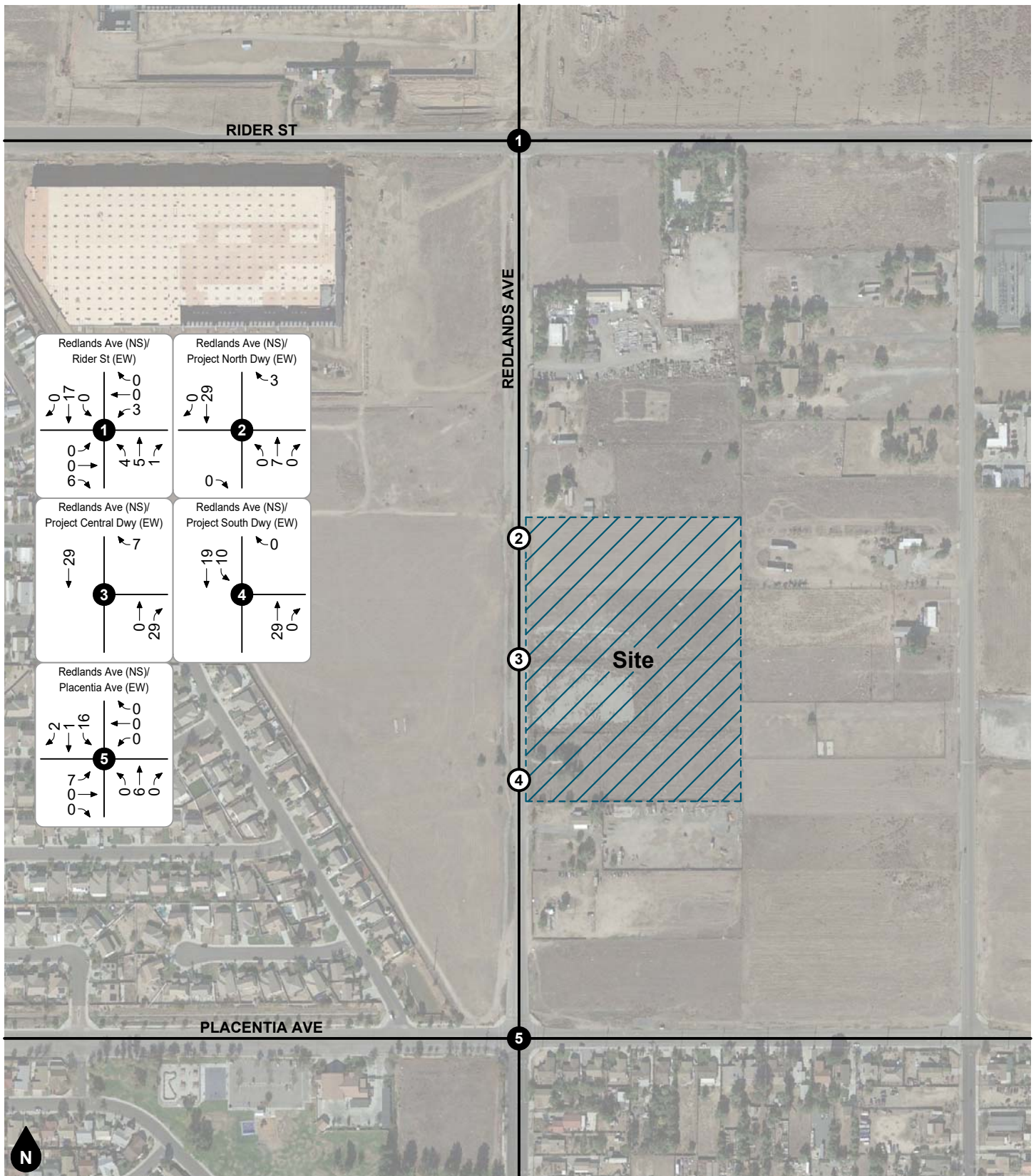


**Legend**

- ## Vehicles Per Day (1,000's)
- NOM Nominal Less Than 50 Vehicles Per Day

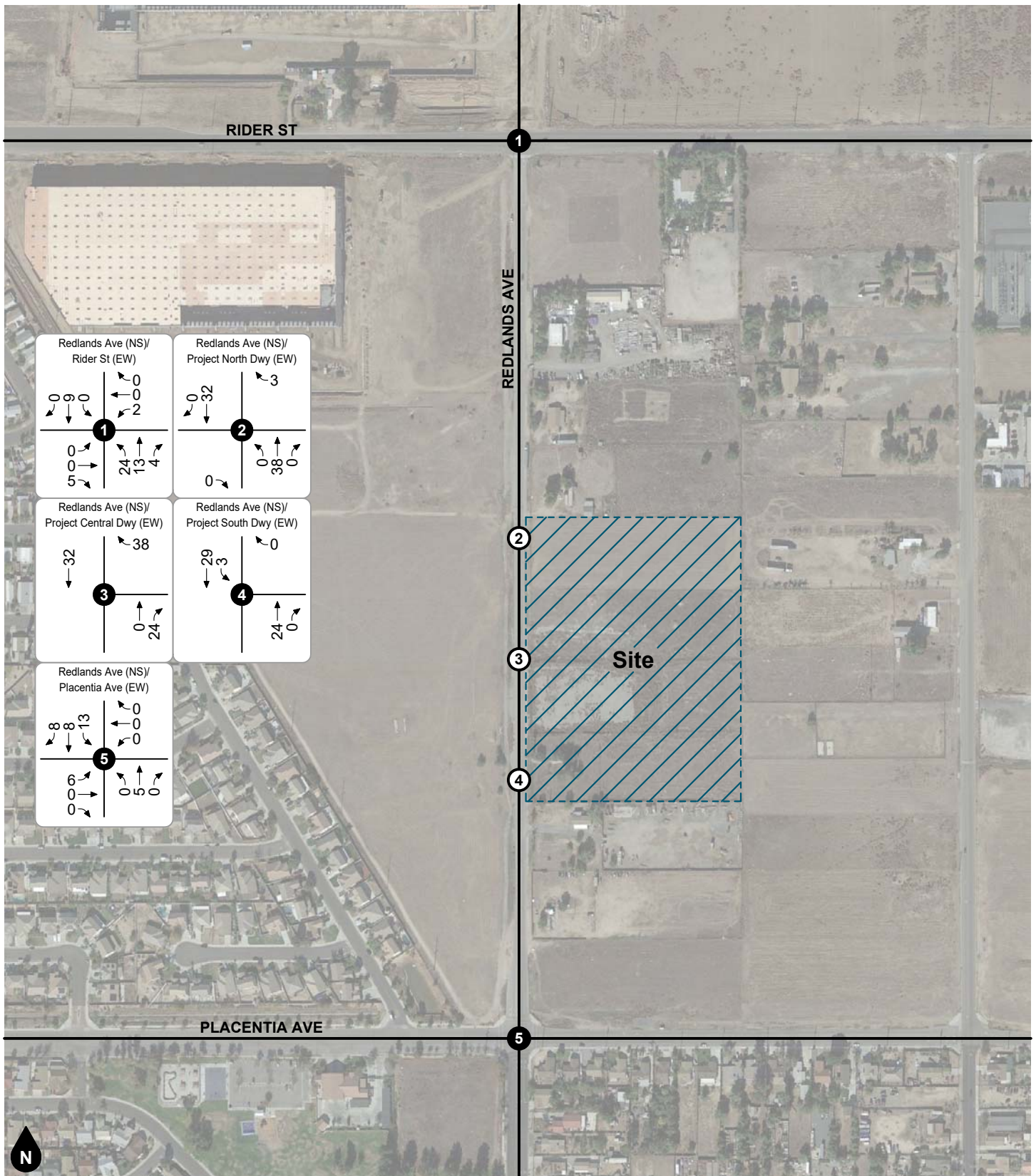
**Figure 15**  
**Project Average Daily Traffic Volumes**





- Legend
- # Study Intersection
  - # Project Driveway

**Figure 16**  
**Project AM Peak Hour Intersection Turning Movement Volumes**

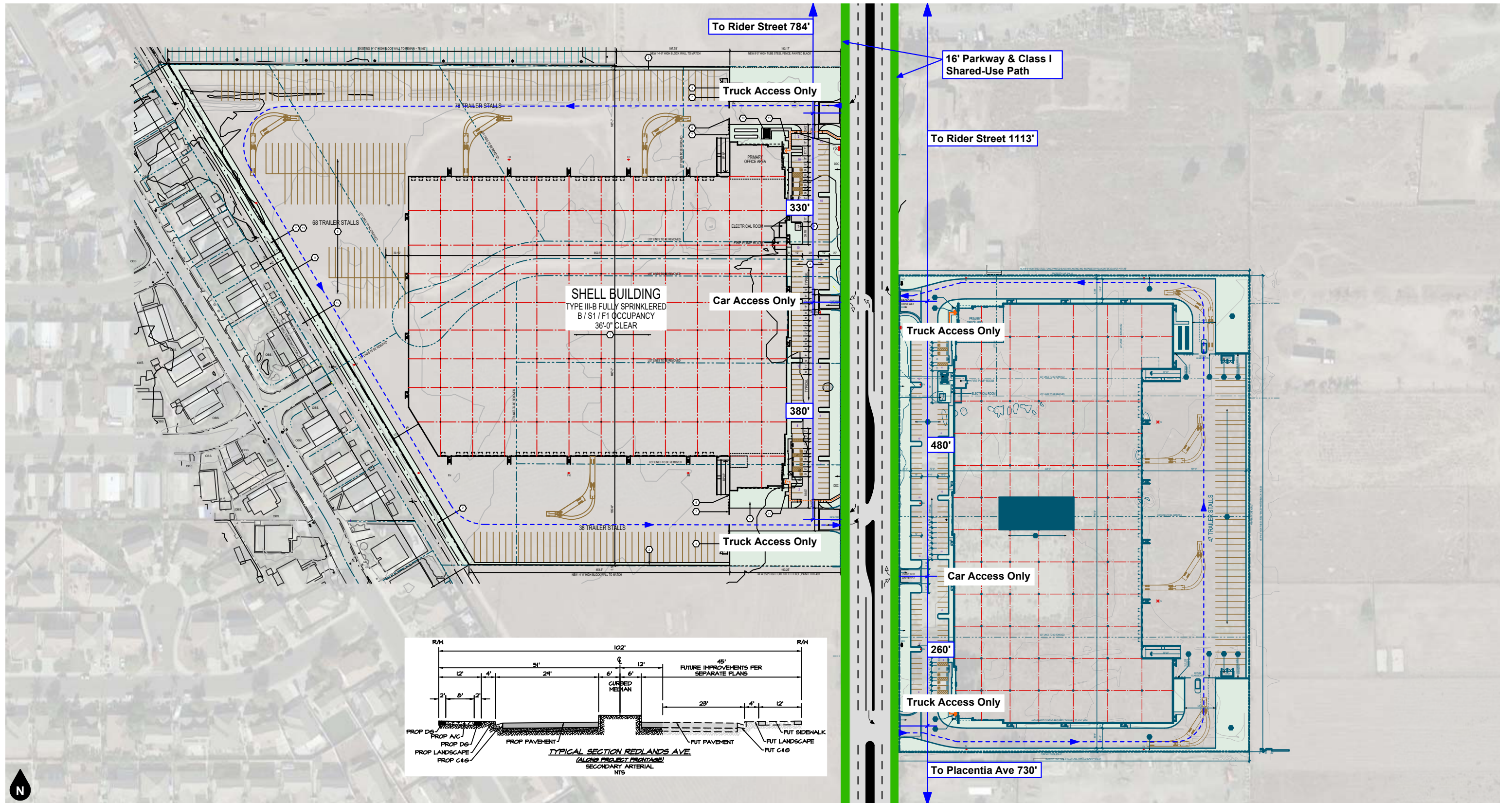


Legend



- # Study Intersection
- # Project Driveway

**Figure 17**  
**Project PM Peak Hour Intersection Turning Movement Volumes**





Legend

-  Passenger Car Only Movement
-  Primary Truck Movement

**Figure 18**  
**Redlands Avenue Conceptual Striping Plan**

## 5. FUTURE VOLUME FORECASTS

---

This section describes how future volume forecasts for each analysis scenario were developed. Forecast study area volumes are illustrated on figures contained in this section.

### CUMULATIVE TRIPS

#### **Ambient Growth Rate**

To account for ambient growth on roadways, existing 2021 roadway volumes were increased by a growth rate of three percent (3%) per year over two years for Opening Year (2023) conditions. This equates to a total growth factor of approximately 1.06. The ambient growth rate was conservatively applied to all movements at the study intersections.

#### **Other Development**

To account for trips generated by future development, trips generated by pending or approved other development projects in the City of Perris were added to the study area. Table 3 shows the other development trip generation and Figure 19 exhibits the other development location map.

Figure 20 shows the forecast average daily traffic volumes for the other development. Figure 21 and Figure 22 show the forecast AM and PM peak hour intersection turning movement volumes for trips generated by other developments.

### ANALYSIS SCENARIO VOLUME FORECASTS

#### **Existing Plus Project**

Existing Plus Project volume forecasts were derived by adding the project generated trips to Existing volumes. Existing Plus Project average daily traffic volumes are shown on Figure 23. Existing Plus Project AM and PM peak hour intersection turning movement volumes are shown on Figure 24 and Figure 25.

#### **Opening Year (2023) Without Project**

To develop Opening Year (2023) Without Project volume forecasts, Existing volumes were combined with ambient growth and other development. Opening Year (2023) Without Project average daily traffic volumes are shown on Figure 26. Opening Year (2023) Without Project AM and PM peak hour intersection turning movement volumes are shown Figure 27 and Figure 28.

#### **Opening Year (2023) With Project**

Opening Year (2023) With Project volume forecasts were developed by adding project generated trips to the Opening Year (2023) Without Project forecast. Opening Year (2023) With Project daily traffic volumes are shown on Figure 29. Opening Year (2023) With Project AM and PM peak hour intersection turning movement volumes are shown on Figure 30 and Figure 31.



**Table 3 (1 of 2)**  
**Other Development Trip Generation**

Map ID	Project Name	Land Use	Quantity	Units <sup>1</sup>	Trips Generated <sup>2</sup>						
					AM Peak Hour			PM Peak Hour			Daily
					In	Out	Total	In	Out	Total	
1	Redlands Avenue West	<u>High-Cube Warehouse</u>	334.447	TSF							
		- Cars			37	9	46	19	30	49	442
		- Trucks			10	3	13	3	3	6	415
2	IDI @ Ramona	<u>High-Cube Warehouse</u>		TSF							
		- Cars			21	6	27	10	26	36	501
		- Trucks			13	3	16	3	13	16	244
3	Cali Express Carwash	Car Wash	5.600	TSF	17	17	34	39	39	78	861
4	Expressway Industrial	<u>High-Cube Warehouse</u>	347.000	TSF							
		- Cars			17	5	22	8	21	29	408
		- Trucks			13	3	16	3	10	13	199
5	TR38071	Single-Family Detached Res	197	DU	36	109	145	123	72	195	1,860
6	Rados	<u>High-Cube Warehouse</u>	1,200.000	TSF							
		- Cars			59	18	77	29	72	101	1,411
		- Trucks			41	10	51	16	31	47	680
7	Walnut Indu	<u>High-Cube Warehouse</u>	205.000	TSF							
		- Cars			10	3	13	5	12	17	241
		- Trucks			8	0	8	3	3	6	117
8	Patriot Ind	<u>High-Cube Warehouse</u>	286.000	TSF							
		- Cars			14	4	18	7	17	24	336
		- Trucks			10	3	13	3	10	13	163
9	Burge Indus 1	<u>Light Industrial</u>	18.000	TSF							
		- Cars			11	1	12	1	10	11	82
		- Trucks			0	0	0	0	0	0	17
10	Burge Indus 2	<u>Light Industrial</u>	19.000	TSF							
		- Cars			11	2	13	2	10	12	87
		- Trucks			0	0	0	0	0	0	17
11	Pulliam Indus	<u>Light Industrial</u>	16.000	TSF							
		- Cars			10	1	11	1	9	10	73
		- Trucks			0	0	0	0	0	0	14
12	Rider 2 & 4	<u>High-Cube Warehouse</u>	1,371.000	TSF							
		- Cars			67	21	88	33	82	115	1,612
		- Trucks			46	13	59	16	41	57	779
13	First Indus (Goodwin)	<u>High-Cube Warehouse</u>	338.000	TSF							
		- Cars			17	5	22	8	20	28	397
		- Trucks			13	3	16	3	10	13	193
14	Chartwell Ind	<u>High-Cube Warehouse</u>	141.000	TSF							
		- Cars			7	2	9	3	8	11	166
		- Trucks			3	0	3	0	3	3	80

**Table 3 (2 of 2)**  
**Other Development Trip Generation**

Map ID	Project Name	Land Use	Quantity	Units <sup>1</sup>	Trips Generated <sup>2</sup>						
					AM Peak Hour			PM Peak Hour			Daily
					In	Out	Total	In	Out	Total	
15	Wilson Ind 1	High-Cube Warehouse	303.000	TSF							
		- Cars			15	5	20	7	18	25	356
		- Trucks			10	3	13	3	10	13	171
16	Wilson Ind 2	High-Cube Warehouse	248.000	TSF							
		- Cars			12	4	16	6	15	21	292
		- Trucks			8	0	8	3	6	9	141
17	TR36797	Multi-Family Residential	76	DU	8	27	35	27	16	43	556
18	Commercial Retail - Spectrum	Commercial Retail	7.400	TSF	4	3	7	14	15	29	279
19	TR37014	Multi-Family Residential	228	DU	24	81	105	80	47	127	1,669
20	TR32497	Multi-Family Residential	131	DU	14	46	60	46	27	73	959
21	TR34260	Single-Family Detached Res	22	DU	4	12	16	14	8	22	208
22	Aldi Market Center	Supermarket	27.000	TSF	62	41	103	127	122	249	2,883
23	TR37038	Multi-Family Residential	111	DU	12	39	51	39	23	62	813
24	TR31659	Single-Family Detached Res	161	DU	30	89	119	100	59	159	1,520
25	TR32041	Single-Family Detached Res	122	DU	23	68	91	76	45	121	1,152
Total					717	659	1,376	880	963	1,843	22,394

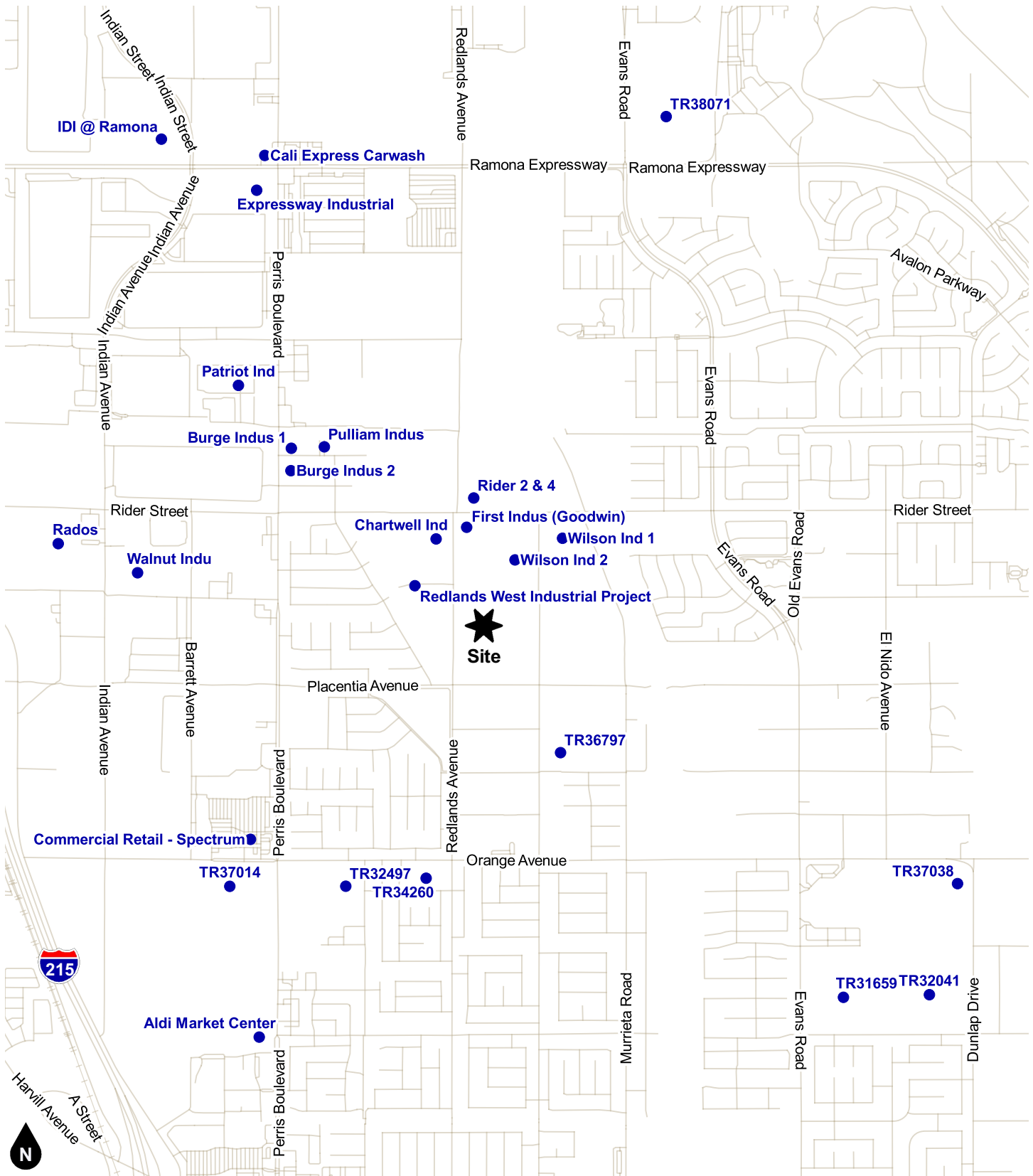
Notes:

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

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

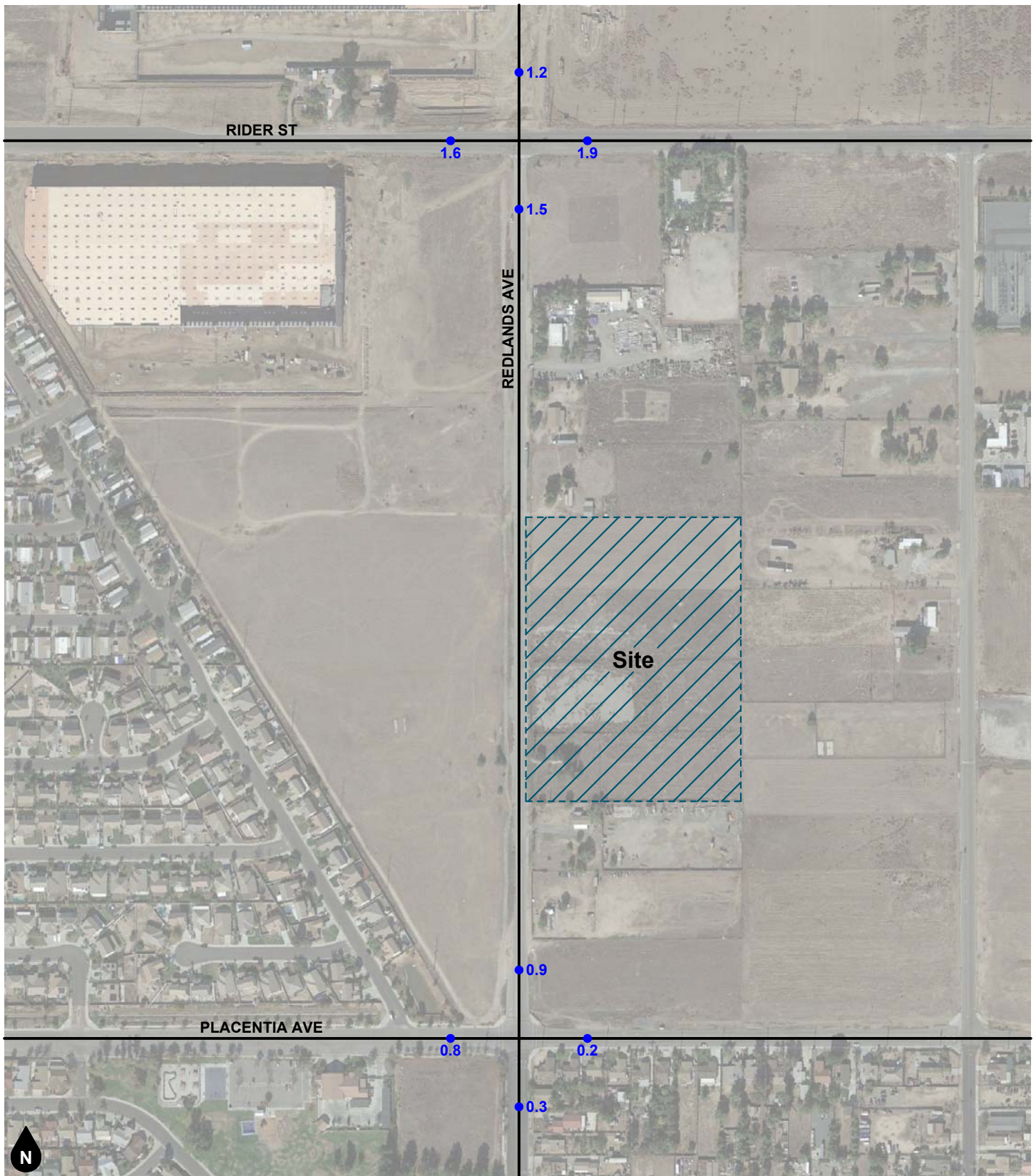
TGMS = ITE Trip Generation Manual Supplement (10th Edition, February 2020); ### = ITE Land Use Code.

SCAQMD = South Coast Air Quality Management District recommendations for non-cold storage high-cube warehouse.



Legend  
Other Development

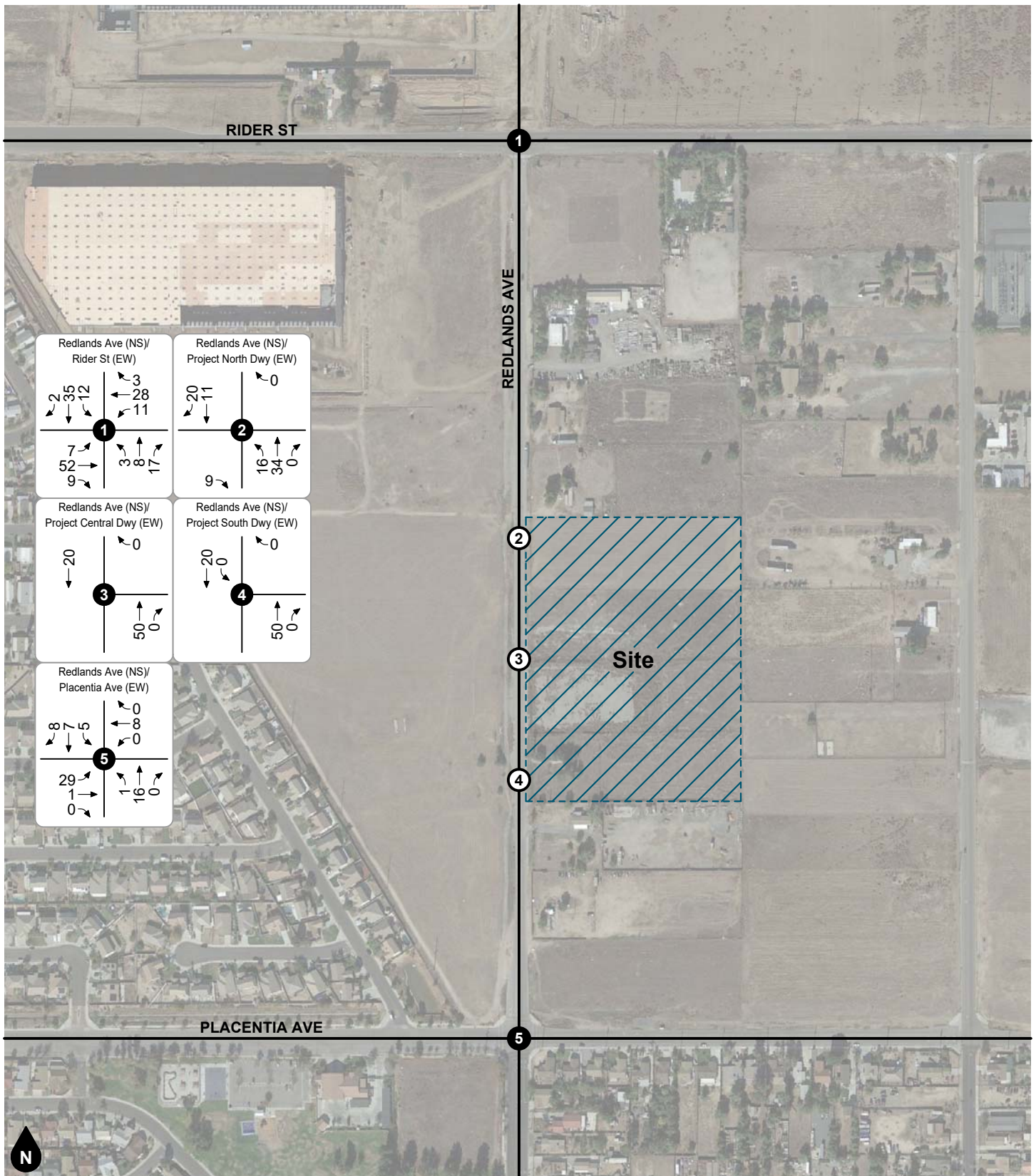
**Figure 19**  
**Other Development Location Map**



**Legend**  
 ●## Vehicles Per Day (1,000's)

**Figure 20**  
**Other Development Average Daily Traffic Volumes**



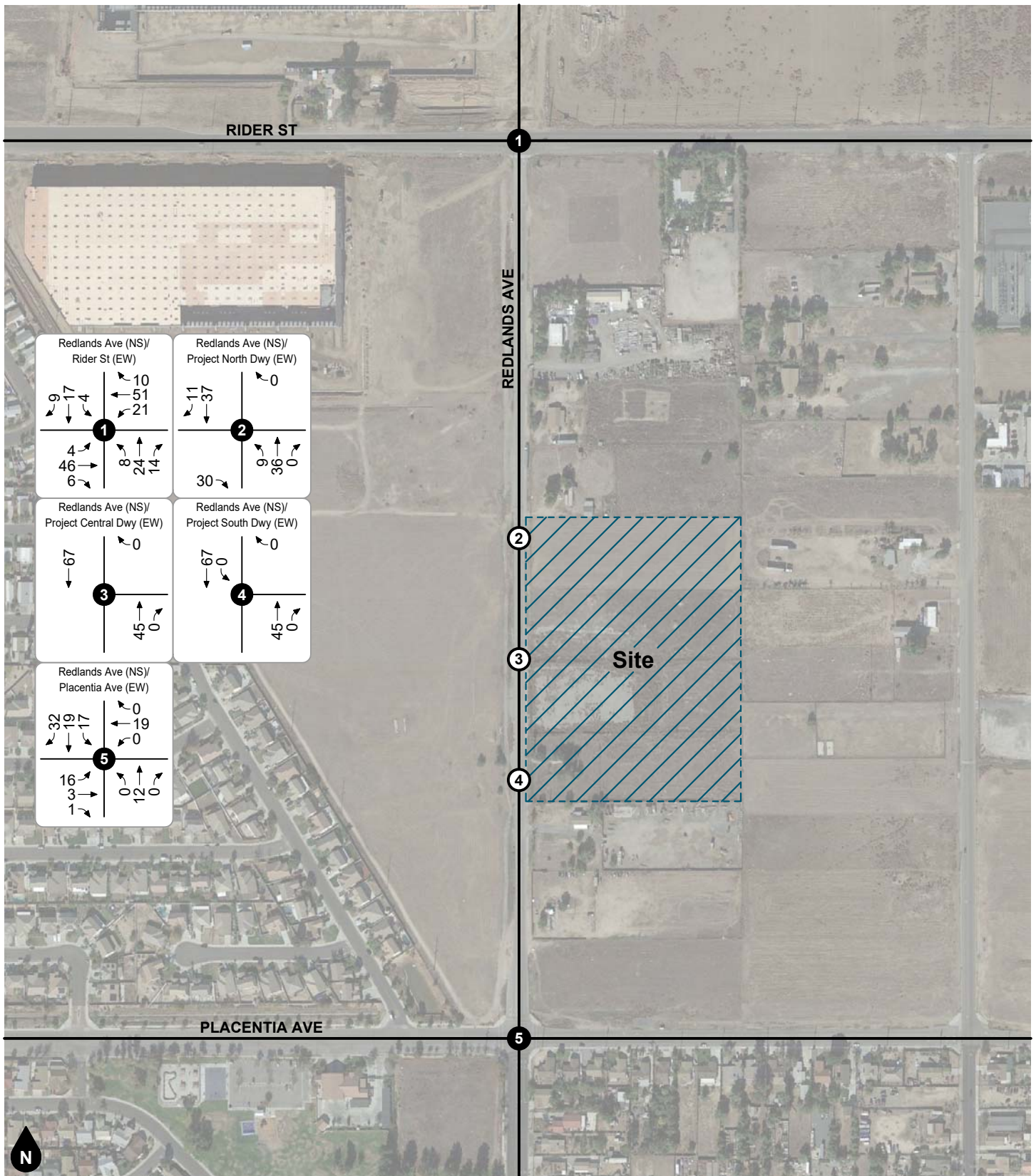


**Legend**

- # Study Intersection
- # Project Driveway

**Figure 21**  
**Other Development**  
**AM Peak Hour Intersection Turning Movement Volumes**



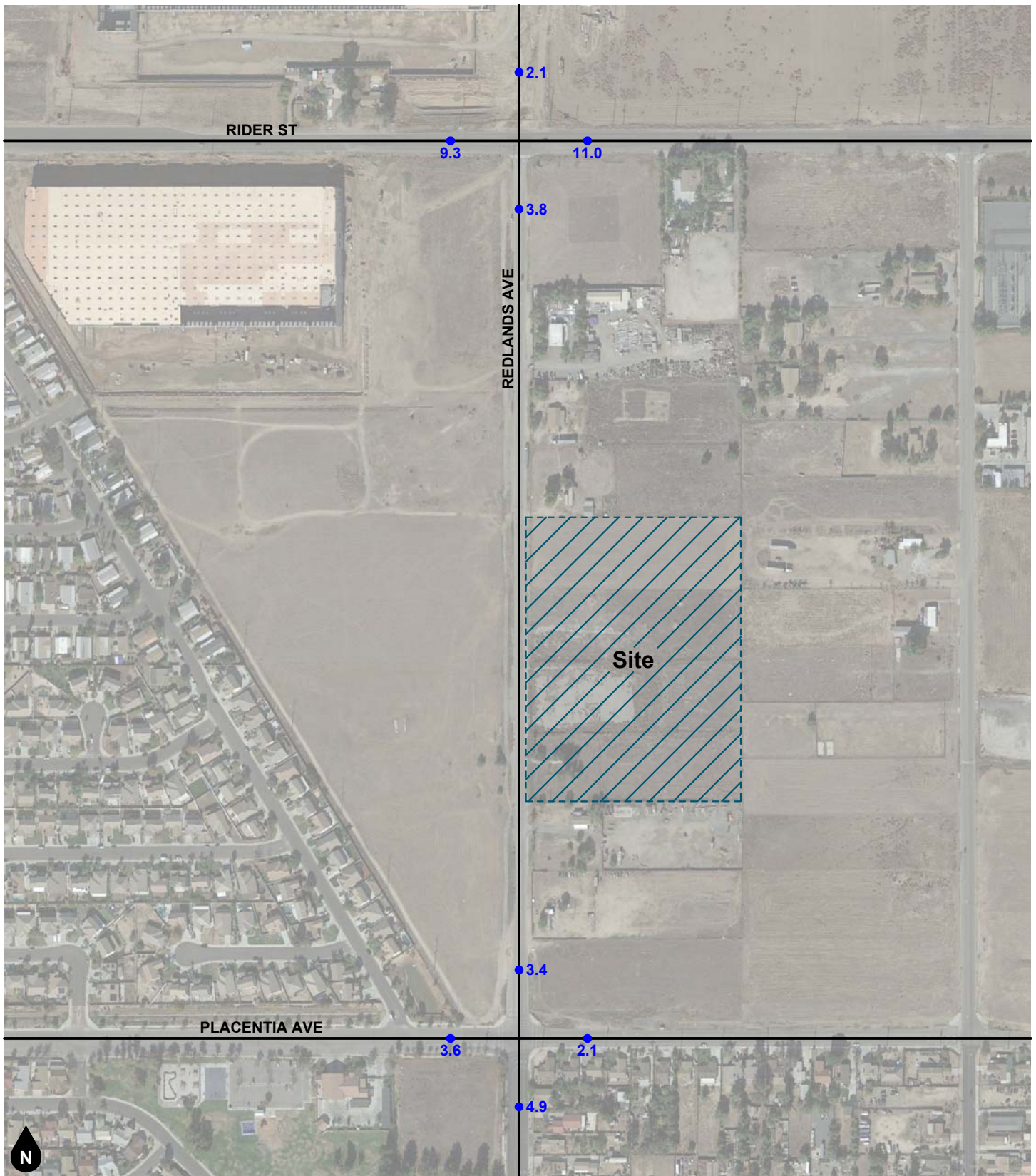


**Legend**

- # Study Intersection
- # Project Driveway

**Figure 22**  
**Other Development**  
**PM Peak Hour Intersection Turning Movement Volumes**



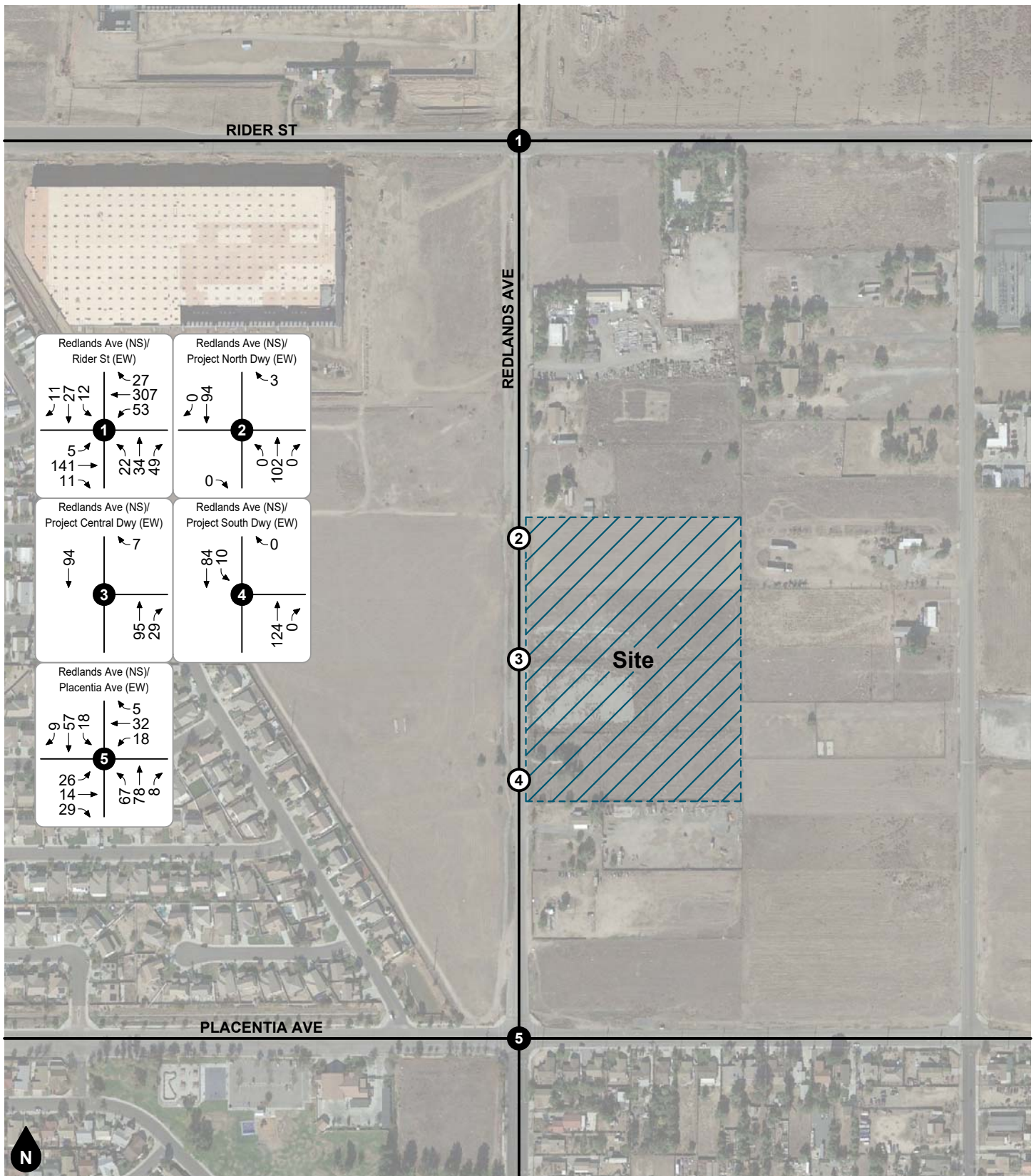


**Legend**

●## Vehicles Per Day (1,000's)

**Figure 23**  
**Existing Plus Project Average Daily Traffic Volumes**

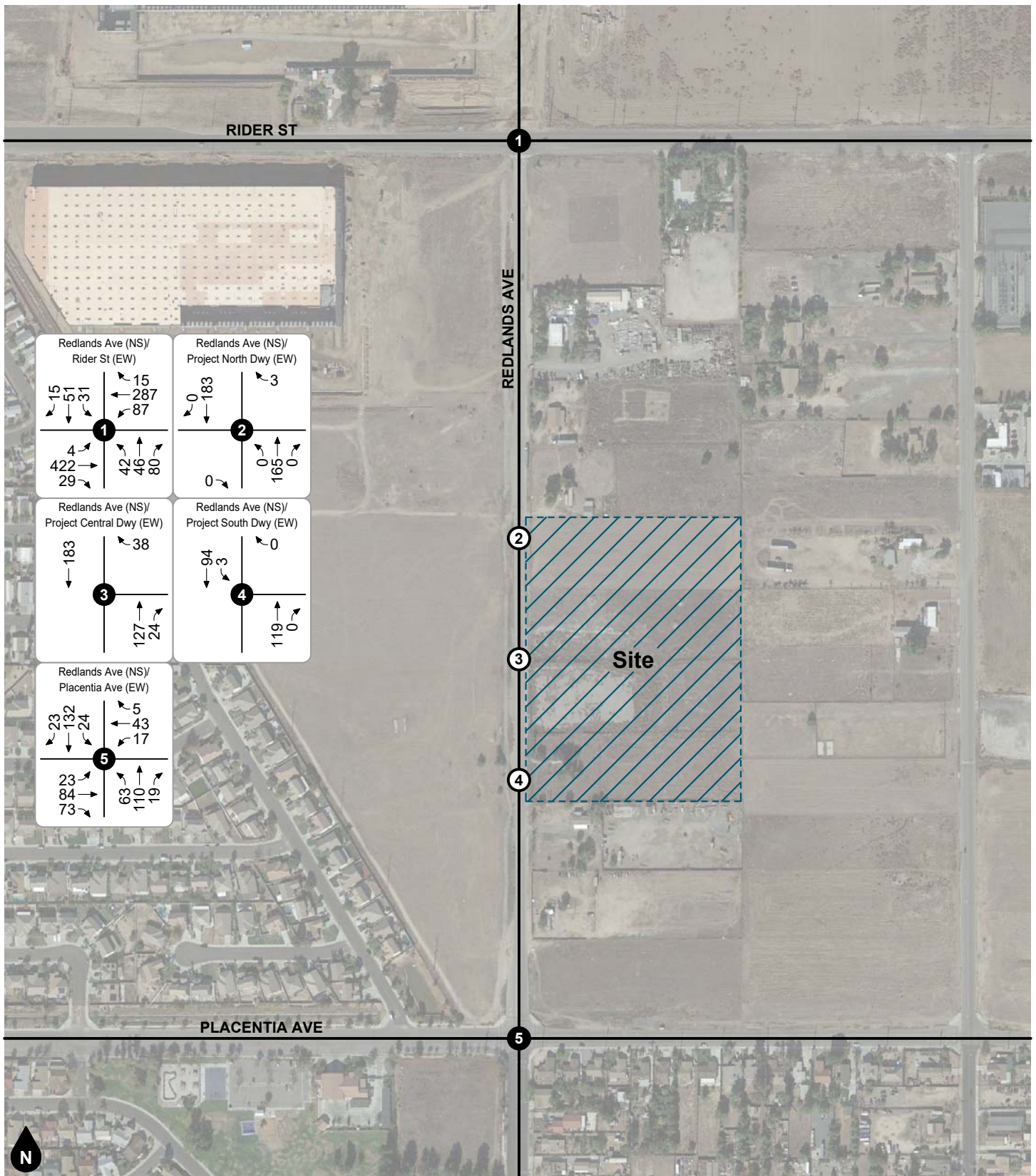




- Legend
- # Study Intersection
  - # Project Driveway

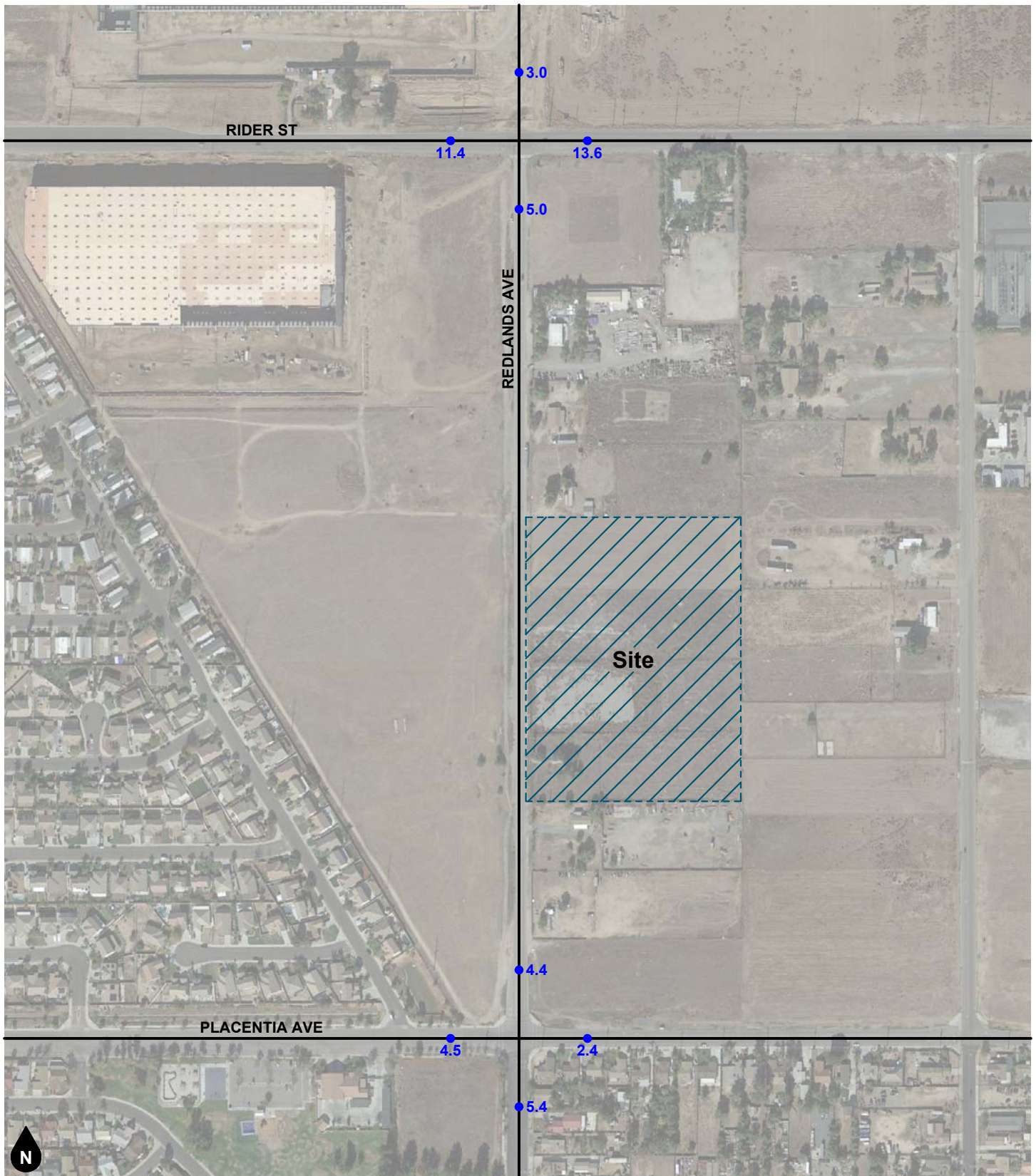
**Figure 24**  
**Existing Plus Project**  
**AM Peak Hour Intersection Turning Movement Volumes**





**Figure 25**  
**Existing Plus Project**  
**PM Peak Hour Intersection Turning Movement Volumes**

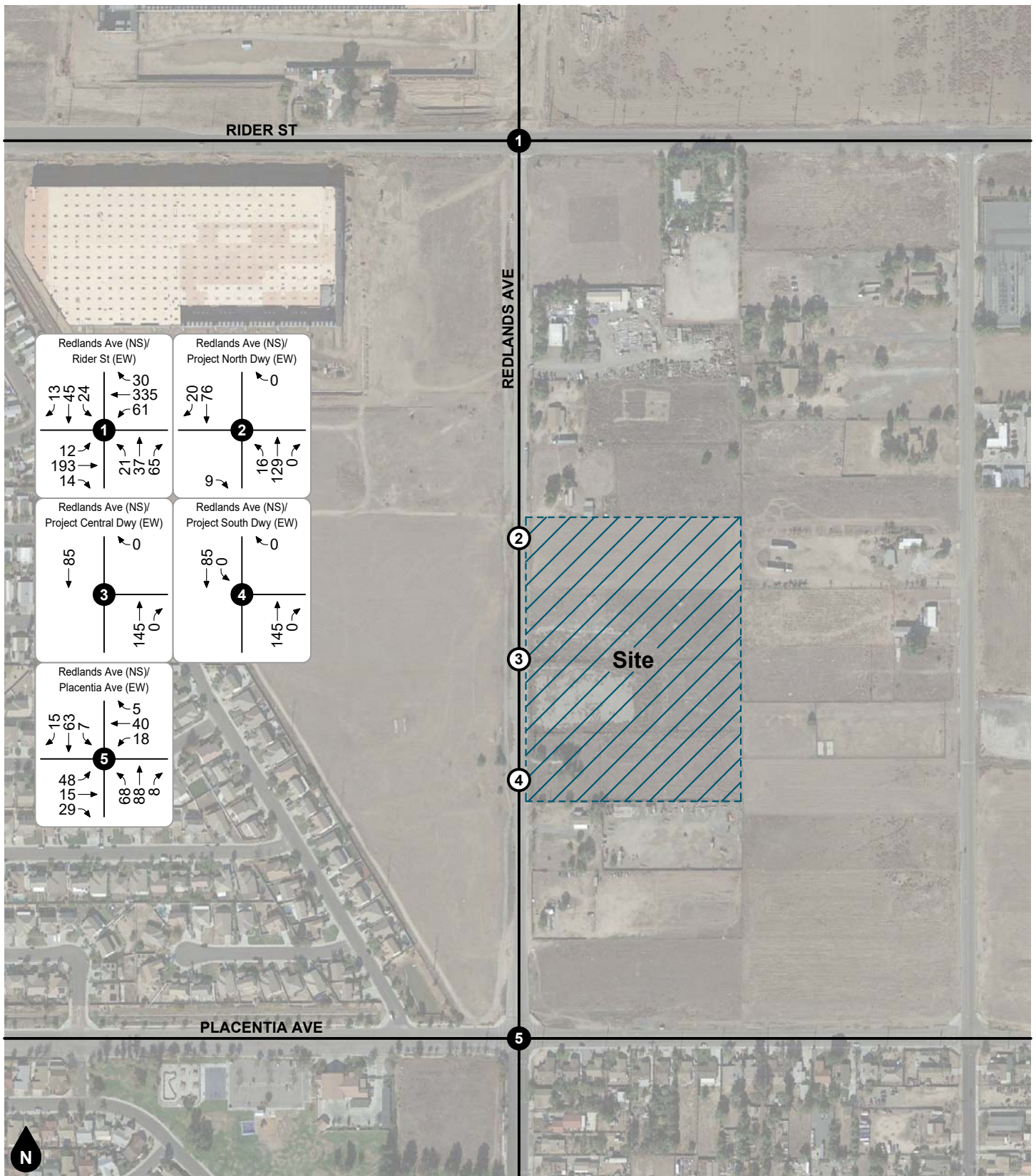




Legend  
 ●## Vehicles Per Day (1,000's)

**Figure 26**  
**Opening Year (2023) Without Project Average Daily Traffic Volumes**



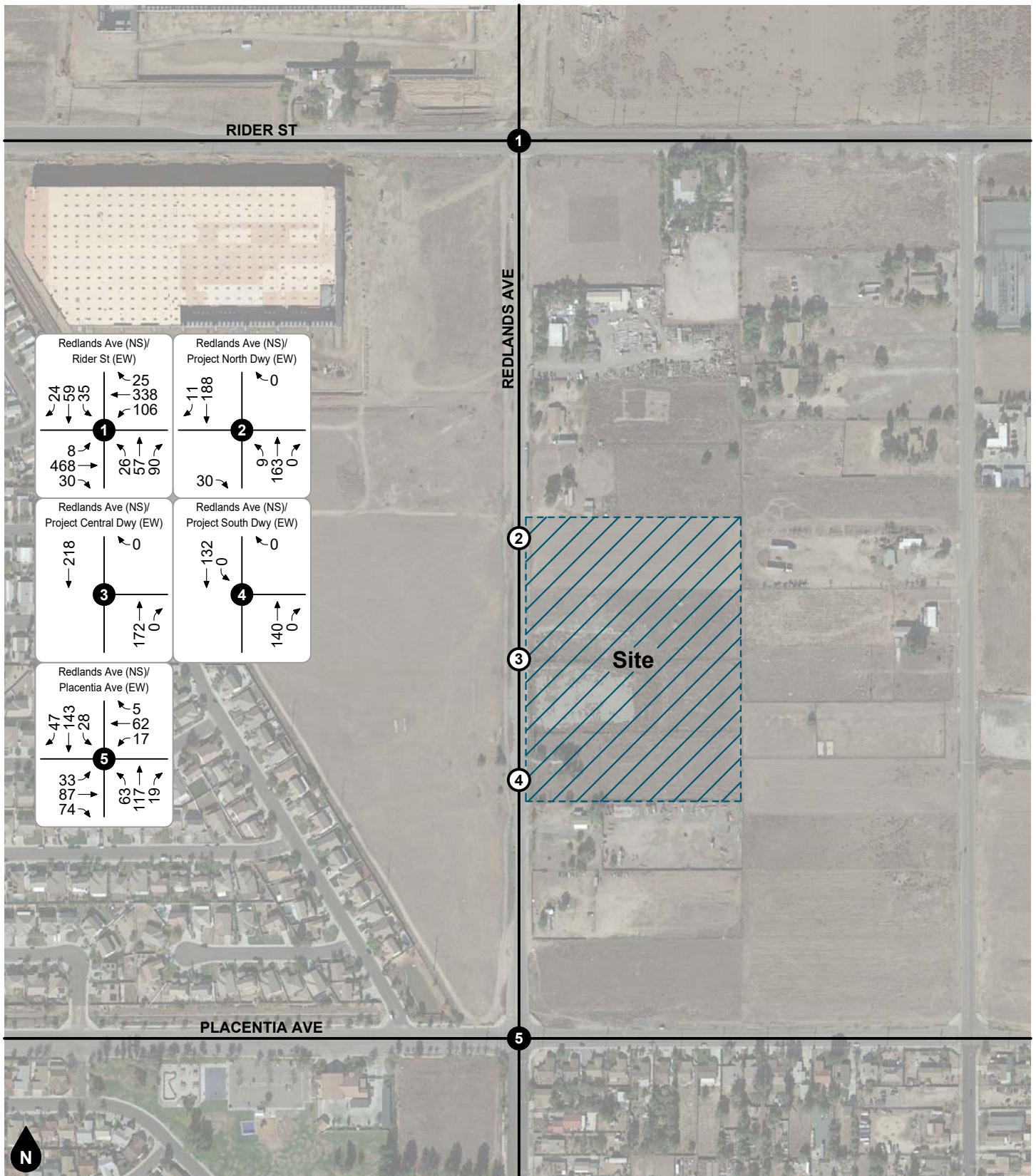


**Legend**

- # Study Intersection
- # Project Driveway

**Figure 27**  
**Opening Year (2023) Without Project**  
**AM Peak Hour Intersection Turning Movement Volumes**



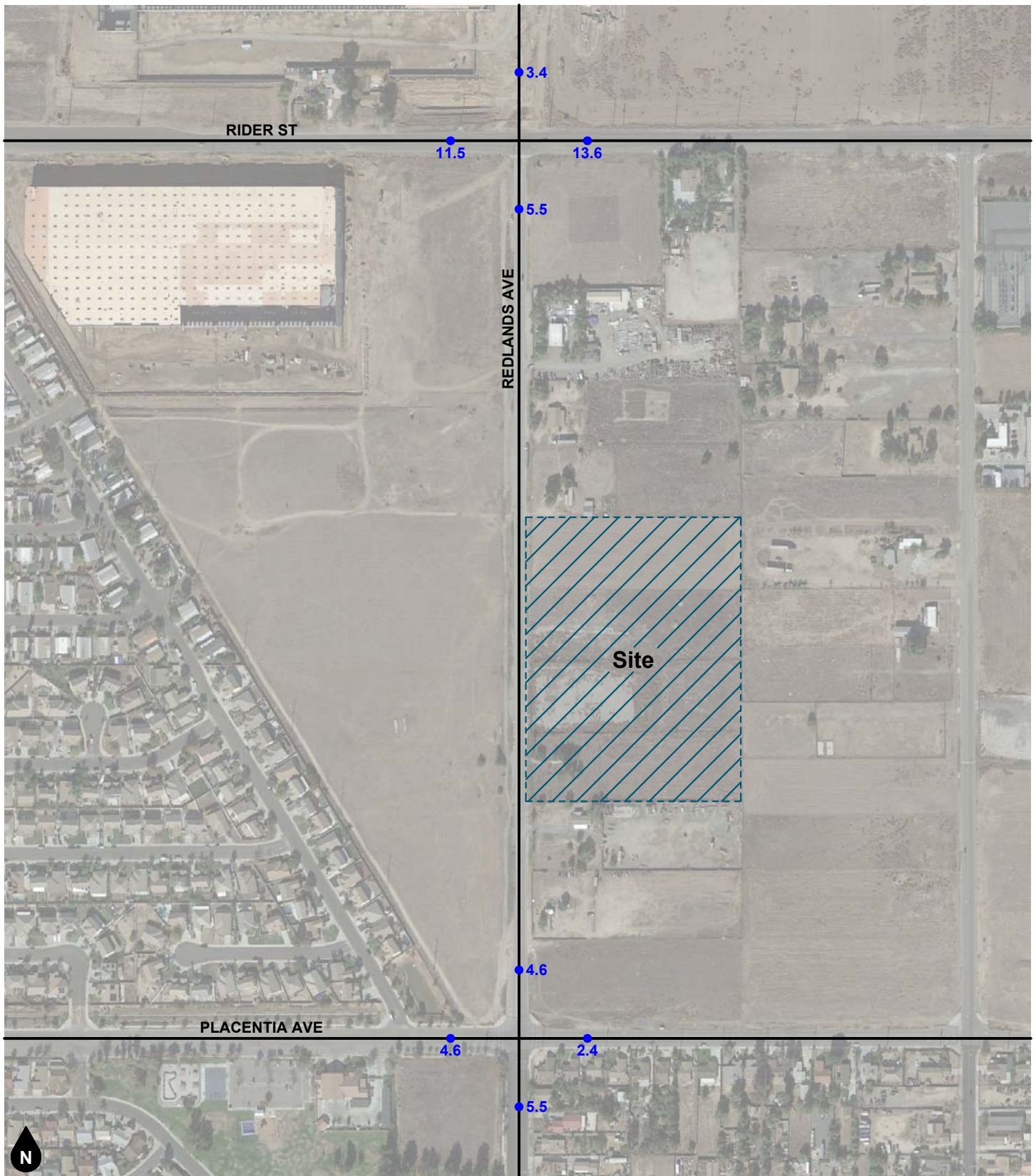


**Legend**

- # Study Intersection
- # Project Driveway

**Figure 28**  
**Opening Year (2023) Without Project**  
**PM Peak Hour Intersection Turning Movement Volumes**



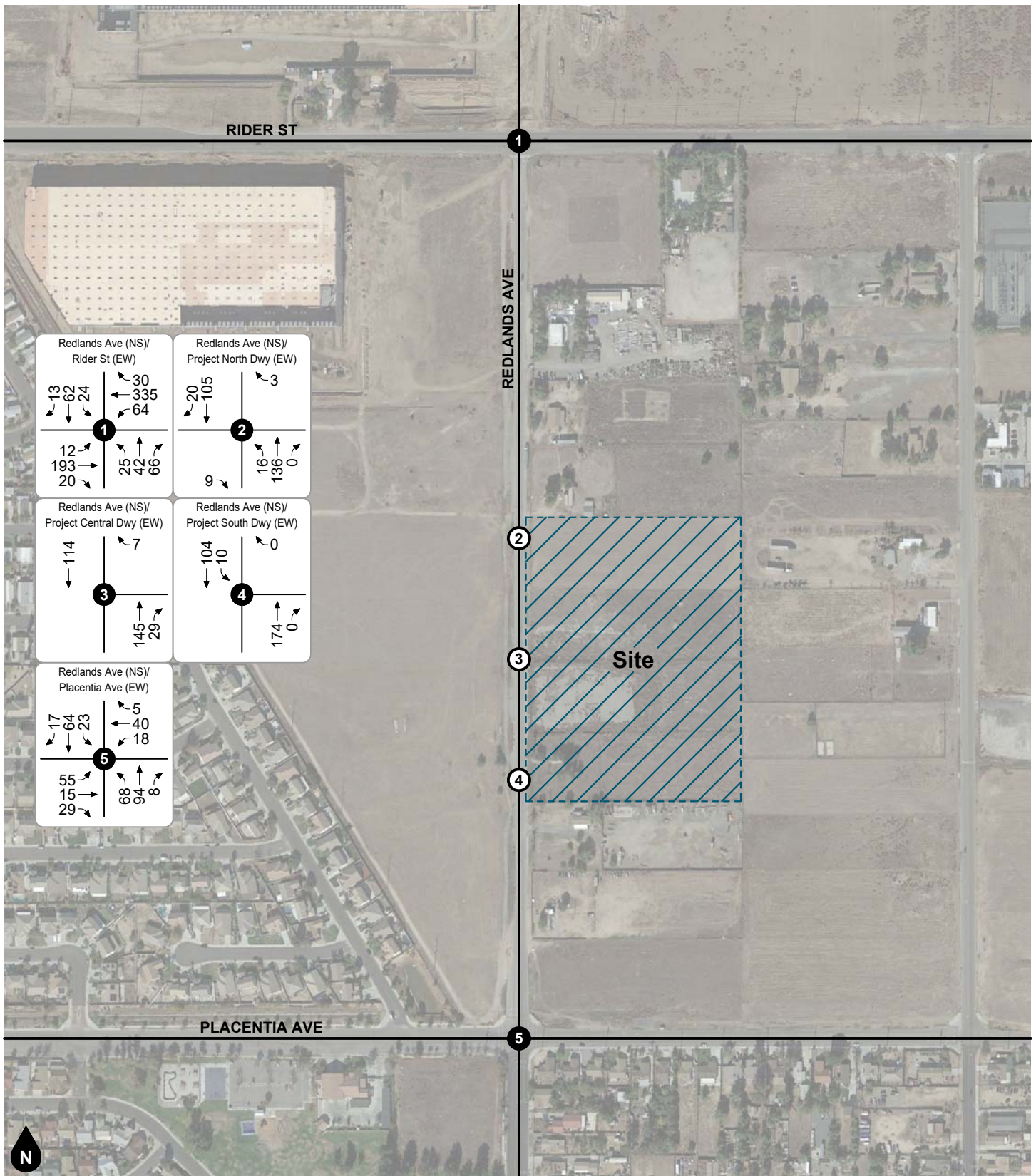


**Legend**

●## Vehicles Per Day (1,000's)

**Figure 29**  
**Opening Year (2023) With Project Average Daily Traffic Volumes**



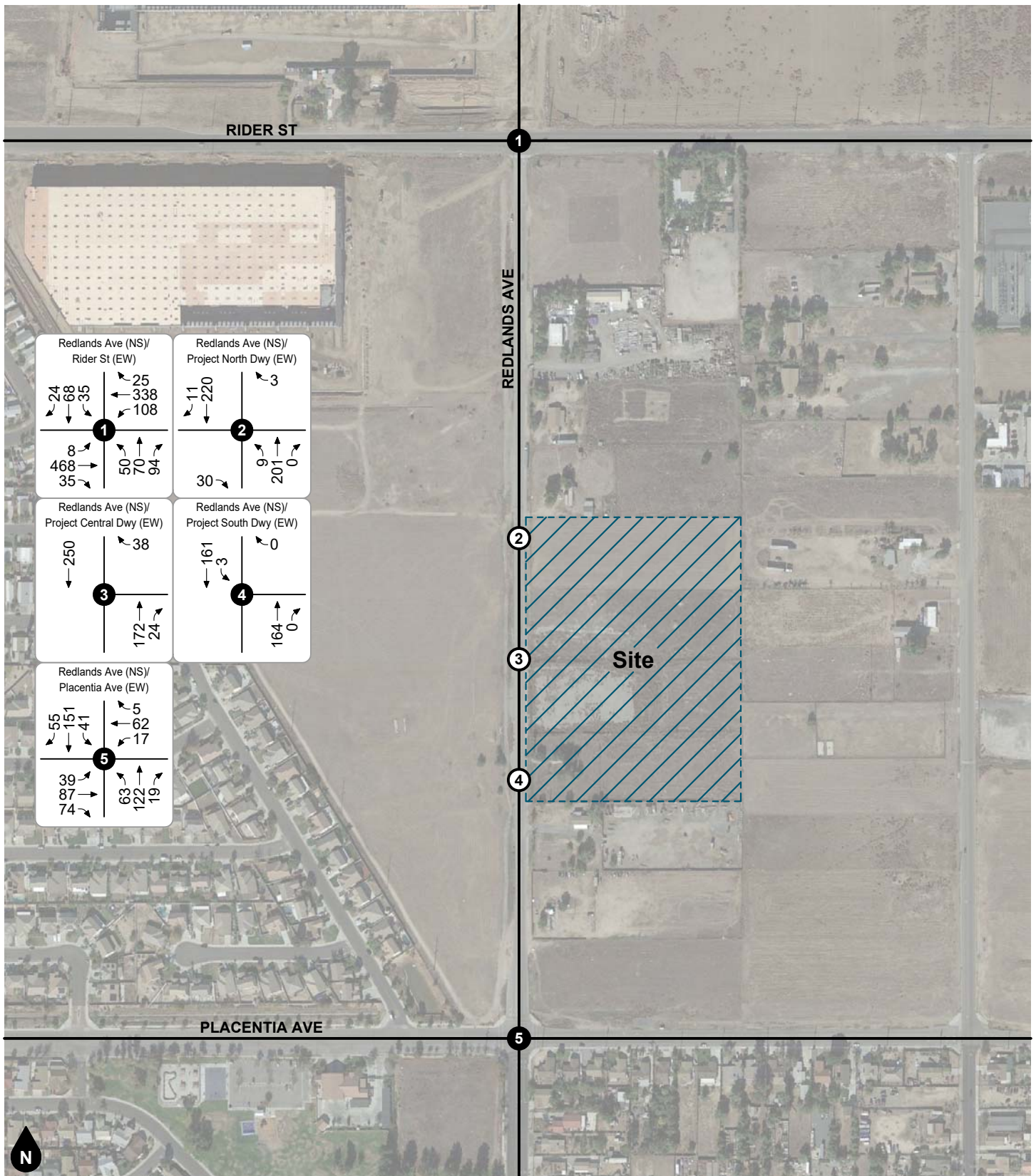


**Legend**

- # Study Intersection
- # Project Driveway

**Figure 30**  
**Opening Year (2023) With Project**  
**AM Peak Hour Intersection Turning Movement Volumes**





**Legend**

- # Study Intersection
- # Project Driveway

**Figure 31**  
**Opening Year (2023) With Project**  
**PM Peak Hour Intersection Turning Movement Volumes**

## 6. FUTURE OPERATIONAL ANALYSIS

---

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

### EXISTING PLUS PROJECT

The intersection Levels of Service for Existing Plus Project conditions are shown in Table 4. As shown in Table 4, the study intersections are forecast to operate within acceptable Levels of Service (D or better) during the peak hours for Existing Plus Project conditions. Therefore, the proposed project is forecast to result in no substantial operational deficiencies at the study intersections for Existing Plus Project conditions and no off-site improvements or corrective measures are recommended.

### OPENING YEAR (2023) WITHOUT PROJECT

The intersection Levels of Service for Opening Year (2023) Without Project conditions are shown in Table 5. As shown in Table 5, the study intersections are forecast to operate within acceptable Levels of Service (D or better) during the peak hours for Opening Year (2023) Without Project conditions.

### OPENING YEAR (2023) WITH PROJECT

The intersection Levels of Service for Opening Year (2023) With Project conditions are shown in Table 6. As shown in Table 6, the study intersections are projected to operate within acceptable Levels of Service (D or better) during the peak hours for Opening Year (2023) With Project conditions. Therefore, the proposed project is forecast to result in no substantial operational deficiencies at the study intersections for Opening Year (2023) With Project conditions and no off-site improvements or corrective measures are recommended.

**Table 4**  
**Existing Plus Project Intersection Levels of Service**

Study Intersection	Traffic Control <sup>1</sup>	AM Peak Hour		PM Peak Hour	
		Delay <sup>2</sup>	LOS <sup>3</sup>	Delay <sup>2</sup>	LOS <sup>3</sup>
1. Redlands Avenue at Rider Street	TS	25.7	C	23.7	C
2. Redlands Avenue at Project North Driveway	CSS	8.6	A	8.8	A
3. Redlands Avenue at Project Central Driveway	CSS	8.7	A	8.9	A
4. Redlands Avenue at Project South Driveway	CSS	8.6	A	8.6	A
5. Redlands Avenue at Placentia Avenue	AWS	8.3	A	9.1	A

Notes:

- (1) TS = Traffic Signal; CSS= Cross Street Stop; AWS = All Way Stop
- (2) Delay is shown in seconds/vehicle. For intersections with traffic signal or all way stop control, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst individual lane (or movements sharing a lane).
- (3) LOS = Level of Service



**Table 5**  
**Opening Year (2023) Without Project Intersection Levels of Service**

Study Intersection	Traffic Control <sup>1</sup>	AM Peak Hour		PM Peak Hour	
		Delay <sup>2</sup>	LOS <sup>3</sup>	Delay <sup>2</sup>	LOS <sup>3</sup>
1. Redlands Avenue at Rider Street	TS	24.7	C	23.4	C
5. Redlands Avenue at Placentia Avenue	AWS	8.4	A	9.3	A

Notes:

- (1) TS = Traffic Signal; AWS = All Way Stop
- (2) Delay is shown in seconds/vehicle. For intersections with traffic signal or all way stop control, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst individual lane (or movements sharing a lane).
- (3) LOS = Level of Service

**Table 6**  
**Opening Year (2023) With Project Intersection Levels of Service**

Study Intersection	Traffic Control <sup>1</sup>	AM Peak Hour		PM Peak Hour	
		Delay <sup>2</sup>	LOS <sup>3</sup>	Delay <sup>2</sup>	LOS <sup>3</sup>
1. Redlands Avenue at Rider Street	TS	24.3	C	23.4	C
2. Redlands Avenue at Project North Driveway	CSS	8.7	A	9.1	A
3. Redlands Avenue at Project Central Driveway	CSS	8.8	A	9.0	A
4. Redlands Avenue at Project South Driveway	CSS	8.8	A	8.7	A
5. Redlands Avenue at Placentia Avenue	AWS	8.5	A	9.4	A

Notes:

- (1) TS = Traffic Signal; CSS= Cross Street Stop; AWS = All Way Stop
- (2) Delay is shown in seconds/vehicle. For intersections with traffic signal or all way stop control, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst individual lane (or movements sharing a lane).
- (3) LOS = Level of Service

## 7. SITE ACCESS AND CIRCULATION

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This section includes a description of project improvements necessary to provide site access.

### PROJECT DESIGN FEATURES

As previously noted, a conceptual striping plan along Redlands Avenue including the Redlands Avenue East Industrial Project located across Redlands Avenue is shown on Figure 18. This analysis assumes the following improvements will be constructed by the project to provide project site access:

- Redlands Avenue (NS) at Project North Driveway (EW) [Study Intersection #2]
  - Truck access only
  - Construct one inbound lane and one outbound lane with a westbound stop control
  - Northbound: one through lane and one shared through/right turn lane
  - Southbound: two through lanes
  - Westbound: one right turn only lane
- Redlands Avenue (NS) at Project Central Driveway (EW) [Study Intersection #3]
  - Passenger car access only
  - Construct one inbound lane and one outbound lane with a westbound stop-control
  - Northbound: one through lane and one shared through/right turn lane
  - Southbound: two through lanes
  - Westbound: one shared left/right turn lane
- Redlands Avenue (NS) at Project South Driveway (EW) [Study Intersection #4]
  - Truck access only
  - Construct one inbound lane and one outbound lane with a westbound stop-control
  - Northbound: one through lane and one shared through/right turn lane
  - Southbound: two through lanes and one left turn lane
  - Westbound: one right turn only lane

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

- A construction work site traffic control plan shall comply with State standards set forth in the California Manual of Uniform Traffic Control Devices and shall be submitted to the City for review and approval prior to the issuance of a grading permit or start of construction. The plan shall identify any roadway, sidewalk, bike route, or bus stop closures and detours as well as haul routes and hours of operation. All construction related trips shall be restricted to off-peak hours to the extent possible.
- All on-site and off-site roadway design, traffic signing and striping, and traffic control improvements relating to the proposed project shall be constructed in accordance with applicable State/Federal engineering standards and to the satisfaction of the City of Perris.
- Site-adjacent roadways shall be constructed or repaired at their ultimate half-section width, including landscaping and parkway improvements in conjunction with development, or as otherwise required by the City of Perris.
- Adequate emergency vehicle access shall be provided to the satisfaction of the Riverside County Fire Authority.



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

## 8. VEHICLES MILES TRAVELED (VMT)

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### BACKGROUND

California Senate Bill 743 (SB 743) directs the State Office of Planning and Research (OPR) to amend the California Environmental Quality Act (CEQA) Guidelines for evaluating transportation impacts to provide alternatives to Level of Service that “promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses.” In December 2018, the California Natural Resources Agency certified and adopted the updated CEQA Guidelines package. The amended CEQA Guidelines, specifically Section 15064.3, recommend the use of Vehicle Miles Travelled (VMT) as the primary metric for the evaluation of transportation impacts associated with land use and transportation projects. In general terms, VMT quantifies the amount and distance of automobile travel attributable to a project or region. All agencies and projects State-wide are required to utilize the updated CEQA guidelines recommending use of VMT for evaluating transportation impacts as of July 1, 2020.

The updated CEQA Guidelines allow for lead agency discretion in establishing methodologies and thresholds provided there is substantial evidence to demonstrate that the established procedures promote the intended goals of the legislation. Where quantitative models or methods are unavailable, Section 15064.3 allows agencies to assess VMT qualitatively using factors such as availability of transit and proximity to other destinations. The Office of Planning and Research (OPR) *Technical Advisory on Evaluating Transportation Impacts in CEQA* (State of California, December 2018) [“OPR Technical Advisory”] provides technical considerations regarding methodologies and thresholds with a focus on office, residential, and retail developments as these projects tend to have the greatest influence on VMT.

### VMT ASSESSMENT AND SCREENING

The project VMT impact has been assessed in accordance with guidance from the *City of Perris Transportation Impact Analysis Guidelines for CEQA* (May 12, 2020) [“the City TIA Guidelines”]. The transportation guidelines provide a framework for “screening thresholds” for certain projects that are expected to cause a less than significant impact without conducting a detailed VMT study.

The project requirements for evaluation of transportation impacts under CEQA was assessed using the City of Perris VMT Scoping Form for Land Use Projects as appended to the City of Perris TIA Guidelines and included in Appendix B of this report. As documented in the VMT Scoping Form, the proposed project satisfies the following VMT screening criteria:

- |                                                           |     |
|-----------------------------------------------------------|-----|
| B. Is the project within half mile of qualifying transit? | No  |
| C. Is the project a local serving land use?               | No  |
| D. Is the project in a low VMT area?                      | Yes |

Therefore, the proposed project is presumed to have a less than significant impact on VMT since it satisfies one or more of the VMT screening criteria established by the City of Perris (the project site is in a low VMT area). No additional VMT modeling or mitigation measures are required.

## 9. CONCLUSIONS

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This section summarizes the findings and recommended improvements or mitigation measures (if any) identified in previous sections of this study.

### PROJECT TRIP GENERATION

The proposed project is forecast to generate approximately 461 daily vehicle trips, including 40 vehicle trips during the AM peak hour and 40 vehicle trips during the PM peak hour. The proposed project is forecast to generate approximately 654 daily PCE trips, including 48 PCE trips during the AM peak hour and 44 PCE trips during the PM peak hour.

### LEVELS OF SERVICE/OPERATIONAL ANALYSIS FINDINGS (Non-CEQA)

The study intersections are forecast to operate within acceptable Levels of Service (D or better) during the peak hours for Existing Plus Project conditions. Therefore, the proposed project is forecast to result in no substantial operational deficiencies at the study intersections for Existing Plus Project conditions and no off-site improvements or corrective measures are recommended.

The study intersections are projected to operate within acceptable Levels of Service (D or better) during the peak hours for Opening Year (2023) With Project conditions. Therefore, the proposed project is forecast to result in no substantial operational deficiencies at the study intersections for Opening Year (2023) With Project conditions and no off-site improvements or corrective measures are recommended.

### VMT ANALYSIS FINDINGS (CEQA)

The proposed project is presumed to have a less than significant impact on VMT since it satisfies one or more of the VMT screening criteria established by the City of Perris (the project site is in a low VMT area). No additional VMT modeling or mitigation measures are required.



## APPENDICES

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Appendix A Glossary  
Appendix B Scoping Agreement  
Appendix C Volume Count Worksheets  
Appendix D Level of Service Worksheets

## **APPENDIX A**

### **GLOSSARY**

## **ACRONYMS**

<b>AC</b>	Acres
<b>ADT</b>	Average Daily Traffic
<b>Caltrans</b>	California Department of Transportation
<b>DU</b>	Dwelling Unit
<b>ICU</b>	Intersection Capacity Utilization
<b>GFA</b>	Gross Floor Area
<b>LOS</b>	Level of Service
<b>PCE</b>	Passenger Car Equivalent
<b>SP</b>	Service Population
<b>TSF</b>	Thousand Square Feet
<b>V/C</b>	Volume/Capacity
<b>VMT</b>	Vehicle Miles Traveled

## **TERMS**

**ACTUATED SIGNAL CONTROL:** A type of traffic signal control in which display of each phase depends on whether the corresponding phase detector has registered a service call or the phase is on recall.

**ACTUATION:** Detection of a roadway user that is forwarded to the signal controller.

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

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

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

**CALL:** An indication within a signal controller that a particular phase is waiting for service, either through actuation from a roadway user or phase recall.

**CAPACITY:** The maximum number of vehicles that can be reasonably expected to pass through a roadway facility during a specified period.

**CHANNELIZATION:** The separation of conflicting traffic movements by use of pavement markings, raised curbs, or other suitable means to facilitate free flow movement.

**CLEARANCE INTERVAL:** Equal to the yellow plus all-red time, if any, when a traffic signal changes between phases (i.e., the amount of time between the end of a green light from one movement to the beginning of a green light for the next).

**COORDINATED SIGNAL CONTROL:** A type of traffic signal control in which non-coordinated phases associated with minor movements are constrained such that the coordinated phases are served at a specific time during the signal cycle, thus maintaining the efficient progression of traffic flow along the major roadway.

**CONTROL DELAY:** The portion of delay attributed to the intersection traffic control (such as a traffic signal or stop sign). It includes initial deceleration, queue move-up time, stopped delay, and final acceleration delay.

**CORDON:** An imaginary boundary line around or across a study area across which vehicles, persons, or other information can be collected for survey and analytical purposes.



**CORNER SIGHT DISTANCE:** The minimum sight distance required by the driver of a vehicle to cross or enter the lanes of the major roadway without requiring approaching traffic traveling at a given speed to radically alter their speed or trajectory.

**CYCLE:** A complete sequence of signal indications for all phases.

**CYCLE LENGTH:** The total time for a traffic signal to complete one full cycle.

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

**DELAY:** The total additional travel time experienced by a roadway user (driver, passenger, bicyclist, or pedestrian) beyond that required to travel at a desired speed.

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

**DETECTOR:** A device used to count or determine the presence of a roadway user.

**DESIGN SPEED:** A speed used for purposes of designing horizontal and vertical alignments of a highway.

**DIRECTIONAL SPLIT:** The percent of two-way traffic traveling in a specified direction.

**DIVERSION:** The rerouting of traffic from a normal path of travel between two points, such as to avoid congestion or perform a secondary trip.

**FREE FLOW:** Traffic flow that is unaffected by a traffic control and/or or upstream or downstream conditions.

**GAP:** Time or distance between two vehicles measured from rear bumper of the front vehicle to front bumper of the second vehicle.

**GAP ACCEPTANCE:** The method by which a driver accepts an available gap in traffic to enter or cross the road.

**HEADWAY:** Time or distance between two successive vehicles measured from same point on both vehicles (i.e., front bumper to front bumper).

**LEVEL OF SERVICE:** A grading scale of quantitative performance measures representing the quality of service of a transportation facility or service from an average traveler's perspective.

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

**MULTI-MODAL:** More than one mode, such as automobile, transit, bicycle, and pedestrian.

**OFFSET:** The time interval between the beginning of a traffic signal cycle at one intersection and the beginning of signal cycle an adjacent intersection.

**PLATOON:** A set of vehicles traveling at similar speed and moving as a general group with clear separation between other vehicles ahead and behind.

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

**PEDESTRIAN CLEARANCE INTERVAL:** Also known as the “Flashing Don’t Walk” interval, it signals the end of pedestrian entry into the crosswalk following the “Walk” indication and provides time for pedestrians who have already entered the crosswalk to finishing crossing.

**PEAK HOUR:** The hour within a day in which the maximum volume occurs.

**PEAK HOUR FACTOR:** The peak hour volume divided by the four times the peak 15-minute flow rate. This

**PHASE:** In traffic signals, the green, yellow, and red clearance intervals assigned to a specified traffic movement.

**PRETIMED SIGNAL:** A traffic signal operation in which the cycle length, phasing sequence, and phasing times are predetermined and fixed, regardless of actual demand for any given traffic movement. Also known as a fixed time signal.

**PROGRESSION:** The coordinated movement of vehicles through signalized intersections along a corridor.

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

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

**RECALL:** A signal phasing operation in which a specified phase places a call to the signal controller each time a conflicting phase is served, thus ensuring the specified phase will be serviced again.

**SEMI-ACTUATED CONTROL:** A type of traffic signal control in which only the minor movements are provided detection.

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

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

**STOPPING SIGHT DISTANCE:** The minimum distance required by the driver of a vehicle traveling at a given speed to bring the vehicle to a stop after an object on the road becomes visible, including reaction and response time.

**TRIP OR TRIP END:** The one-directional movement of a person or vehicle. Every trip has an origin and a destination at its respective ends (i.e., trip ends). In terms of site trip generation, the same vehicle entering and exiting a site generates two trips: one inbound trip and one outbound trip.

**TRIP GENERATION RATE:** The rate at which a land use generates trips per the specified land use variable, such per dwelling unit or per thousand square feet.

**TRUCK:** A heavy motor vehicle generally used for transporting goods.

**VEHICLE MILES TRAVELED:** A measure of the amount and distance of automobile travel essentially calculated as the sum of each trip times the trip length.

## **APPENDIX B**

### **SCOPING AGREEMENT**





## MEMORANDUM OF UNDERSTANDING

**TO:** Candida Neal, Interim Development Services Director | CITY OF PERRIS

**FROM:** Bryan Crawford, Senior Transportation Planner | GANDDINI GROUP, INC.

**DATE:** ~~June 29, 2021~~ **Revised 1/4/2022**

**SUBJECT:** Redlands Avenue East Industrial Project (Case# DPR 20-000-21) Traffic Study Scoping

---

### INTRODUCTION

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

### PROJECT DESCRIPTION

Figure 1 shows the project location map. The project site is located east of Redlands Avenue, south of Rider Street, and north of Placentia Avenue in the City of Perris, as exhibited in Figure 2.

The site plan is shown in Appendix A. The 12.59-acre project site is proposed to include a 250,511 square foot warehouse building with 4,000 square foot mezzanine. The proposed project is anticipated to be constructed and fully operational by year 2023.

The project site is proposed to provide three access driveways on Redlands Avenue. The north and south project driveways will primarily serve truck traffic and the center driveway will serve passenger cars.

### VMT SCOPING FORM

Appendix B shows the City of Perris VMT Scoping Form for Land Use Project based on the City of Perris TIA Guidelines, dated May 12, 2020. The project is presumed to have a less than significant impact on VMT because the project satisfies at least one (1) of the VMT screening criteria. As shown in Appendix B, the project satisfies VMT screening criteria D because the project is in a low VMT area. According to WRCOG VMT Screening Tool, the project TAZ 2012 daily home-based work VMT per worker is 9.95, which is less than the city average 2012 daily home-based work VMT per worker of 11.62.

### PROJECT TRIP GENERATION

Table 1 shows the project trip generation based upon rates obtained from the Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Edition, 2017). ITE land use code 155 (High-Cube Fulfillment Center Non-Sort) has been used to estimate the site-specific trip generation estimates for up to 254,511 square feet of high-cube fulfillment center (non-sort) use.

The project vehicle trips are converted to Passenger Car Equivalent (PCE) trips based on truck rates (as a percentage of a total vehicle trips) from the ITE Trip Generation Manual Supplement (10th Edition, 2020) and truck axle mix data recommended by the South Coast Air Quality Management District (SCAQMD). Appendix C includes the source information. As shown in Table 1, the proposed project is forecast to generate approximately 654 daily PCE trips, including 48 PCE trips during the AM peak hour and 44 PCE trips during the PM peak hour.

## PROJECT TRIP DISTRIBUTION

Figure 3 and Figure 4 illustrate the forecast outbound and inbound directional distribution patterns of project-generated truck trips and passenger car trips.

## STUDY AREA

Based on the City of Perris TIA Guidelines for CEQA (May 12, 2020), a TIS (Traffic Impact Study) for LOS (Level of Service) evaluation is required for projects which exceed 500 daily trips or 50 peak hour trip for project approval purposes. Since the project is anticipated to generate less than 500 daily trips and less than 50 peak hour trips, a full TIA (Traffic Impact Analysis) is not required. A traffic study should be prepared to review access, on-site circulation, and parking.

Intersections identified for analysis typically include signalized intersections at which a project is forecast to contribute 50 or more trips during the AM or PM peak hours. The study area is proposed to consist of the following four (4) study intersections, even if the project may not contribute 50 or more trips during either the AM or PM peak hours but are the adjacent or primary intersections impacted by the proposed project.

Study Intersections (Figure 1)

1. Redlands Avenue (NS) at Rider Street (EW)
2. Redlands Avenue (NS) at Placentia Avenue (EW)
3. Project North Driveway (NS) at Redlands Avenue (EW)
4. Project Center Driveway (NS) at Redlands Avenue (EW)
5. Project South Driveway (NS) at Redlands Avenue (EW)

## TRAFFIC COUNTS

Intersection turning movement counts will be used at the study intersections during the AM peak period (7:00 AM – 9:00 AM) and PM peak period (4:00 PM – 6:00 PM) on a typical weekday (Tuesday, Wednesday, or Thursday).

## ANALYSIS SCENARIOS

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

- Existing [2021]
- Existing Plus Project [2021]
- Opening Year Without Project [2023]
- Opening Year With Project [2023]

## REDLANDS AVENUE CONCEPTUAL STRIPING PLAN

Figure 5 exhibits a conceptual striping plan for Redlands Avenue including project access. Driveway spacing is included on this figure. The City of Perris *Perris Valley Commerce Center Amendment No. 9 Specific Plan* (May

2018) states that appropriate driveway spacing for intersections along a Secondary Arterial (Raised Median), such as Redlands Avenue, is 660 feet. The distance between Rider Street and the Project North Driveway is 1,113 feet, which exceeds the 660 feet requirement. The distance between the Project North Driveway and Project Central Driveway is 379.78 feet. The distance between the Project Central Driveway and the Project South Driveway is 359.91 feet. The distance between the Project North Driveway and Project South Driveway is 739.69 feet. Since the Project Central Driveway is less than 600 feet from the Project North Driveway and Project South Driveway, consultation between the City and project applicant in plan check shall determine feasibility of the inclusion of this project driveway.

## FORECASTING METHODOLOGY

### Ambient Growth Rate

To account for area-wide ambient growth, the Opening Year 2023 will include a 3% annual growth for 2 years (total growth factor = 1.06) over the 2021 base volumes. The 3% annual growth rate is consistent to other traffic studies conducted in the area.

### Other Cumulative Projects

A list of pending and approved cumulative development projects has been obtained from the City of Perris website (see Appendix D). This list will be narrowed down to include projects within a 1.5 mile radius of the project site. The Redlands Avenue West Industrial Project (Case# DPR 20-000-20) will be included as a cumulative project. This list obtained from City staff was last updated January 2021 and we are working with City staff on receiving a more current and updated list.

Trip forecasts for other development projects within the project study area will be determined based on the Institute of Transportation Engineers (ITE), Trip Generation Manual, 10th Edition, 2017 and will be added to existing roadway volumes for the applicable analysis scenarios.

## CONCLUSION

We appreciate the opportunity to provide this scoping document for your review. Should you have any questions or comments regarding the proposed scope, please contact Bryan Crawford at (714) 795-3100 x 104 or bryan@ganddini.com.



**Table 1**  
**Project Trip Generation**

Land Use: High-Cube Fulfillment Center Warehouse (Non-Sort)

Size: 254,511 TSF

TRIP GENERATION RATES PER TSF <sup>1</sup>								
Vehicle Type	Source <sup>2</sup>	AM Peak Hour			PM Peak Hour			Daily Rate
		In	Out	Rate	In	Out	Rate	
All Vehicles	TGMS 155	81%	19%	0.150	39%	61%	0.160	1.810
Passenger Cars (91.0% AM, 93.0% PM, 73.0% Daily)	TGMS 155	0.111	0.026	0.137	0.058	0.091	0.149	1.321
Trucks (9.0% AM, 7.0% PM, 27.0% Daily)	TGMS 155*	0.011	0.003	0.014	0.004	0.007	0.011	0.489
Truck Mix:	SCAQMD							
2-Axle Trucks (16.7%)		0.002	0.000	0.002	0.001	0.001	0.002	0.082
3-Axle Trucks (20.7%)		0.002	0.001	0.003	0.001	0.001	0.002	0.101
4+ Axle Trucks (62.6%)		0.007	0.002	0.009	0.003	0.004	0.007	0.306

VEHICLE TRIPS GENERATED							
Vehicle Type	AM Peak Hour			PM Peak Hour			Daily
	In	Out	Total	In	Out	Total	
Passenger Cars	28	7	35	15	23	38	336
Trucks							
2-Axle Trucks	1	0	1	0	0	0	21
3-Axle Trucks	1	0	1	0	0	0	26
4+ Axle Trucks	2	1	3	1	1	2	78
Subtotal	4	1	5	1	1	2	125
<b>Total Vehicle Trips Generated</b>	<b>32</b>	<b>8</b>	<b>40</b>	<b>16</b>	<b>24</b>	<b>40</b>	<b>461</b>

PCE <sup>3</sup> TRIPS GENERATED							
Vehicle Type	PCE Factor <sup>4</sup>	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Passenger Cars	1.0	28	7	35	15	23	38
Trucks							
2-Axle Trucks	1.5	2	0	2	0	0	0
3-Axle Trucks	2.0	2	0	2	0	0	0
4+ Axle Trucks	3.0	6	3	9	3	3	6
Subtotal		10	3	13	3	3	6
<b>Total PCE Trips Generated</b>		<b>38</b>	<b>10</b>	<b>48</b>	<b>18</b>	<b>26</b>	<b>44</b>

**Notes:**

(1) TSF = Thousand Square Feet

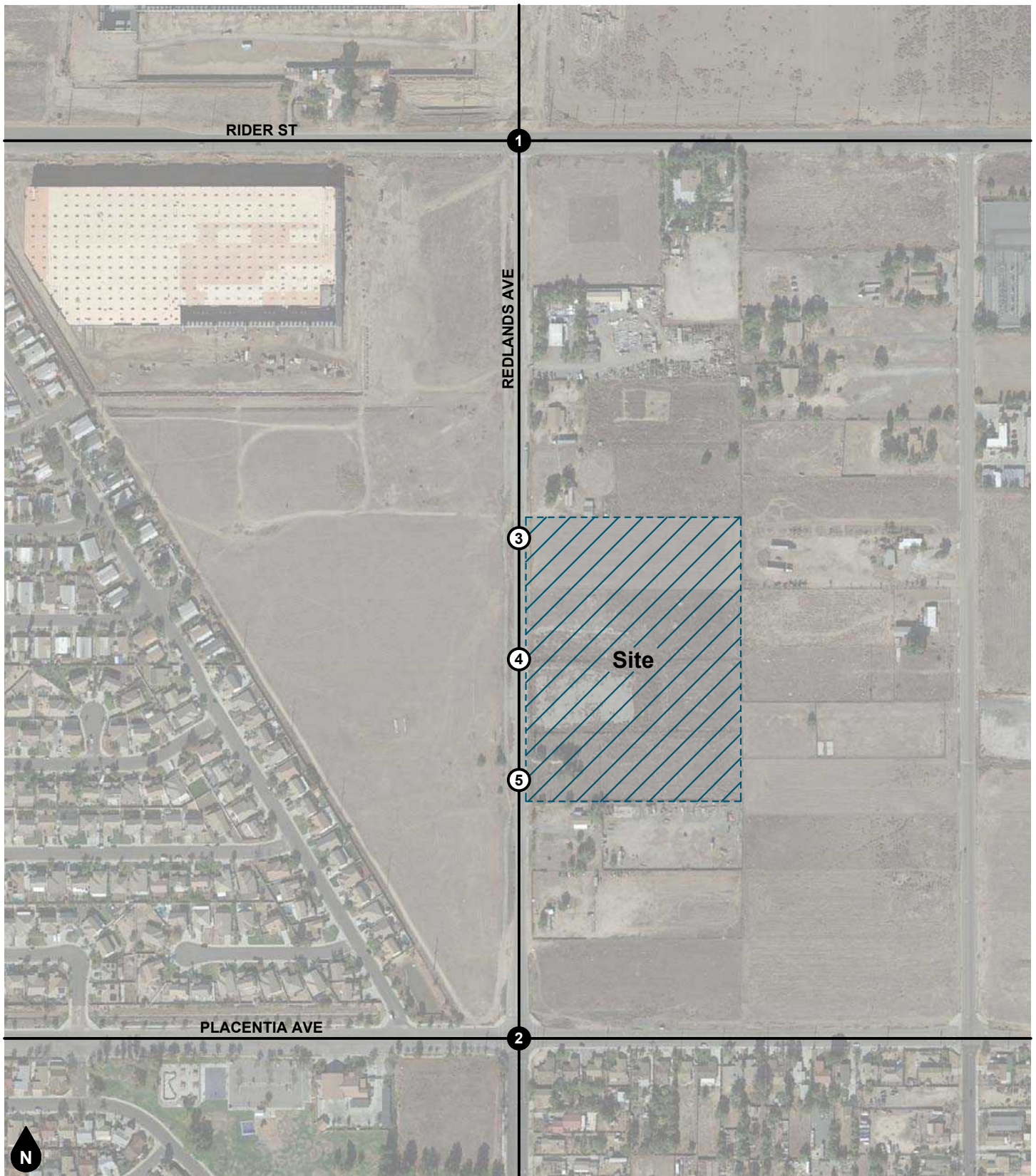
(2) TGMS = Trip Generation Manual Supplement (Institute of Transportation Engineers (ITE), February 2020); ### = ITE Land Use Code.

\* = Daily truck percent based on ITE 150 (Warehousing) since it is not available for ITE 155 (Non-Sort).

SCAQMD = South Coast Air Quality Management District recommendations for non-cold storage high-cube warehouse.

(3) PCE = Passenger Car Equivalent

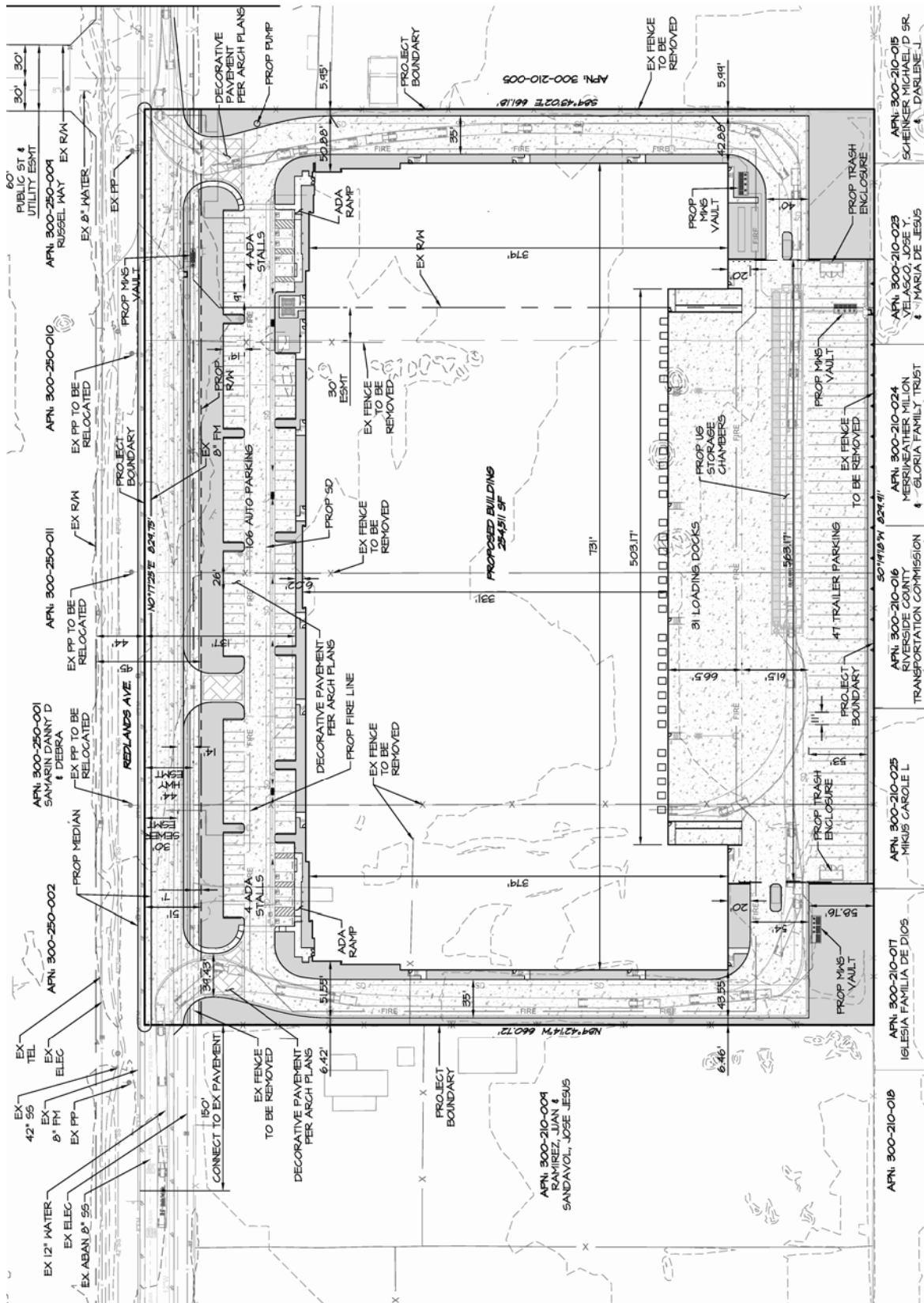
(4) Source: San Bernardino County Congestion Management Program (2016), Appendix B.



**Legend**

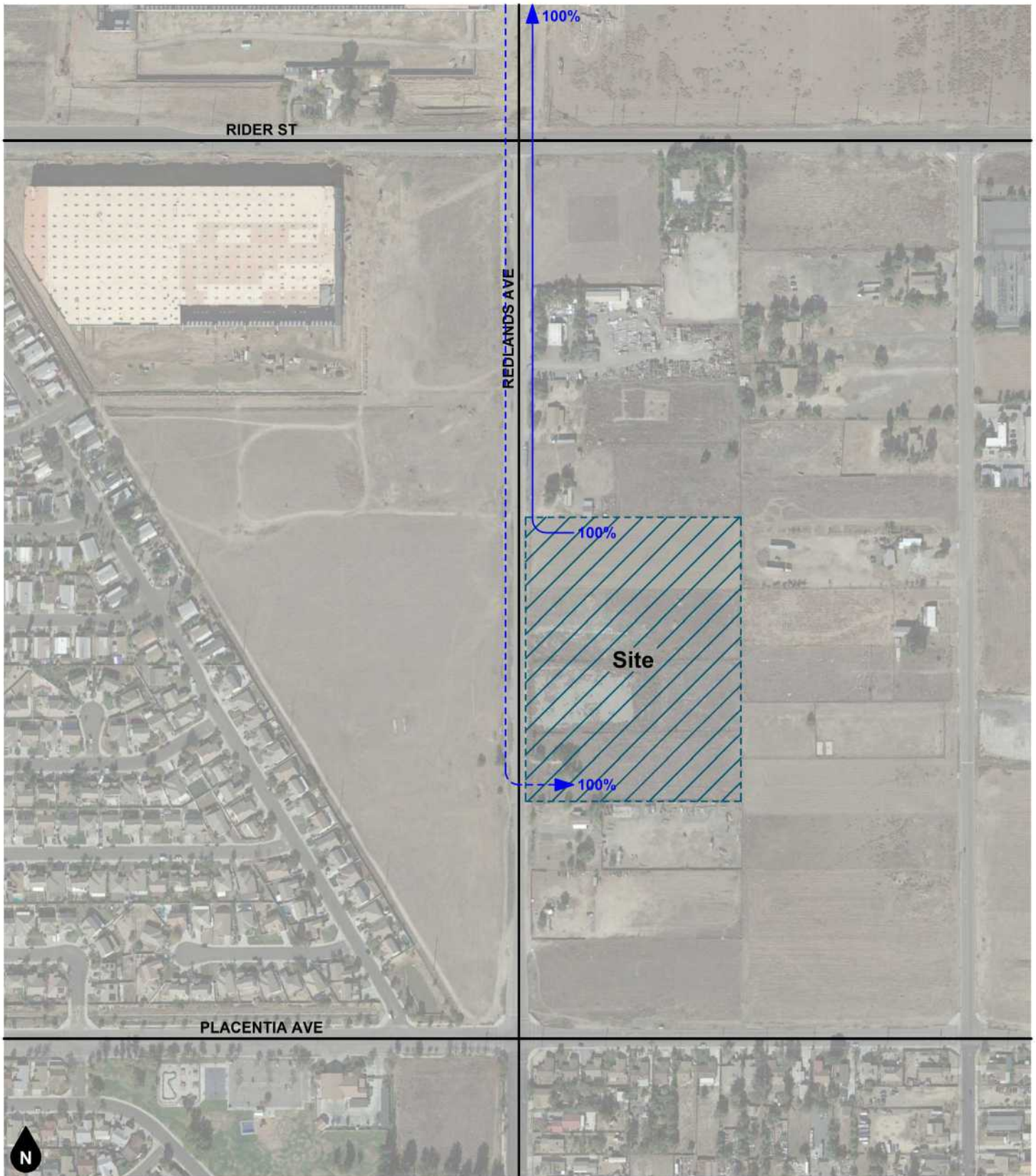
- # Study Intersection
- # Project Driveway

**Figure 1**  
**Project Location Map**



**Figure 2**  
**Site Plan**



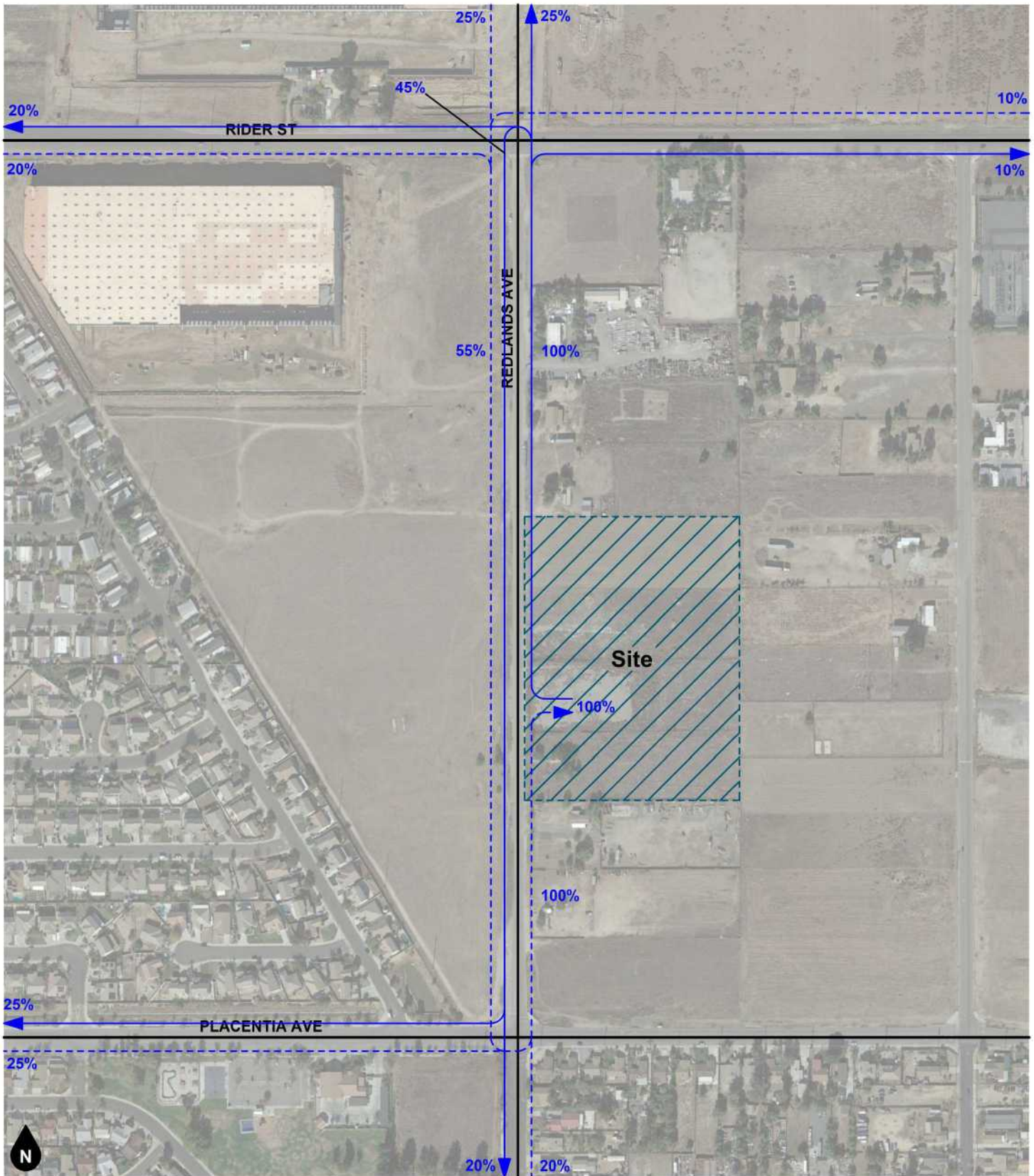


**Legend**

- 100% Percent From Project
- - -100% Percent To Project

**Figure 3**  
**Project Truck Trip Distribution**



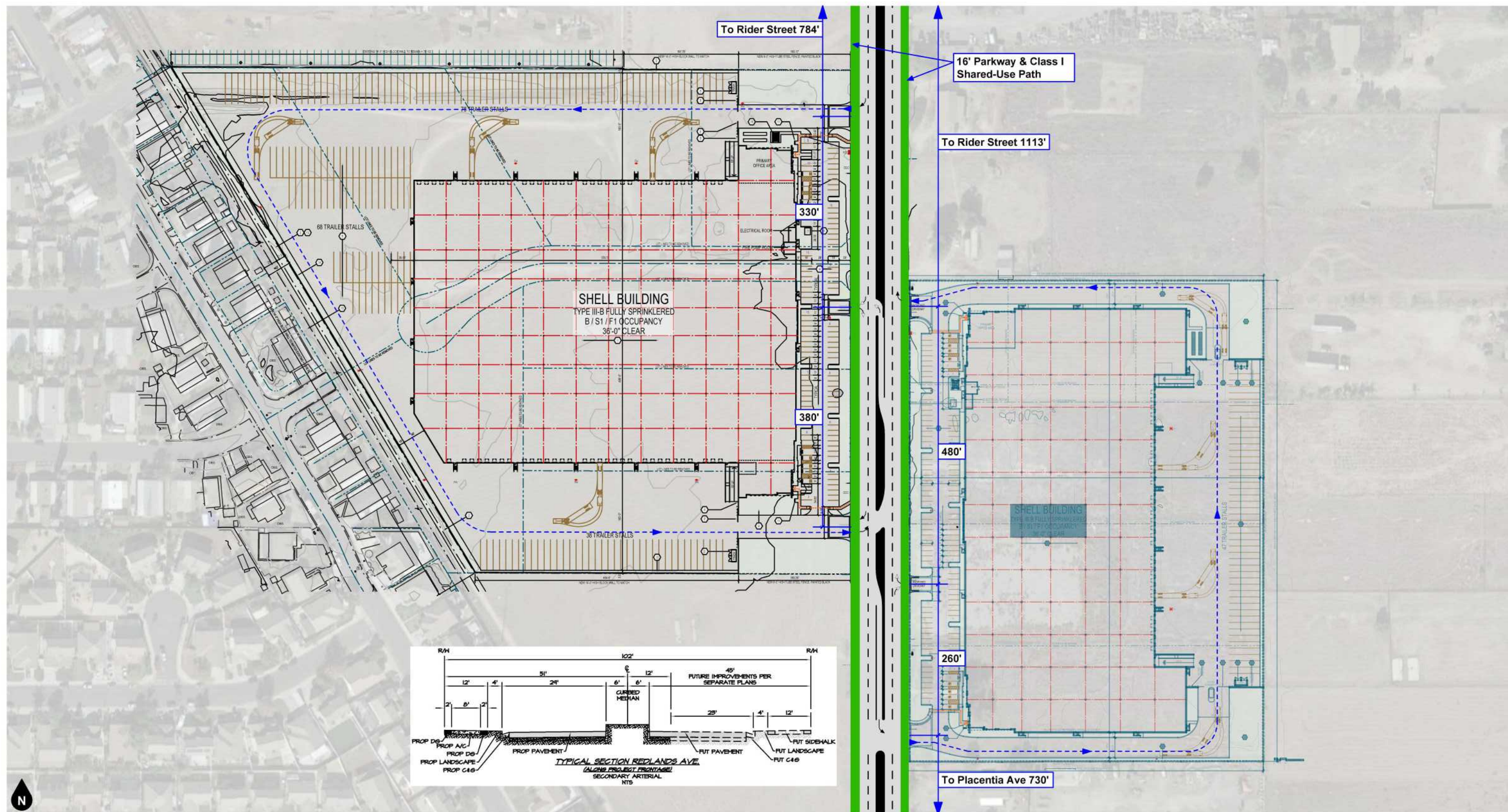


**Legend**

- ← 10% Percent From Project
- ← 10% Percent To Project

**Figure 4**  
**Project Passenger Car Trip Distribution**



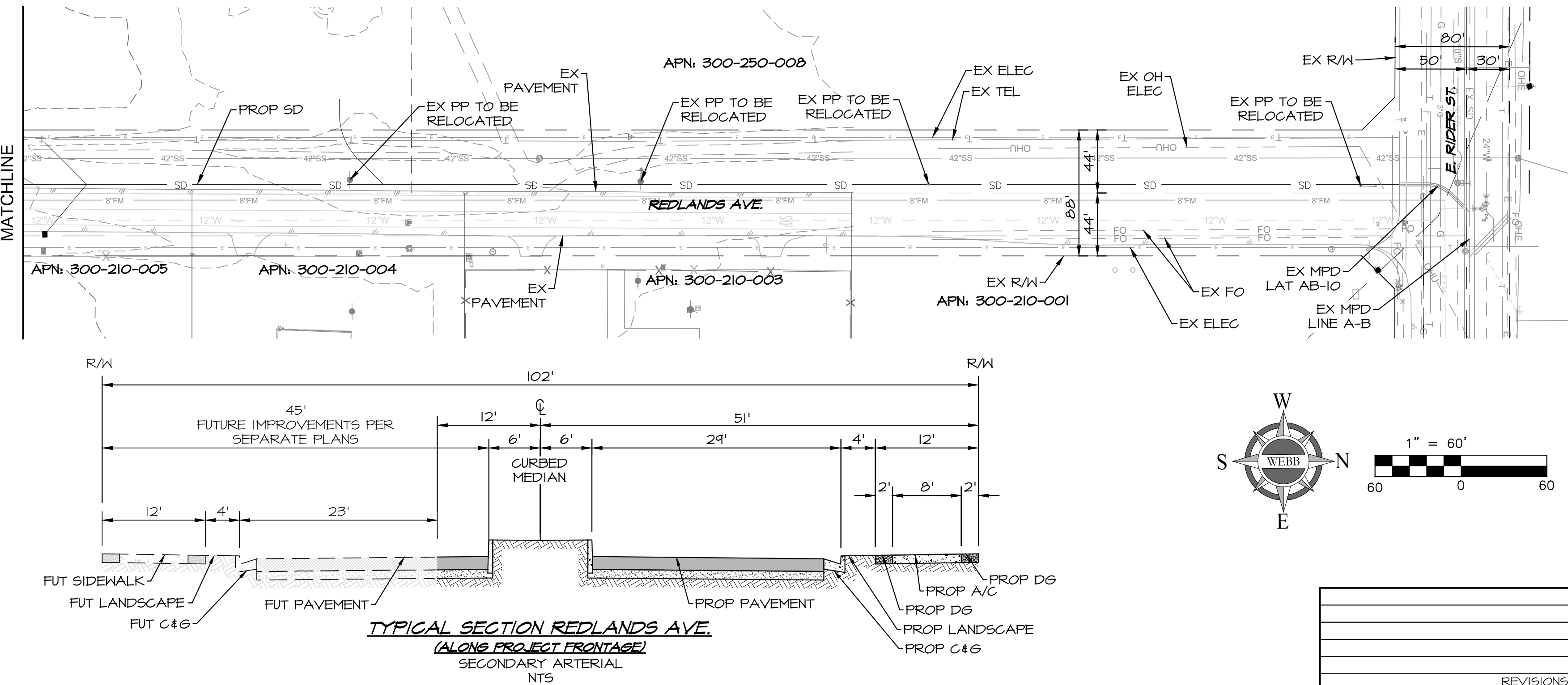
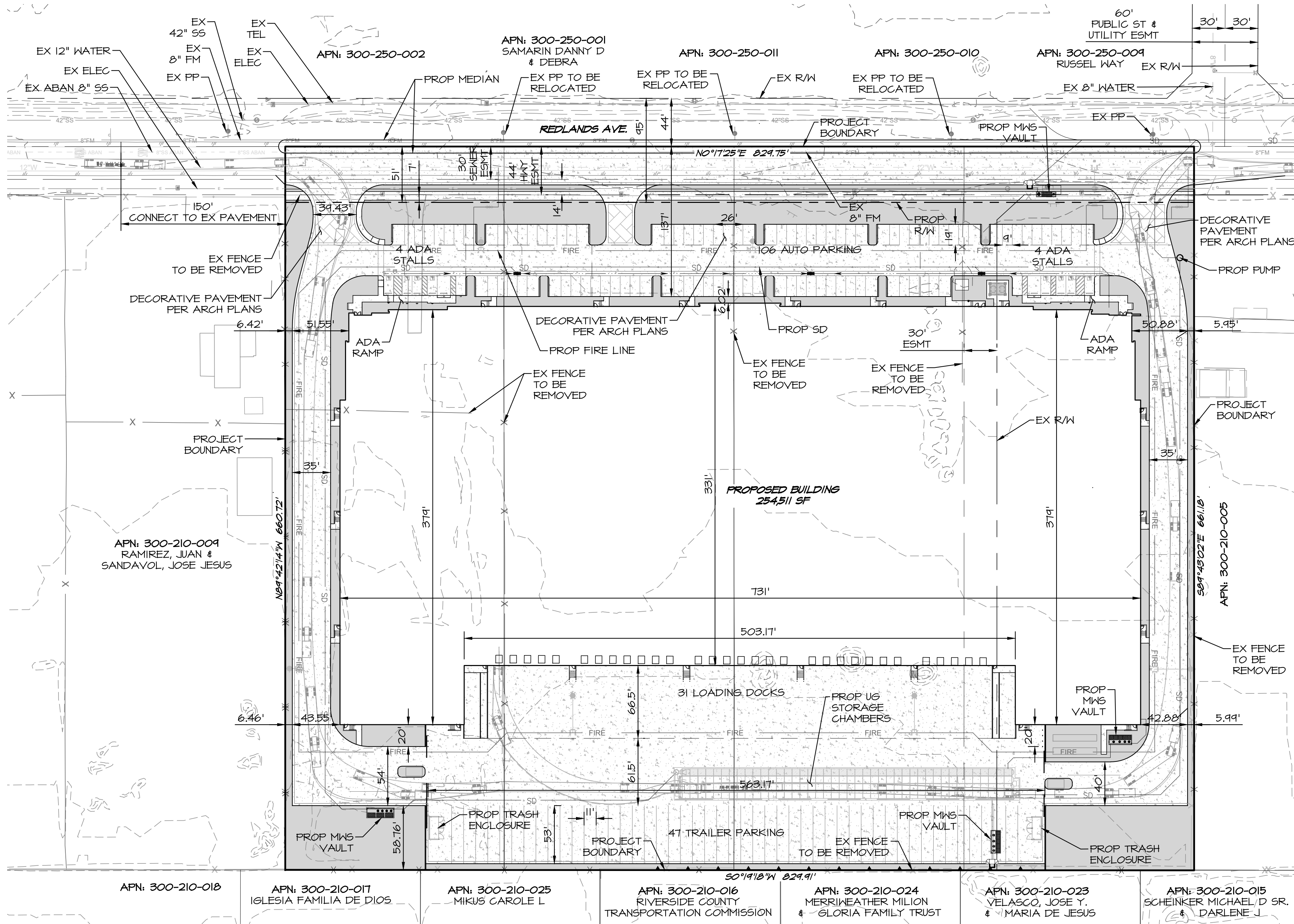


**Figure 5**  
**Redlands Avenue Conceptual Striping Plan**



## **Appendix A**

### **Site Plan**



NOTES

- 2010 THOMAS BROS. MAP - PAGE TTI, GRID H-4
- THIS AREA IS NOT SUBJECT TO LIQUEFACTION OR OTHER GEOLOGIC HAZARDS WITHIN A SPECIAL STUDIES ZONE.
- FEMA COMMUNITY PANEL NO. 06065C1430H ZONE X (AREA OF MINIMAL FLOOD HAZARD), CITY OF PERRIS.
- CONTOUR INTERVAL, ONE FOOT.
- THIS AREA IS WITHIN THE PERRIS VALLEY COMMERCE CENTER SPECIFIC PLAN.
- THIS PROJECT IS NOT WITHIN A COMMUNITY SERVICES DISTRICT.
- THIS PROPERTY IS NOT SUBJECT TO OVERFLOW, INUNDATION, OR FLOOD HAZARD.
- SUBSURFACE SEPTIC SEWAGE IS NOT INTENDED FOR THIS SITE.
- ALL GATES ARE AT LEAST 24" IN WIDTH, AUTOMATIC WITH THE KNOX RAPID ENTRY SYSTEM.

UTILITIES

- |              |                                    |
|--------------|------------------------------------|
| WATER        | - EASTERN MUNICIPAL WATER DISTRICT |
| SEWER        | - EASTERN MUNICIPAL WATER DISTRICT |
| GAS          | - SOUTHERN CALIFORNIA GAS COMPANY  |
| ELECTRIC     | - SOUTHERN CALIFORNIA EDISON       |
| TELEPHONE    | - SPECTRUM                         |
| SCHOOL DIST. | - VAL VERDE SCHOOL DISTRICT        |

LEGAL DESCRIPTION

THE LAND REFERRED TO HEREIN IS SITUATED IN THE CITY OF PERRIS, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:

PARCEL 4, AS SHOWN BY PARCEL MAP NO. 10002, IN THE CITY OF PERRIS, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 42 PAGE 23 OF PARCEL MAPS, RECORDS OF RIVERSIDE COUNTY

PARCEL 1 OF PARCEL MAP NO. 11104, IN THE CITY OF PERRIS, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 47, PAGE 62 OF PARCEL MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

PARCEL 3 AS SHOWN ON PARCEL MAP 10002, RECORDED NOVEMBER 17, 1971 IN BOOK 42 PAGE 23 OF PARCEL MAPS, RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

PARCEL 1 TO PARCEL 3, INCLUSIVE TOGETHER WITH LETTERED LOTS "B", "C" AND "D" OF PARCEL MAP NO. 16345 AS SHOWN BY MAP ON FILE IN BOOK 142 OF PARCEL MAPS, AT PAGE 58 RECORDS OF RIVERSIDE COUNTY, CALIFORNIA, THE EXTERIOR BOUNDARY OF WHICH IS DESCRIBED BY MEETS AND BOUNDS AS FOLLOWS:  
BEGINNING AT THE SOUTHWEST CORNER OF LOT "B" AS SHOWN ON SAID MAP;

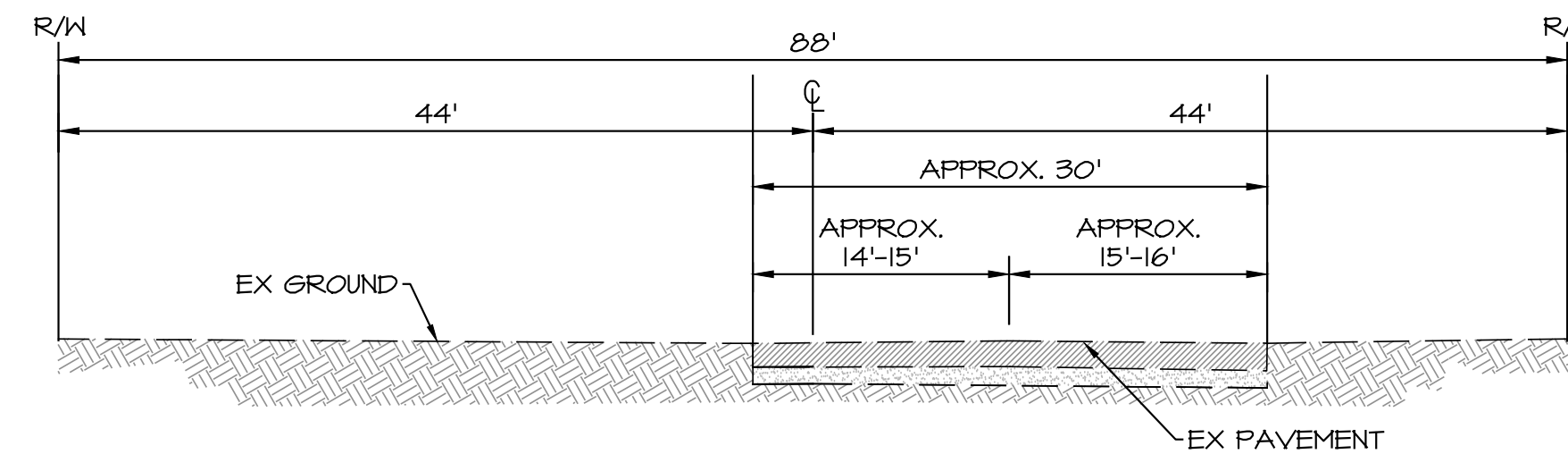
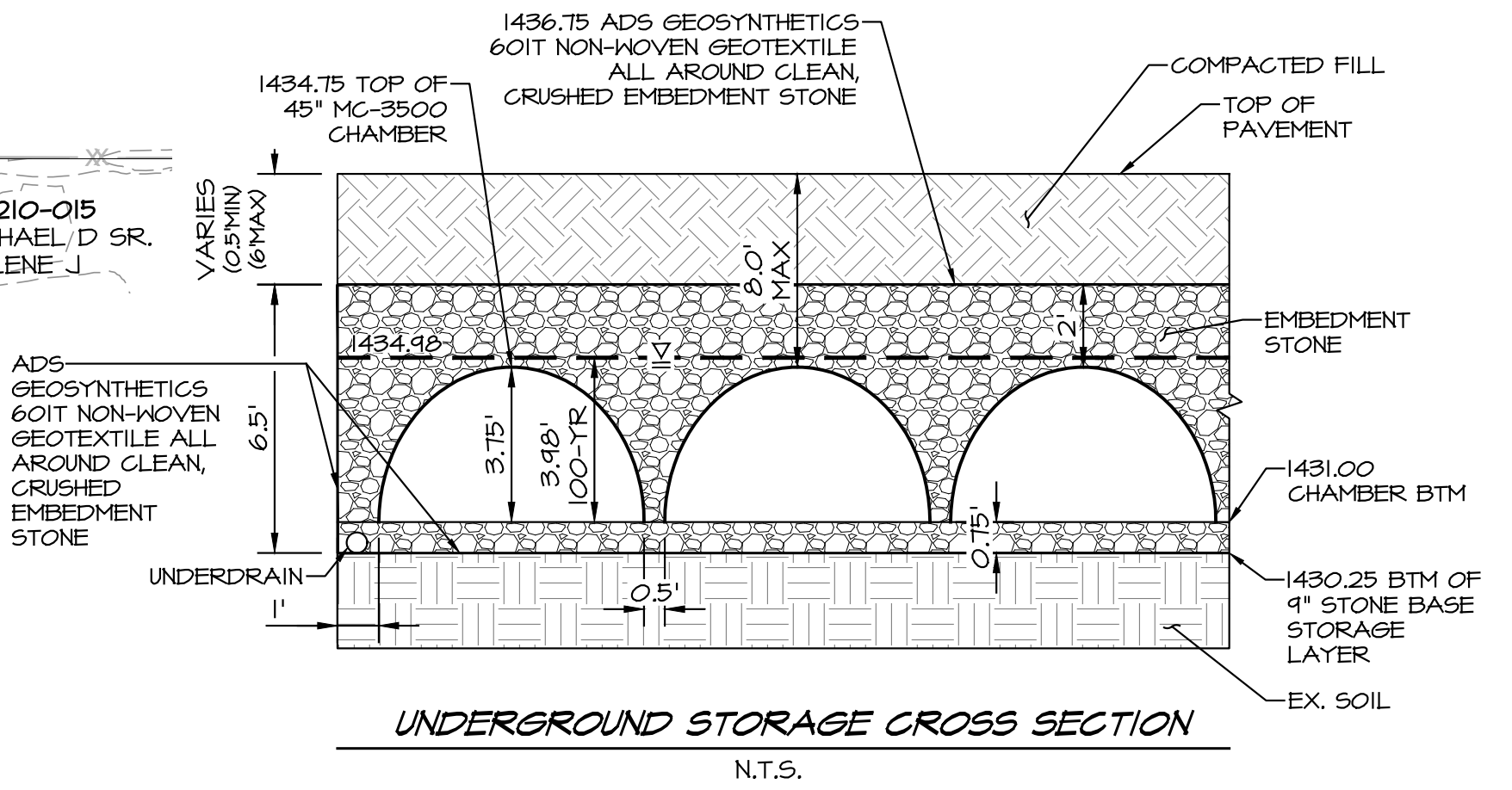
THENCE NORTH 0° 29' 07" WEST, ALONG THE WEST LINES OF SAID LOT "B" AND PARCEL 1 AS SHOWN ON SAID MAP, A DISTANCE 210.00 FEET TO THE NORTHWEST CORNER OF SAID PARCEL 1;

THENCE NORTH 84° 30' 53" EAST, ALONG THE NORTH LINES OF PARCEL 1, PARCEL 2 AND PARCEL 3 AS SHOWN ON SAID MAP, A DISTANCE OF 617.02 FEET TO THE NORTHEAST CORNER OF SAID PARCEL 3;

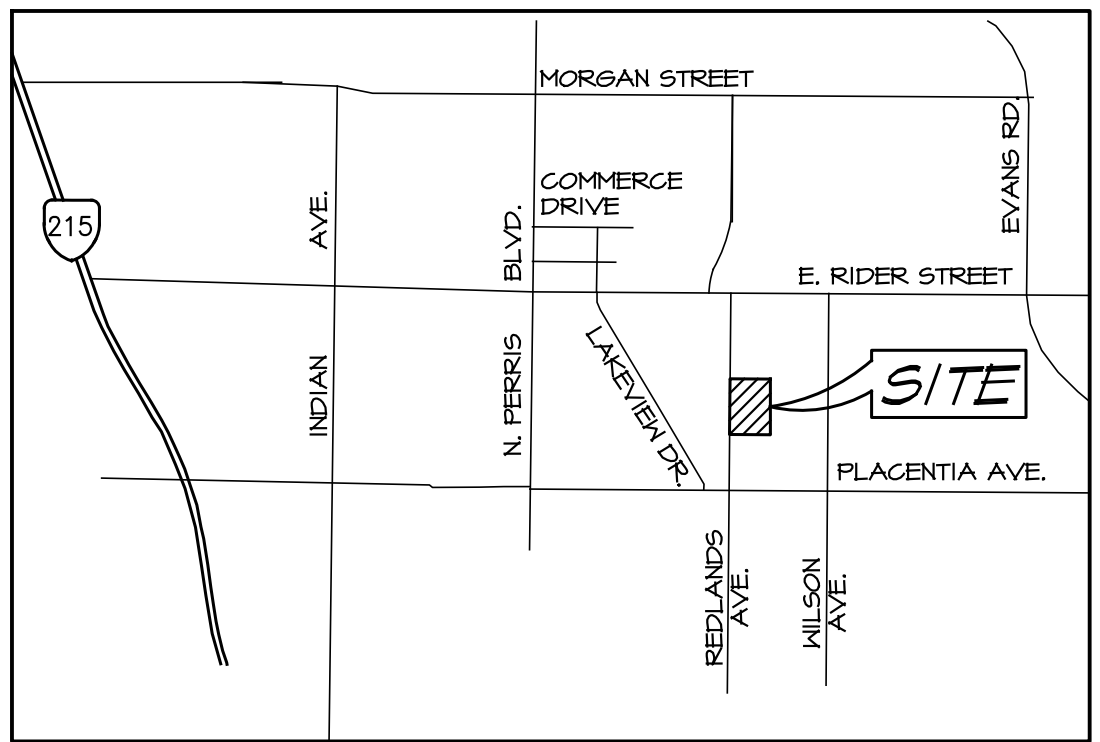
THENCE SOUTH 0° 27' 00" WEST, ALONG THE EAST LINES OF PARCEL 3 AND LOT "D" AS SHOWN ON SAID MAP, A DISTANCE OF 210.00 FEET TO THE SOUTHEAST CORNER OF SAID LOT "D";

THENCE SOUTH 84° 30' 53" WEST, ALONG THE SOUTH LINES OF LOT "D", LOT "C" AND LOT "B", A DISTANCE OF 616.84 FEET TO THE POINT OF BEGINNING.

THIS LEGAL IS PURSUANT TO "CERTIFICATE OF COMPLIANCE PARCEL MERGER NO. 01-0106" RECORDED SEPTEMBER 11, 2002 AS INSTRUMENT NO. 2002-503549 OF OFFICIAL RECORDS.



EXISTING TYPICAL SECTION REDLANDS AVE.  
(OUTSIDE PROJECT FRONTAGE)  
SECONDARY ARTERIAL  
NTS



VICINITY MAP  
N.T.S.

APPLICANT

LAKE CREEK INDUSTRIAL LLC  
1302 BRITTANY CROSS ROAD  
SANTA ANA, CA 92705  
CONTACT: MICHAEL JOHNSON  
TEL: 714-200-4681

OWNER

LAKE CREEK INDUSTRIAL LLC  
1302 BRITTANY CROSS ROAD  
SANTA ANA, CA 92705  
CONTACT: MICHAEL JOHNSON  
TEL: 714-200-4681

APN

300-210-006 300-210-026  
300-210-007 300-210-027  
300-210-008 300-210-028

LAND USE/ZONING

EX LAND USE:	LIGHT INDUSTRIAL
PROPOSED LAND USE:	LIGHT INDUSTRIAL
EX ZONING:	LIGHT INDUSTRIAL
PROPOSED ZONING:	LIGHT INDUSTRIAL
EX GENERAL PLAN:	PVCC SP
PROPOSED GENERAL PLAN:	PVCC SP

ACREAGE

12.6 ACRES GROSS  
11.7 ACRES NET

TOPOGRAPHY

INLAND AERIAL SURVEYS, INC.  
AUGUST 10, 2020

EARTHWORK ESTIMATE

RAW CUT/FILL	CUT	FILL
	17,599 C.Y.	13,630 C.Y.
*REMEDIATION GRADING		30,404 C.Y.
TOTAL		26,435 C.Y. IMPORT

\*REMEDIATION GRADING IS REQUIRED TO REMOVE THE EXISTING ARTIFICIAL FILL WITHIN BUILDING LIMITS. LIMITS AND DEPTHS PER GEOTECHNICAL REPORT RECOMMENDATIONS.

PROJECT DATA

SITE AREA	548,475 SF 12.6 ACRES GROSS AREA 11.7 ACRES NET AREA
BUILDING AREA WAREHOUSE	254,511 SF
LOT COVERAGE	44.5%
PARKING REQUIRED 8,000 OFFICE PARKING (LESS THAN 10%) 0-20K SF (1/1000 SF) 20K-40K SF (1/2000 SF) 40K+ SF (1/5000 SF)	00 STALLS 20 STALLS 10 STALLS 43 STALLS
TOTAL PARKING REQUIRED	73 STALLS
PARKING PROVIDED ACCESSIBLE STALLS STANDARD STALLS FUTURE STALLS TOTAL PROVIDED	8 STALLS 106 STALLS 00 STALLS 114 STALLS
LANDSCAPING AREA AREA REQUIRED AREA PROVIDED	61,752 SF 12.0% 12.2%
GROSS IMPERVIOUS AREA AREA	483,067 SF

LEGEND

PROPOSED CONCRETE/ASPHALT	
PROPOSED LANDSCAPE	
PROPOSED COMBO RETAINING WALL / PERIMETER WALL	
PROPOSED 8' HIGH CHAIN LINK FENCE	
PROPOSED MWS WATER QUALITY TREATMENT VAULT (SIZE VARIES)	
EX POWER POLE	
FIRE LINE	
EX SD	
PROP STORM DRAIN	
PROP FH	

CITY OF PERRIS  
DEVELOPMENT PLAN REVIEW  
DPR 20-00021

W.O. 20-0181  
SHEET /  
OF 2 SHEETS  
DWG. NO.

SCALE: 1"=60'  
DATE: 12/20/21  
DESIGNED: AYS  
CHECKED: JRG  
PLN CK REF:  
F.B.  
PLOT DATE: 20-Dec-21  
ALBERTA WEBB ASSOCIATES  
ENGINEERING CONSULTANTS  
3788 MCCRAY STREET  
RIVERSIDE CA 92506  
PH. (951) 686-1070  
FAX (951) 788-1256

REVISIONS

DATE BY

## **Appendix B**

### **VMT Scoping Form for Land Use Projects**





**CITY OF PERRIS**  
**VTM SCOPING FORM FOR LAND USE PROJECTS**

This Scoping Form acknowledges the City of Perris requirements for the evaluation of transportation impacts under CEQA. The analysis provided in this form should follow the City of Perris TIA Guidelines, dated May 12, 2020.

**I. Project Description**

Tract/Case No. **DPR 20-000-21**

Project Name: **Redlands Avenue East Industrial Project**

Project Location: **East Side of Redlands Avenue between Rider Street and Placentia Ave in the City of Perris**

Project Description: **A 250,511 SF warehouse building with 4,000 SF mezzanine**

(Please attach a copy of the project Site Plan)

Current GP Land Use: **PVCC SP - Light Industrial**

Proposed GP Land Use: **PVCC SP - Light Industrial**

Current Zoning: **PVCC SP - Light Industrial**

Proposed Zoning: **PVCC SP - Light Industrial**

If a project requires a General Plan Amendment or Zone change, then additional information and analysis should be provided to ensure the project is consistent with RHNA and RTP/SCS Strategies.

**II. VMT Screening Criteria**

A. Is the Project 100% affordable housing?

**YES** ☐ **NO** ☒

Attachments:

B. Is the Project within 1/2 mile of qualifying transit?

**YES** ☐ **NO** ☒

Attachments:

C. Is the Project a local serving land use?

**YES** ☐ **NO** ☒

Attachments:

D. Is the Project in a low VMT area?

**YES** ☒ **NO** ☐

Attachments:

E. Are the Project's Net Daily Trips less than 500 ADT?

**YES** ☐ **NO** ☒

Attachments: **Table 1**

**Low VMT Area Evaluation:**

Citywide VMT Averages <sup>1</sup>			
Citywide Home-Based VMT =	15.05	VTM/Capita	
Citywide Employment-Based VMT =	11.62	VTM/Employee	

**WRCOG VMT MAP**

Project TAZ	VTM Rate for Project TAZ <sup>1</sup>	Type of Project	
3,814	VTM/Capita	Residential:	
	9.95 VTM/Employee	Non-Residential:	<input checked="" type="checkbox"/>

<sup>1</sup> Base year (2012) projections from RIVTAM.

APN:000250010, TAZ:3,814  
Within a Transit Priority Area (TPA)?  
No (F)  
Within a low VMT generating TAZ based on Total VMT?  
Yes (F)  
Unincorporated average 2012 daily total VMT per service population = 27.59  
Project TAZ 2012 daily total VMT per service population = 21.99  
Within a low VMT generating TAZ based on Residential Home-Based VMT?  
Yes (F)  
Unincorporated average 2012 daily residential home-based VMT per capita = 15.05  
Project TAZ 2012 daily residential home-based VMT per capita = 13.16  
Within a low VMT generating TAZ based on Home-Based Work VMT?  
Yes (F)  
Unincorporated average 2012 daily home-based work VMT per worker = 11.62  
Project TAZ 2012 daily home-based work VMT per worker = 9.95

**Trip Generation Evaluation:**

Source of Trip Generation: **ITE 10 Edition, 2017. High-Cube Fulfillment Center Warehouse Non-Sort (ITE 155)**

Project Trip Generation:

**461 ADT** **Average Daily Trips (ADT)**

Internal Trip Credit:	YES	<input type="checkbox"/>	NO	<input checked="" type="checkbox"/>
Pass-By Trip Credit:	YES	<input type="checkbox"/>	NO	<input checked="" type="checkbox"/>
Affordable Housing Credit:	YES	<input type="checkbox"/>	NO	<input checked="" type="checkbox"/>
Existing Land Use Trip Credit:	YES	<input type="checkbox"/>	NO	<input checked="" type="checkbox"/>

% Trip Credit:   
% Trip Credit:   
% Trip Credit:   
Trip Credit:

Net Project Daily Trips:

**654 PCE** **Average Daily Trips (ADT)**

Attachments: **Table 1**

Does project trip generation warrant an LOS evaluation outside of CEQA?

**YES** ☒ **NO** ☐

**III. VMT Screening Summary****A. Is the Project presumed to have a less than significant impact on VMT?**

A Project is presumed to have a less than significant impact on VMT if the Project satisfies at least one (1) of the VMT screening criteria.

Yes. Criteria D.

**B. Is mitigation required?**

If the Project does not satisfy at least one (1) of the VMT screening criteria, then mitigation is required to reduce the Project's impact on VMT.

No.

**C. Is additional VMT modeling required to evaluate Project impacts?**

YES

NO

✓

If the Project requires a zone change and/or General Plan Amendment AND generates 2,500 or more net daily trips, then additional VMT modeling using RIVTAM/RIVCOM is required. If the project generates less than 2,500 net daily trips, the Project TAZ VMT Rate can be used for mitigation purposes.

**IV. MITIGATION****A. Citywide Average VMT Rate (Threshold of Significance) for Mitigation Purposes:**

--	--

**B. Unmitigated Project TAZ VMT Rate:**

--	--

**C. Percentage Reduction Required to Achieve the Citywide Average VMT:**

	%
--	---

**D. VMT Reduction Mitigation Measures:**

Source of VMT Reduction Estimates:	
------------------------------------	--

Project Location Setting	
--------------------------	--

VMT Reduction Mitigation Measure:		Estimated VMT Reduction (%)
1.		0.00%
2.		0.00%
3.		0.00%
4.		0.00%
5.		0.00%
6.		0.00%
7.		0.00%
8.		0.00%
9.		0.00%
10.		0.00%
Total VMT Reduction (%)		0.00%

(Attach additional pages, if necessary, and a copy of all mitigation calculations.)

**E. Mitigated Project TAZ VMT Rate:**

--	--

**F. Is the project presumed to have a less than significant impact with mitigation?**

--

If the mitigated Project VMT rate is below the Citywide Average Rate, then the Project is presumed to have a less than significant impact with mitigation. If the answer is no, then additional VMT modeling may be required and a potentially significant and unavoidable impact may occur. All mitigation measures identified in Section IV.D. are subject to become Conditions of Approval of the project. Development review and processing fees should be submitted with, or prior to the submittal of this Form. The Planning Department staff will not process the Form prior to fees being paid to the City.

Prepared By			Developer/Applicant		
<b>Company:</b>	Ganddini Group, Inc.		<b>Company:</b>	Lake Creek Industrial	
<b>Contact:</b>	Bryan Crawford		<b>Contact:</b>	Dr. Michael Johnson	
<b>Address:</b>	550 Parkcenter Dr, Ste 202, Santa Ana CA 92705		<b>Address:</b>	1302 Brittany Cross Road, Santa Ana CA 92705	
<b>Phone:</b>	714-795-3100*104		<b>Phone:</b>	(786) 200-9681	
<b>Email:</b>	bryan@ganddini.com		<b>Email:</b>	mj@lakecreekindustrial.com	
<b>Date:</b>			<b>Date:</b>		
<b>Approved by:</b>					
<b>Perris Development Services Dept.</b>			<b>Perris Public Works Dept.</b>		
<b>Date</b>			<b>Date</b>		

## **Appendix C**

### **Trip Generation Information**



## Land Use: 155

### High-Cube Fulfillment Center Warehouse

#### Description

A high-cube warehouse (HCW) is a building that typically has at least 200,000 gross square feet of floor area, has a ceiling height of 24 feet or more, and is used primarily for the storage and/or consolidation of manufactured goods (and to a lesser extent, raw materials) prior to their distribution to retail locations or other warehouses. A typical HCW has a high level of on-site automation and logistics management. The automation and logistics enable highly-efficient processing of goods through the HCW. High-cube fulfillment center warehouses include warehouses characterized by a significant storage function and direct distribution of ecommerce product to end users. These facilities typically handle smaller packages and quantities than other types of HCWs and often contain multiple mezzanine levels. Warehousing (Land Use 150), high-cube transload and short-term storage warehouse (Land Use 154), high-cube parcel hub warehouse (Land Use 156), and high-cube cold storage warehouse (Land Use 157) are related land uses.

Each fulfillment center in the ITE database has been categorized as either a sort or non-sort facility. A sort facility is a fulfillment center that ships out smaller items, requiring extensive sorting, typically by manual means. A non-sort facility is a fulfillment center that ships large box items that are processed primarily with automation rather than through manual means. Separate sets of data plots are presented for the sort and non-sort fulfillment centers.

#### Additional Data

The High-Cube Warehouse/Distribution Center-related land uses underwent specialized consideration through a commissioned study titled "High-Cube Warehouse Vehicle Trip Generation Analysis," published in October 2016. The results of this study have been incorporated into the 10th Edition *Trip Generation Manual* and are posted on the ITE website at <http://library.ite.org/pub/a3e6679a-e3a8-bf38-7f29-2961becdd498>.

The sites were surveyed in the 2000s and the 2010s in California, New Jersey, and Texas.

#### Source Numbers

752, 941, 1001, 1002, 1011

# High-Cube Fulfillment Center Warehouse - Non-Sort (155)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Weekday

Setting/Location: General Urban/Suburban

Number of Studies: 10

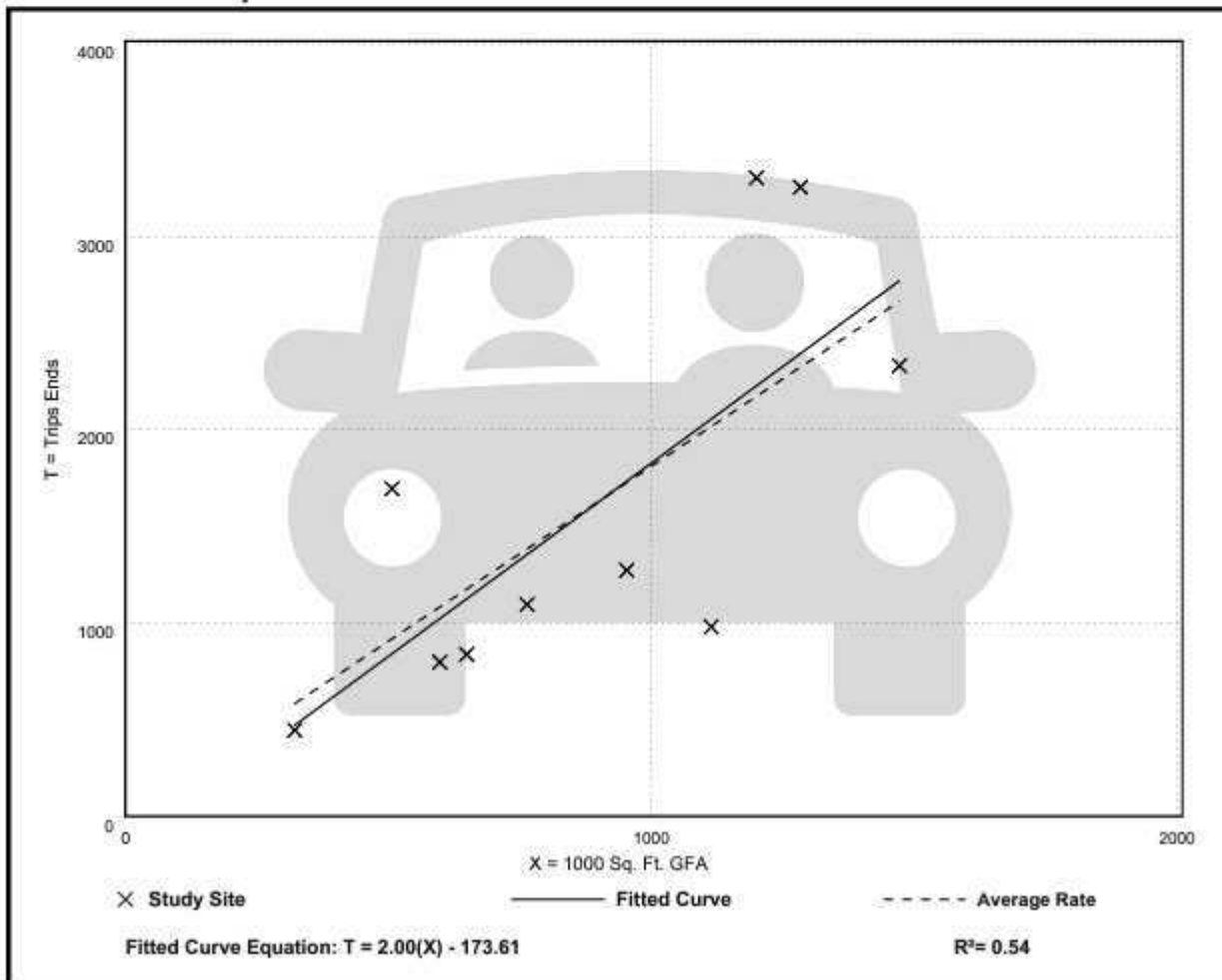
Avg. 1000 Sq. Ft. GFA: 886

Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.81	0.88 - 3.34	0.76

## Data Plot and Equation



# High-Cube Fulfillment Center Warehouse - Non-Sort (155)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,  
Peak Hour of Adjacent Street Traffic,  
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 22

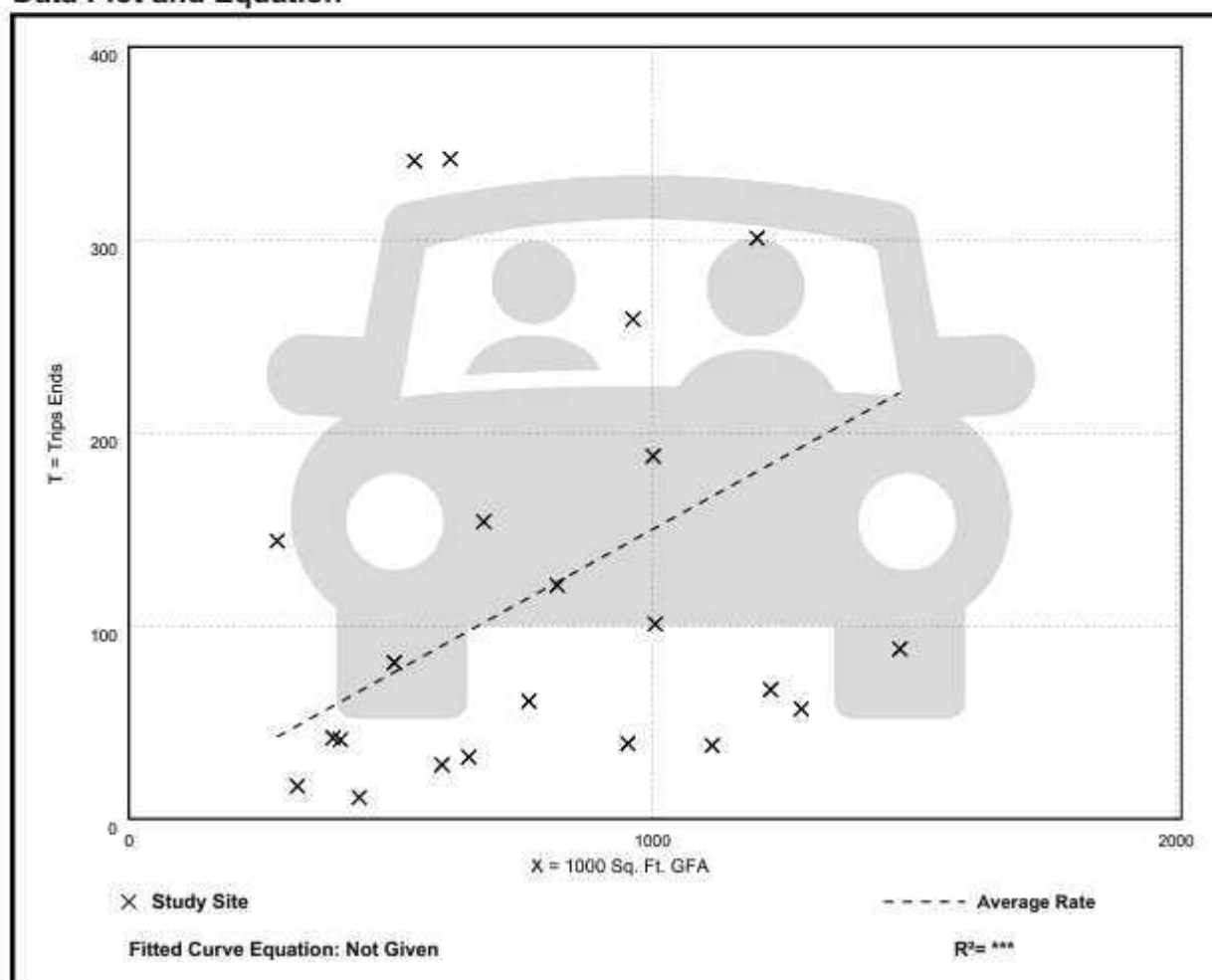
Avg. 1000 Sq. Ft. GFA: 783

Directional Distribution: 81% entering, 19% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.15	0.03 - 0.62	0.15

## Data Plot and Equation





# High-Cube Fulfillment Center Warehouse - Non-Sort (155)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,  
Peak Hour of Adjacent Street Traffic,  
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 22

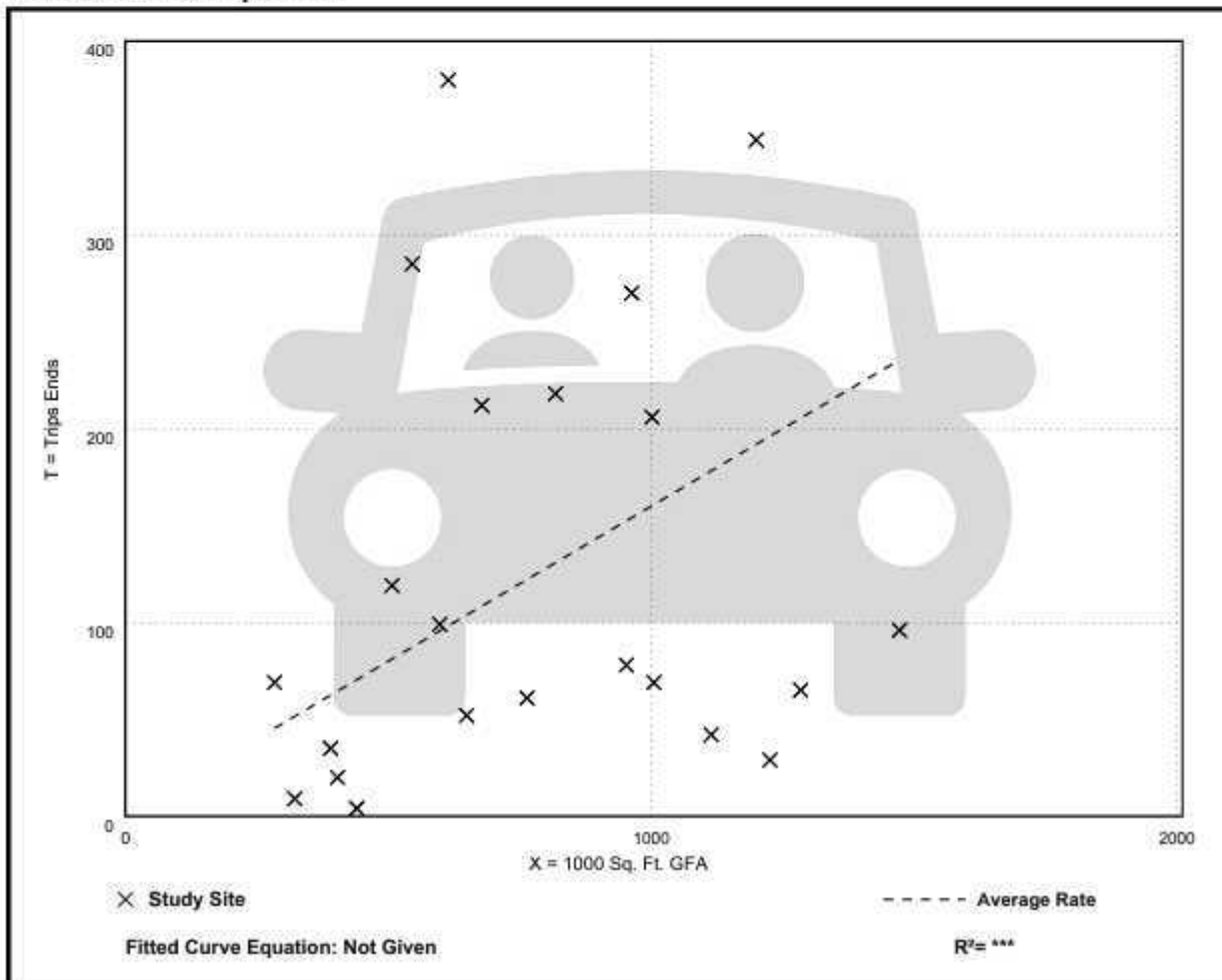
Avg. 1000 Sq. Ft. GFA: 783

Directional Distribution: 39% entering, 61% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.16	0.01 - 0.62	0.15

## Data Plot and Equation



New Land Use and Existing Land Uses with Substantial Expansion of Database

23

## C | Appendix: Truck Trips as Percent of Total Vehicle Trips

Land Use Code, Land Use Name, and Time Period	Truck Trips as Percentage of Total Vehicle Trips				
	# Sites	Wtd Avg	Lowest	Highest	Std Dev
<b>110 General Light Industrial</b>					
Weekday	28	8%	0%	29%	8%
Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	27	3%	0%	50%	12%
Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	27	2%	0%	20%	4%
Weekday, AM Peak Hour of Generator	28	4%	0%	100%	21%
Weekday, PM Peak Hour of Generator	27	7%	0%	29%	9%
<b>130 Industrial Park</b>					
Weekday	3	15%	10%	16%	3%
Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	3	12%	10%	13%	1%
Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	3	10%	3%	13%	5%
Weekday, AM Peak Hour of Generator	3	6%	4%	8%	2%
Weekday, PM Peak Hour of Generator	3	10%	7%	13%	3%
<b>140 Manufacturing</b>					
Weekday	17	10%	0%	35%	10%
Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	17	8%	0%	50%	17%
Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	16	7%	0%	80%	24%
Weekday, AM Peak Hour of Generator	17	2%	0%	37%	9%
Weekday, PM Peak Hour of Generator	17	6%	0%	42%	14%

Truck Trips as Percentage of Total Vehicle Trips					
Land Use Code, Land Use Name, and Time Period	# Sites	Wtd Avg	Lowest	Highest	Std Dev
<b>150 Warehousing</b>					
Weekday	12	27%	0%	65%	21%
Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	21	13%	0%	71%	22%
Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	23	15%	0%	87%	20%
Weekday, AM Peak Hour of Generator	24	22%	0%	100%	26%
<b>151 Mini-Warehouse</b>					
Weekday	6	6%	0%	8%	3%
Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	5	0%	0%	0%	0%
Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	6	0%	0%	0%	0%
Weekday, AM Peak Hour of Generator	6	4%	0%	15%	6%
Weekday, PM Peak Hour of Generator	6	5%	0%	50%	20%
<b>154 High-Cube Transload and Short-Term Storage Warehouse</b>					
Weekday	57	16%	3%	52%	11%
Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	90	20%	0%	90%	21%
Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	91	16%	0%	65%	17%
Weekday, AM Peak Hour of Generator	12	12%	4%	39%	12%
Weekday, PM Peak Hour of Generator	13	14%	2%	25%	7%
<b>155 High-Cube Fulfillment Center Warehouse (Non-Sort)</b>					
Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	11	9%	1%	49%	18%
Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	11	7%	2%	100%	31%



Truck Trips as Percentage of Total Vehicle Trips					
Land Use Code, Land Use Name, and Time Period	# Sites	Wtd Avg	Lowest	Highest	Std Dev
155 High-Cube Fulfillment Center Warehouse (Sort)					
Weekday	1	3%	—	—	N.A.
Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	2	2%	1%	2%	N.A.
Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	2	2%	1%	6%	N.A.
156 High-Cube Parcel Hub Warehouse					
Weekday	1	9%	—	—	N.A.
Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	1	5%	—	—	N.A.
Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	1	1%	—	—	N.A.
157 High-Cube Cold Storage Warehouse					
Weekday	4	35%	32%	39%	3%
Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	5	27%	18%	46%	13%
Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	5	23%	0%	45%	16%
170 Utility					
Weekday	13	2%	0%	17%	5%
Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	12	0%	0%	0%	0%
Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	12	1%	0%	2%	1%
Weekday, AM Peak Hour of Generator	13	1%	0%	22%	6%
Weekday, PM Peak Hour of Generator	13	2%	0%	50%	16%

## **Appendix D**

### **Other Cumulative Projects**

**PROJECTS THAT HAVE STARTED CONSTRUCTION**

TRACT	DEVELOPER	PROJECT	LOCATION	DU	TYPE	Approval Date	Status	Planner
16-00014	Talat Dib	DTSP Mixed Use	SW of "D" Street and 10th Street.	15	APT	10/15/2017	Vertical construction in process	BM
31226	Pacific Communities	Pacific Heritage 1	SW Nuevo & McKimball	82	SFD	10/15/2003	Vertical construction in process	DS
31650	Sunwest Enterprises		SW Van Wy & De Lines	61	SFD	7/13/2004	FTM approved 6-13-2006 - Architecture review MDPH 20-05143	DS
32406	Sunwest Enterprises		SE Bowen & Windflower	15	SFD	1/5/2005	FTM approved 11-28-2006 - Architecture review MDPH 20-05143	AG/DS
32497	Pacific Communities	Pacific Ave	SW Orange & Medical	131	PUD	10/31/2006	Vertical construction in process	NP
32769	CBM Consulting & Dev, Inc.	Faith Circle	West side of "B" Street, south of 11th St	20	SFD	4/20/2006	Final Home Sales 2021	RZ
36988	Richmond	GVSP	N of Ethanac Rd & W of Murrieta Rd	169	SFD	8/29/2017	Final Home Sales 2020	KP
36989	KB Home	GVSP	N of Ethanac Rd & W of Murrieta Rd	145	SFD	8/29/2017	Final Home Sales 2020	KP

**638 Total Units**
**PROJECTS IN PLAN CHECK**

TRACT	DEVELOPER	PROJECT	LOCATION	DU	TYPE	Approval Date	Status	Planner
31912	TKC		7th & Clayton vacant land	8	SFD		FTM approved 4/24/2007 Plan Check	RG
37014	JD Pierce	Barrett Apt	Btw Barrett & Perris Blvd	202	APT	10/25/2016	Plan check; grading anticipated 4th quarter 2019 - Major Mod 18-05211; DPR 15-04	KP

**202 Total Units**
**FINAL MAP RECORDED OR DA WITH NO FURTHER NEED FOR EXTENSION**

TRACT	DEVELOPER	PROJECT	LOCATION	DU	TYPE	Approval Date	Status	Planner
31157	Palin Enterprises	Parkwest SP	S of Nuevo Road & E. PVSD	529	SFD	1/3/2018	Dormant (DA extension until 1/27/2028)	KP
31651	Sunwest Enterprises		SEC Nuevo & Wilson	57	SFD	7/27/2004	FTM approved 4/10/17. No Construction Started	DS
31659	Jason Keller/John Ford		NEC Citrus & Evans	161	SFD	7/27/2004	FTM approved 2/28/2006 No Construction Started	
32041	Jason Keller/John Ford		NWC Citrus & Dunlap	122	SFD	4/24/2007	FTM approved 5/24/2007 No Construction Started Right below School	NP
32666	WSI Mojave Inv/ Richland	Riverwood SP	Mapes & Ethanac	663	SFD	12/14/2004	Final Map recorded with option in increase to 750 lots; Ex)TTM 33042	BE
33338	Rastogi Family LTD /John Ford		NWC Nuevo & Evans	75	SFD	4/11/2006	FTM approved 4/24/2007 No Construction Started	NP
33549	Perris Investment Group	Village Walk	NE Perris & Commercial	129	SFD	1/30/2007	FTM approved 7/27/2011 No Construction Started	SC

**1736 Total Units**
**ENTITLED RESIDENTIAL DEVELOPMENTS**

TRACT	DEVELOPER	PROJECT	LOCATION	DU	TYPE	Approval Date	Status	Planner
33199	MR-10, LLC		NW of Metz and Webster Ave	26	SFD	8/30/2005	EOT18-05220 is proposing to Expire 08/30/2019	RZ
33900	WSI Mojave Inv	Richland	SE Ethanac & McPherson	198	SFD	4/29/2008	Has received various 1 year extensions. Valid until 5/8/2020. EOT19-05029	RZ
33973	County Lands PIP IV		W McPherson & S Ethanac	384	SFD	5/27/2008	Has received various 1 year extensions. Valid until 5/27/2019. New EOT 19-05071	RZ
34260	Tristone/David Jeffers		Flame Avenue	22	SFD	10/28/2014	Has received various 1 year extensions. Valid until 10/28/2019. EOT18-05252	KP
35062	Sterling Villa	Senior Housing	SE corner of Nuevo and Murrieta	429	APT	2/13/2006	Expires 2/4/2021 no further extension available through MMOD (aka DPR 06-0378)	KP
36648	John Abel	Stratford Ranch	W of Evans Road @ northern City Limits	270	SFD	8/29/2017	EOT 19-05151 for 1-year extension	NP
36797	Nova Homes		NEC Wilson & Water	76	PUD	10/28/2014	Has received various 1 year extensions. Valid until 10/25/2019. EOT18-05254	IL
37038	Kile Investment Trust	Citrus Court	SW Orange & Dunlap	111	PUD	2/28/2017	EOT 19-05325	KP/RG
37181	Metz and A LLC	Villa Verona Apt	NE A & Metz	360	APT	8/29/2017	Dormant - DPR 16-00002	NP
N/A	Lansing Properties	Senior Housing	NW of A & Ellis	141	APT	3/26/2019	Dormant - DPR 17-00005	MB

**Total 2017 Total Units**
**IN PROCESS RESIDENTIAL DEVELOPMENTS**

TRACT	DEVELOPER	PROJECT	LOCATION	DU	TYPE	Approval Date	Status	Planner
36647	John Abel	Stratford Ranch	W of Evans Road and N of Ramona Exp	90	SFD	9/29/2020	Entitlement Phase	NP
37441	Julio Arias	Graham PUD	W of Graham St btw Metz & Weston	33	PUD	In process	Entitlement Phase	AG
37223	Raintree Investments GVSP	GVSP	Watson & Murrieta	258	SFD	In process	Entitlement Phase	NP
37262	Raintree Investments GVSP	GVSP	Ethanac & Goetz	212	SFD	In process	Entitlement Phase	NP
37716	Raintree Investments GVSP	GVSP	730' E of the NW of Goetz & Ethanac	108	PUD	In process	Entitlement Phase	NP
37722	Raintree Investments GVSP	GVSP	NW Green Valley Pkwy & Murrieta Rd	104	SF	In process	Entitlement Phase	NP
37803	UCI Prop		SWC Metz & A St	145	SFD	In process	Entitlement Phase (submitted 2019.8)	NP
37817	Raintree Investments GVSP	GVSP	NEC of GV Pky & Ethanac 1,500' N of Etha	228	PUD	In process	Entitlement Phase	NP
37818	Raintree Investments GVSP	GVSP	NWC of GV Pky and Ethanac	376	PUD/APT	In process	Entitlement Phase (140 PUD and 236 APT)	NP

**Total 1554 Total Units**



Projects completed

	Commercial	Sq. Ft.	Acreage	Location	Entitlement Status	Status	Case Number(s)	Planner
1	Perris Crossing	387,993	27	E of I-215 btw Watson and Ethanac Rd	Entitled 2006.4.11	Partially completed (2009)	DPR 04-0621	DS
11	DTSP Mixed Use	10,834	1	SW corner of Tenth and D	Entitled 2017.11.5	Grading	DPR 16-00014	BM
12	7-Eleven	3,000	1	NE corner of Ethanac and Case	Entitled 2017.1.18	Completed (November 2018)	CUP 16-05074	NP
13	Autozone	19,000	2	NE corner of Perris Crossing Center	Entitled 2017.10.4	Completed (December 2018)	ADPR 16-05074	DS
5	Partial MTC	10,000	2.4	SE corner of Ethanac and Trumble	Entitled 2017.3.15	Completed 2020	CUP 16-05168	KP
9	Weinerschnitzel	2,000	1	W side of Perris Blvd & S. of Placentia	Entitled 2017.11.15	Completed (October 2019)	CUP 17-05083	DS
10	Behavioral Health Clinic	37,000	4	NW San Jacinto & Redlands	Entitled 2017.7.19	Completed (June 2019)	CUP 16-05189	BM
	<b>Total</b>	<b>469,827</b>						

Projects that have started construction

	Commercial	Sq. Ft.	Acreage	Location	Entitlement Status	Status	Case Number(s)	Planner
6	Perris Common	35,000	5.5	SW corner San Jacinto and Redlands	Entitled 2018.4.10	Vertical construction	MAJ MOD 18-05004	NP
7	Perris Plaza - Build-out	173,000	42	NE of Nuevo and Frontage	Entitled	Vertical construction	MIN MOD 17-05178	NP
	<b>Total</b>	<b>208,000</b>	<b>48</b>					

Project in Plan Check

	Commercial	Sq. Ft.	Acreage	Location	Entitlement Status	Status	Case Number(s)	Planner
3	March Plaza	47,253	8	NW corner of Perris Blvd & Harley Knox	Entitled 2017.3.15	Plan check	CUP 16-05165	DS
	<b>Total</b>	<b>47,253</b>	<b>8</b>					

In Process and Entitled Projects that are Dormant

	Commercial	Sq. Ft.	Acreage	Location	Entitlement Status	Status	Case Number(s)	Planner
	Aldi Market Center	27,000	4.6	West of Perris Blvd and Citrus	Entitled 2020.3.4	Grading	ADPR 19-05039; CUP 1 NP	
	Arco Expansion	3,869	1.4	289 Old Nuevo Road & I-215	Entitled 2015.2.18	Prep for Plan Check	CUP 14-09-0001	DS
14	Cali Express Carwash	5,600	1	NW corner of Ramona and Perris	Entitled 2018.10.18	Prep for Plan Check	CUP 16-05258	DS
2	Quick Quack Carwash	3,600	1	E of Case Rd north of Ethanac Rd	Entitled 2018.7.18	Prep for Plan Check	CUP 18-05045	DS
4	Motte Town Center (MTC)	484,300	59	SE corner of Ethanac and Trumble	Entitled 2008.5.13	Dormant	DPR 06-0337	DS
8	Perris Venue	643,000	68	SE corner of San Jacinto and Redlands	Entitled 2009.8.13	Dormant	DPR 08-04-0015	KP
	Gas Station & Carwash	7,000	1.8	4th St and Navajo Rd	Submitted 2019.11.13	In process	CUP 19-05295	AG
	Commercial Retail - Spectrum	7,400	2	W of Perris Blvd north of Orange	Submitted 2019.11.18	In process	CUP 19-05301	AG
	Tommy's carwash	8,500		E. side of Perris Blvd	Submitted 2020.12.23	In process	CUP 20-05217	RG
	Pharmacy	15,000	1.3	S. side of 4th St west of Park St	Submitted 2021.1.7	In process	DPR 20-00022	AG
	<b>Total</b>	<b>1,205,269</b>						

**PVCC SP - Projects Completed**

Industrial Projects	Sq. Ft.	Acreage	Location	Entitlement Status	Status	Case Number(s)	Planner
BI (Bargemann Industrial)	173,000	9	Btw Harely Knox & Nance W of Webster	Entitled 2008.11.25	Completed (April 2018)	DPR 07-09-0018	KP
Circle Industrial	600,000	31	NW corner of Markham & Redlands	Entitled 2013.11.12	Completed (March 2017)	DPR 13-02-00005	NP
Circle Industrial III	211,000	10	NW corner of Nance & Redlands	Entitled 2018.10.17	Complete (2020)	DPR 17-00006	NP
Duke 2 (Forever 21)	669,000	31	SE corner of Indian & Markham	Entitled 2017.10.18	Completed (April 2019)	DPR 16-00008	NP
Duke @ Perris Blvd	1,070,000	54	E of Perris Blvd btw Markham & Perry	Entitled 2017.8.28	Completed (August 2020)	DPR 17-00002 & CUP 1CP	
First Perry	240,000	11	SW corner of Perry & Redlands	Entitled 2017.11.15	Completed (December 2019)	DPR 16-00013	NP
Gateway	400,000	22	SE corner of I-215 & Harley Knox	Entitled 2017.1.31	Completed (December 2018)	DPR 16-00003	KP
General Mills	1,600,000	70	Btw Markham and Ramona W of Indian	Entitled 2009.12.8	Completed (November 2016)	DPR 07-07-0029	KP
Home Depot (IDI)	1,750,000	90	Btw Nance & Markham W of Perris Blvd	Entitled	Completed (March 2014)	DPR 05-0113	
Home Depot (SR)	1,700,000	91	E of Redlands north of Perry	Entitled 2012.11.27	Completed (May 2017)	DPR 11-12-0004	
Indian Palms	39,000	2	W of Indian bt Rider and Walnut	Entitled 2016.1.31	Completed (2009)	DPR 05-0285	
Integra	864,000	43	Btw Markham & Nance E of Webster	Entitled 2015.1.27	Completed (December 2018)	DPR 14-02-0014	DS
Lowes	1,200,000	120	Btw Ramona & Morgan W of Indian	Entitled	Completed (2001)	DPR 99-0167	
Markham East	460,000	22	NW corner of Redlands & Perry	Entitled 2007.6.20	Completed	DPR 05-0477	
OLC 1	1,455,000	69	NW corner of Webster & Ramona	Entitled 2016.1.12	Completed (December 2018)	DPR 12-10-0005	KP
OLC 2 (H&M)	1,037,000	49	NE corner of Patterson & Markham	Entitled 2016.1.12	Completed (December 2019)	DPR 14-01-0015	KP
Phelan Indus	81,000	4	N. Side of Markham btw Webster & Perris	Entitled 2017.10.10	Complete (2020)	ADPR 16-05202	NP
Ridge (Fallas & Hanes)	1,900,000	90	NW corner of Perris & Morgan	Entitled 2007.3.27	Completed (2012)	DPR 05-0493	
Rider 1	350,000	16	SW corner of Rider & Redlands	Entitled 2007.6.20	Completed (2020)	DPR 06-0365	KP
Rider 3	640,000	30	NW corner of Rider & Redlands	Entitled 2009.3.31	Completed (2020)	DPR 06-0432	KP
Ross (Oakmont 2)	700,000	37	SW corner of Perris & Markham	Entitled 2007.3.27	Completed (2013)	DPR 05-0192	
Ross	1,600,000	83	SW corner of Indian & Morgan	Entitled date ?	Completed (2002)	?	
Wayfair (Duke 1)	2,000,000	96	NE corner of Indian & Rider	Entitled 2009.8.25	Completed (October 2017)	DPR 06-0417	DS
Western Brass	494,000	24	NE corner of Harley Knox and Indian	Entitled 2004.7.3	Completed (2007)	DPR 03-0388	KP
Whirlpool (IDS)	1,700,000	80	NE corner of Perris & Morgan	Entitled 2005.8.17	Completed (2006)	DPR 04-0464	
<b>Total</b>	<b>22,933,000</b>	<b>1,184</b>					

**PVCC SP - Projects that have started construction**

Industrial Projects	Sq. Ft.	Acreage	Location	Entitlement Status	Status	Case Number(s)	
AAA	2,000	10	SE Corner of Harley Knox & Webster	Entitled 2018.3.7	Vertical Constructin	DPR 16-00012	
Burge Indus 1	18,000	2.5	E. of Perris Blvd. & N of Commerce Dr	Entitled 2019.8.7	Vertical Constructin	DPR 18-00001	CP
Burge Indus 2	19,000	3	E. Perris Blvd. and S of Commerce Dr	Entitled 2019.8.7	Vertical Constructin	DPR 18-00007	CP
Duke @ Patterson	811,000	37	SE corner of Patterson & Markham	Entitled 2019.1.29	Vertical Constructin	DPR 17-00001	KP
MI (Markham Industrial)	170,000	9	NE corner of Indian & Markham	Entitled 2017.8.16	Vertical Constructin	DPR 16-00015	KP
Pulliam Indus	16,000	0.5	Lots 10 & 12 on Commerce Dr, E of Perris	Entitled 2018.6.20	Vertical Constructin	DPR 17-00007 & 9	CP
Western Ind	250,000	25	E. Side of Western Way & City limits	Entitled 2019.12.18	Grading	DPR 19-00003	NP
<b>Total</b>	<b>1,286,000</b>	<b>86.6</b>					

**PVCC SP - Projects in Plan Check**

Industrial Projects	Sq. Ft.	Acreage	Location	Entitlement Status	Status	Case Number(s)	
Canyon Steel (CS)	25,000	4	NWC of Patterson and California	Entitled 2019.2.20	Plan Check	DPR 18-00006	KP
Duke @ Perry	144,000	7	SE Corner of Perry and Barrett	Entitled 2019.11.6	Plan check	DPR 18-00011	CP
IDI @ Ramona	426,000	24	NW corner of Ramona and Indian	Entitled 2019.11.20	Plan check	DPR 18-00002	CP
IDI - Site 3	2,300,000	217	NE corner of Redlands and Ellis	Entitled 2010.7.13	Plan Check	DPR 08-01-0007	DS/CP
WT (Westcoast Textile)	180,000	9	SW corner of Indian & Nance	Entitled 2016.7.20	Plan check	DPR 16-00001	KP
Rados	1,200,000	83	SW corner of Rider & Indian	Entitled 2011.7.12	Plan Check	MMOD 18-05204; DPRNP	
<b>Total</b>	<b>4,275,000</b>	<b>344</b>					

**PVCC SP - In Process and Entitled Projects**

Industrial Projects	Sq. Ft.	Acreage	Location	Entitlement Status	Status	Case Number(s)	
<b>Integra - Expansion (IT-E)</b>	<b>273,000</b>	<b>10</b>	<b>NE corner of Markham and Webster</b>	<b>Entitled 2019.4.17</b>	<b>In process</b>	<b>MMOD 17-05075</b>	<b>DS</b>
Marijuana Manufacturing (MM)	1,000	0.5	NW corner of Webster and Washington	Not entitled	In process	DPR 18-00008	MD
Rider 2 & 4	1,373,000	73	NE corner of Rider & Redlands	Not entitled	In process	DPR 19-00004	MB
Walnut Indu	205,000	11	N. Side Walnut St, btw Indian & Barnett	Not entitled	In process	DPR 19-00014	MD
Truck Terminal	0	9.5	N. side of Markham & E of Perris Blvd	Not entitled	In process	CUP 20-05100	AG
Expressway Industrial	347,000	16	SW corner of Ramona and Perris	Not entitled	In process	DPR 19-00012	AG
C5 Rental	17,400	15.6	4783 Wade Avenue	Not entitled	In process	CUP 19-05128	AG
First Indus (Goodwin)	338,000	15	SE Corner of Rider and Redlands	Not entitled	In process	DPR 19-00016	AG
Patriot Ind	286,000	15	SW Perris and Morgan	Not entitled (9/29/20)	In process	DPR 20-00013	CP
Wilson Ind	303,000	16	E. Side of Wilson S. of Rider St	Not entitled	In process	DPR 19-00007	AG
Wilson Ind	248,000		SW corner of Rider and Wilson	Not entitled (8/26/20)	In process	DPR 20-00011	CP
Natwar Ind	420,000	23	W. Side of Natwar 300' N. of Nandina	Not entitled	In process	DPR 20-00004	NP
Natwar Ind Truck Lot	0	5	E. Side of Natwar. 300' N. of Nandina	Not entitled	In process	DPR 20-00009	CP
Serrao Ind	3,500	0.17	N. Side of Nance Street 660' E. of Webster	Not entitled	In process	DPR 20-00010	RG
Lakecreek East	256,000	11	E. Side of Redlands S. of Rider St	Not entitled (1/7/21)	In process	DPR 20-00021	CP
Lakecreek West	300,000	20	W. Side of Reldands S. of Rider St	Not entitled (1/7/21)	In process	DPR 20-00020	CP
<b>Total</b>	<b>4,370,900</b>						

**1 South Perris - In Process and Entitled Projects**

Industrial Projects	Sq. Ft.	Acreage	Location	Entitlement Status	Status	Case Number(s)	
4 IDI - Site 1	784,000	36	SW corner of Mountain & Goetz	Entitled 2010.7.13	Dormant	DPR 07-0130	DS
5 IDI - Site 2	3,448,734	205	SW of Mapes and Goetz	Entitled 2010.7.13	Dormant	DPR 08-04-0006	DS
6 Marijuana Manufacturing	50,000	2	N. side of Malbert St & W. of Goetz Rd	Not entitled	In process	DPR 18-00005	MB
7 Marijuana Manufacturing	12,000	1	S. side of Illinois & E. I-215 Freeway	Not entitled	In process	DPR 18-00004	
Marijuana Manufacturing/Cul	30,000	6	N. side of Mapes btw Goetz & Alpine	Not entitled	In process	DPR 18-00010	
Perez Indus	2,500	0.5	E. side of G St N of Case Rd	Entitled 2018.12.19	In process	DPR 16-00016	
<b>Total</b>	<b>4,327,234</b>						



**APPENDIX C**

**VOLUME COUNT WORKSHEETS**

# INTERSECTION TURNING MOVEMENT COUNTS

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

DATE:  
Wed, May 26, 21

LOCATION:  
NORTH & SOUTH:  
EAST & WEST:

Perris  
Redlands  
Rider

PROJECT #:  
LOCATION #:  
CONTROL:

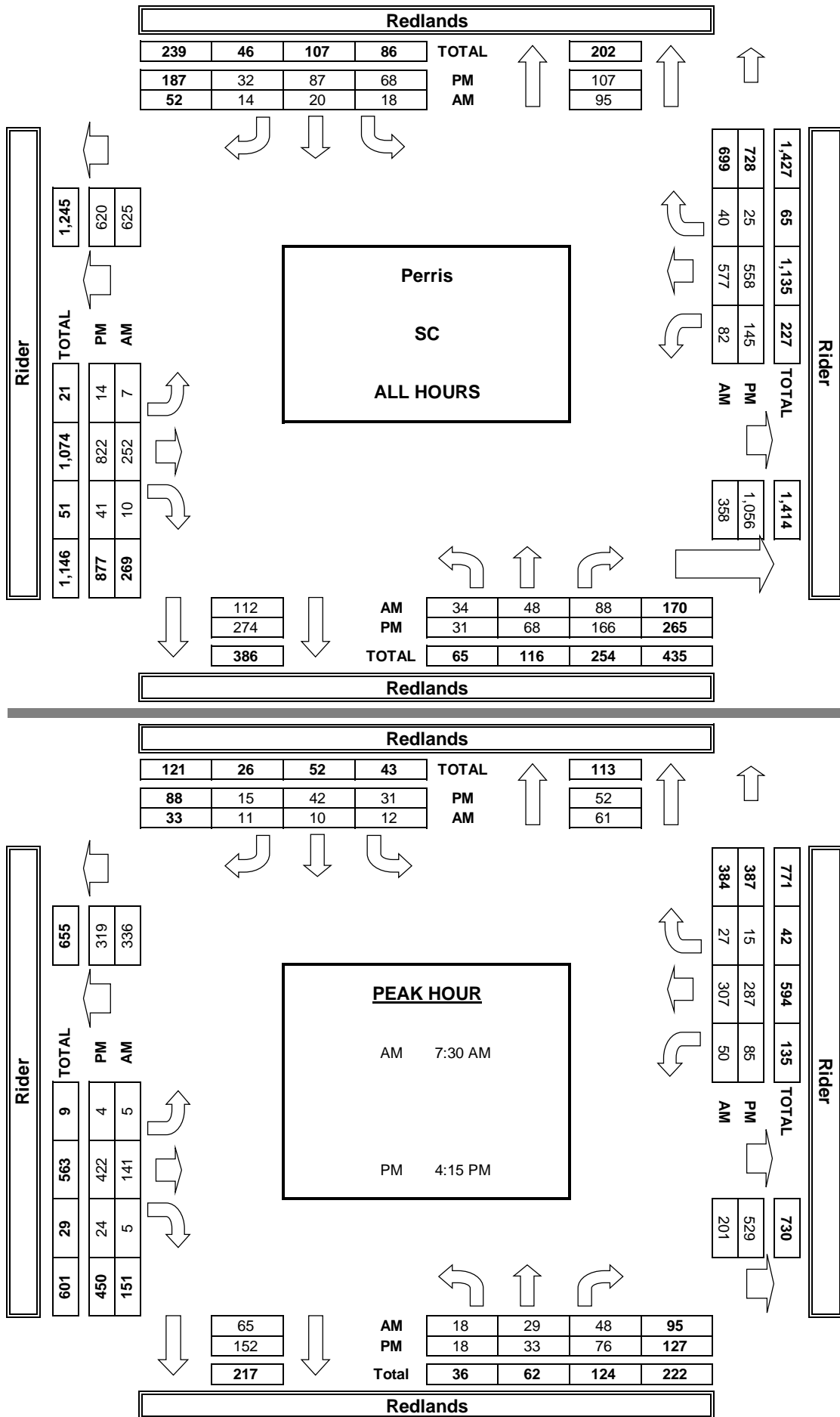
SC  
1  
SIGNAL

NOTES:	AM		▲	
	PM		N	
	MD	◀ W		E ▶
	OTHER		S	
	OTHER		▼	

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Redlands			Redlands			Rider			Rider			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	1	1	1	1	1	1	1	1	1	1	2	0	

AM	7:00 AM	5	4	8	1	0	1	0	18	1	3	69	3	113
	7:15 AM	1	9	14	1	1	0	1	28	0	9	73	2	139
	7:30 AM	3	8	19	3	0	1	0	41	0	14	81	8	178
	7:45 AM	6	10	8	3	2	7	0	25	3	13	85	9	171
	8:00 AM	6	4	8	4	4	1	2	40	1	14	67	8	159
	8:15 AM	3	7	13	2	4	2	3	35	1	9	74	2	155
	8:30 AM	7	3	5	3	6	2	1	34	1	8	60	5	135
	8:45 AM	3	3	13	1	3	0	0	31	3	12	68	3	140
	VOLUMES	34	48	88	18	20	14	7	252	10	82	577	40	1,190
	APPROACH %	20%	28%	52%	35%	38%	27%	3%	94%	4%	12%	83%	6%	
	APP/DEPART	170	/	95	52	/	112	269	/	358	699	/	625	0
PM	BEGIN PEAK HR	7:30 AM												
	VOLUMES	18	29	48	12	10	11	5	141	5	50	307	27	663
	APPROACH %	19%	31%	51%	36%	30%	33%	3%	93%	3%	13%	80%	7%	
	PEAK HR FACTOR	0.792			0.688			0.878			0.897			0.931
	APP/DEPART	95	/	61	33	/	65	151	/	201	384	/	336	0
	4:00 PM	5	10	18	13	9	2	3	89	7	15	61	4	236
	4:15 PM	7	7	21	7	11	4	1	101	5	22	82	3	271
	4:30 PM	4	6	17	8	9	1	0	93	6	24	70	3	241
	4:45 PM	2	11	20	10	11	5	1	114	7	21	69	3	274
	5:00 PM	5	9	18	6	11	5	2	114	6	18	66	6	266
	5:15 PM	4	10	24	7	12	7	3	99	4	12	78	2	262
	5:30 PM	2	10	27	5	10	4	4	102	3	14	64	0	245
	5:45 PM	2	5	21	12	14	4	0	110	3	19	68	4	262
	VOLUMES	31	68	166	68	87	32	14	822	41	145	558	25	2,057
	APPROACH %	12%	26%	63%	36%	47%	17%	2%	94%	5%	20%	77%	3%	
	APP/DEPART	265	/	107	187	/	274	877	/	1,056	728	/	620	0
	BEGIN PEAK HR	4:15 PM												
	VOLUMES	18	33	76	31	42	15	4	422	24	85	287	15	1,052
	APPROACH %	14%	26%	60%	35%	48%	17%	1%	94%	5%	22%	74%	4%	
	PEAK HR FACTOR	0.907			0.846			0.922			0.904			0.960
	APP/DEPART	127	/	52	88	/	152	450	/	529	387	/	319	0

**AimTD LLC**  
TURNING MOVEMENT COUNTS



# INTERSECTION TURNING MOVEMENT COUNTS

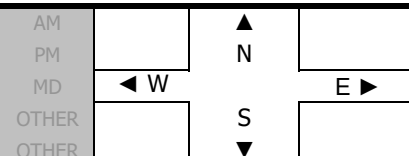
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:  
Wed, May 26, 21

LOCATION:  
NORTH & SOUTH: Perris  
EAST & WEST: Redlands  
Placentia

PROJECT #: SC  
LOCATION #: 2  
CONTROL: STOP ALL

NOTES:

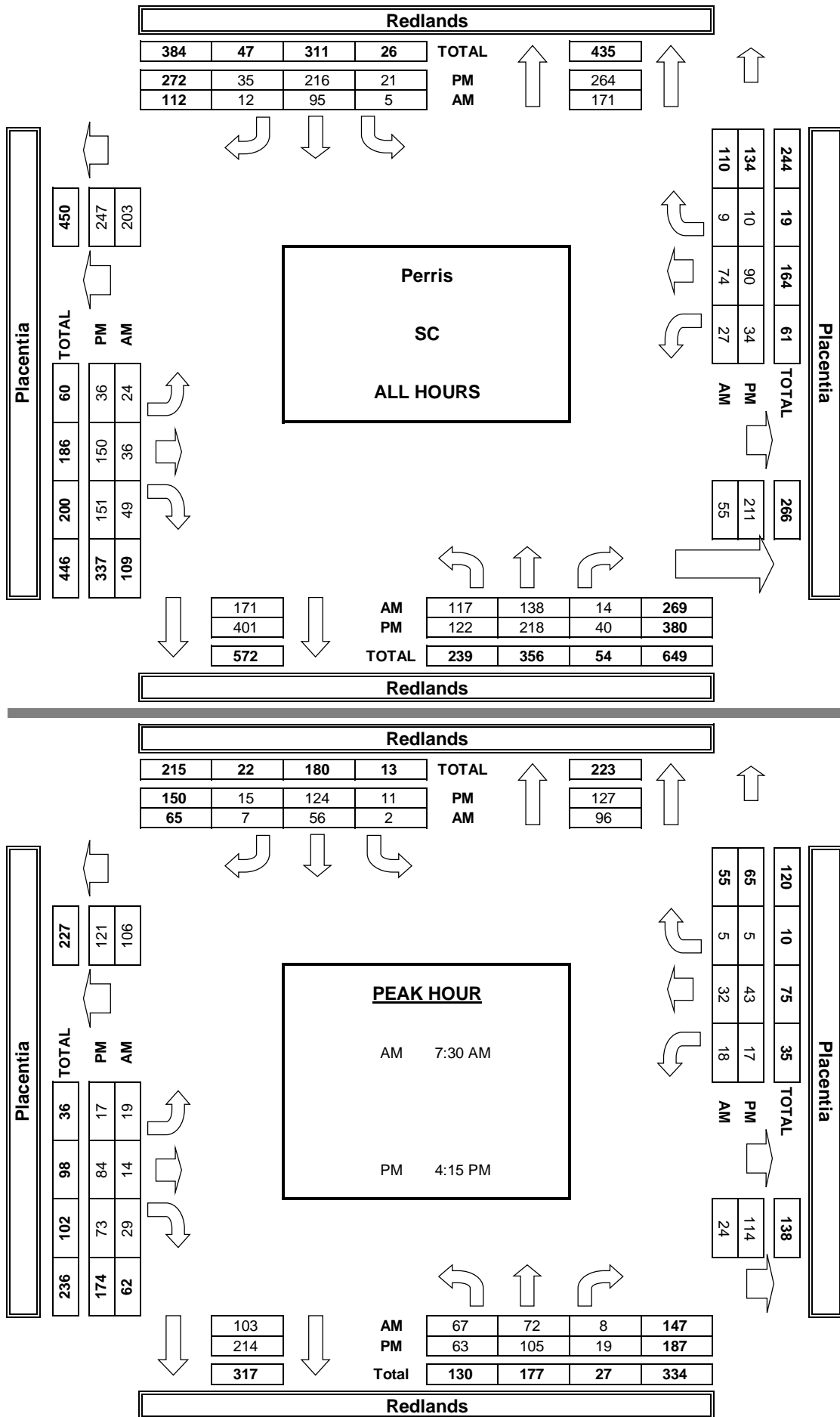


	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	Redlands			Redlands			Placentia			Placentia			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	1	1.5	0.5	1	1	1	1	1	1	1	1	0	

AM	7:00 AM	18	17	0	0	5	0	1	2	3	1	13	0	60
	7:15 AM	11	21	2	0	11	0	0	4	4	2	8	2	65
	7:30 AM	20	23	1	0	13	2	8	1	8	4	7	0	87
	7:45 AM	11	20	2	1	16	1	4	4	11	5	11	1	87
	8:00 AM	15	13	4	0	15	2	3	7	6	4	7	2	78
	8:15 AM	21	16	1	1	12	2	4	2	4	5	7	2	77
	8:30 AM	11	13	4	0	10	3	0	9	3	3	13	1	70
	8:45 AM	10	15	0	3	13	2	4	7	10	3	8	1	76
	VOLUMES	117	138	14	5	95	12	24	36	49	27	74	9	600
	APPROACH %	43%	51%	5%	4%	85%	11%	22%	33%	45%	25%	67%	8%	
PM	APP/DEPART	269	/	171	112	/	171	109	/	55	110	/	203	0
	BEGIN PEAK HR	7:30 AM												
	VOLUMES	67	72	8	2	56	7	19	14	29	18	32	5	329
	APPROACH %	46%	49%	5%	3%	86%	11%	31%	23%	47%	33%	58%	9%	
	PEAK HR FACTOR	0.835			0.903			0.816			0.809			0.945
	APP/DEPART	147	/	96	65	/	103	62	/	24	55	/	106	0
	4:00 PM	14	25	6	2	22	7	4	14	19	3	10	0	126
	4:15 PM	12	30	3	1	32	4	4	22	18	4	10	1	141
	4:30 PM	15	20	6	5	30	4	7	21	21	2	6	0	137
	4:45 PM	17	28	6	3	34	5	3	19	12	6	16	1	150
PM	5:00 PM	19	27	4	2	28	2	3	22	22	5	11	3	148
	5:15 PM	20	29	1	3	22	6	7	17	18	4	11	2	140
	5:30 PM	13	35	8	2	22	1	6	16	18	6	8	1	136
	5:45 PM	12	24	6	3	26	6	2	19	23	4	18	2	145
	VOLUMES	122	218	40	21	216	35	36	150	151	34	90	10	1,123
	APPROACH %	32%	57%	11%	8%	79%	13%	11%	45%	45%	25%	67%	7%	
	APP/DEPART	380	/	264	272	/	401	337	/	211	134	/	247	0
	BEGIN PEAK HR	4:15 PM												
	VOLUMES	63	105	19	11	124	15	17	84	73	17	43	5	576
	APPROACH %	34%	56%	10%	7%	83%	10%	10%	48%	42%	26%	66%	8%	
	PEAK HR FACTOR	0.917			0.893			0.888			0.707			0.960
	APP/DEPART	187	/	127	150	/	214	174	/	114	65	/	121	0



**AimTD LLC**  
TURNING MOVEMENT COUNTS



**APPENDIX D**

**LEVEL OF SERVICE WORKSHEETS**

**EXISTING**

Redlands Avenue East Industrial Project

Vistro File: C:\...\AME.vistro  
Report File: C:\...\AME.pdf

Scenario 1 Existing AM Peak Hour  
7/23/2021

**Intersection Analysis Summary**

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Redlands Ave (NS) at Rider St (EW)	Signalized	HCM 6th Edition	EB Left	0.186	26.5	C
5	Redlands Ave (NS) at Placentia Ave (EW)	All-way stop	HCM 6th Edition	NB Left	0.102	8.2	A

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



**Intersection Level Of Service Report****Intersection 1: Redlands Ave (NS) at Rider St (EW)**

Control Type:	Signalized	Delay (sec / veh):	26.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.186

**Intersection Setup**

Name	Northbound			Southbound			Eastbound			Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Northbound			Southbound			Eastbound			Westbound		
Base Volume Input [veh/h]	18	29	48	12	10	11	5	141	5	50	307	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	29	48	12	10	11	5	141	5	50	307	27
Peak Hour Factor	0.9310	0.9310	0.9310	0.9310	0.9310	0.9310	0.9310	0.9310	0.9310	0.9310	0.9310	0.9310
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	8	13	3	3	3	1	38	1	13	82	7
Total Analysis Volume [veh/h]	19	31	52	13	11	12	5	151	5	54	330	29
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	120	120	0	120	120	0	120	120	0	120	120	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	21	0	11	21	0	12	22	0	11	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	65	65	65	65	65	65	65	65	65	65	65	65
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	37	37	1	36	36	1	7	7	4	10	10
g / C, Green / Cycle	0.03	0.57	0.57	0.02	0.56	0.56	0.01	0.10	0.10	0.06	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.01	0.02	0.03	0.01	0.01	0.01	0.00	0.08	0.00	0.03	0.09	0.09
s, saturation flow rate [veh/h]	1781	1870	1589	1781	1870	1589	1781	1870	1589	1781	1870	1818
c, Capacity [veh/h]	56	1057	898	40	1040	884	19	190	161	117	293	285
d1, Uniform Delay [s]	30.90	6.26	6.36	31.37	6.46	6.47	32.02	28.48	26.41	29.28	25.48	25.51
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.29	0.05	0.11	4.19	0.02	0.03	7.65	5.87	0.08	2.47	1.79	1.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.32	0.03	0.05	0.30	0.01	0.01	0.27	0.74	0.03	0.43	0.58	0.58
d, Delay for Lane Group [s/veh]	34.19	6.31	6.47	35.57	6.48	6.50	39.67	34.35	26.49	31.75	27.28	27.40
Lane Group LOS	C	A	A	D	A	A	D	C	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.31	0.15	0.26	0.22	0.05	0.06	0.11	2.25	0.07	0.77	2.31	2.28
50th-Percentile Queue Length [ft/ln]	7.83	3.83	6.55	5.56	1.35	1.51	2.79	56.15	1.68	19.17	57.83	57.00
95th-Percentile Queue Length [veh/ln]	0.56	0.28	0.47	0.40	0.10	0.11	0.20	4.04	0.12	1.38	4.16	4.10
95th-Percentile Queue Length [ft/ln]	14.10	6.89	11.79	10.02	2.43	2.72	5.01	101.06	3.02	34.51	104.09	102.60

**Movement, Approach, & Intersection Results**

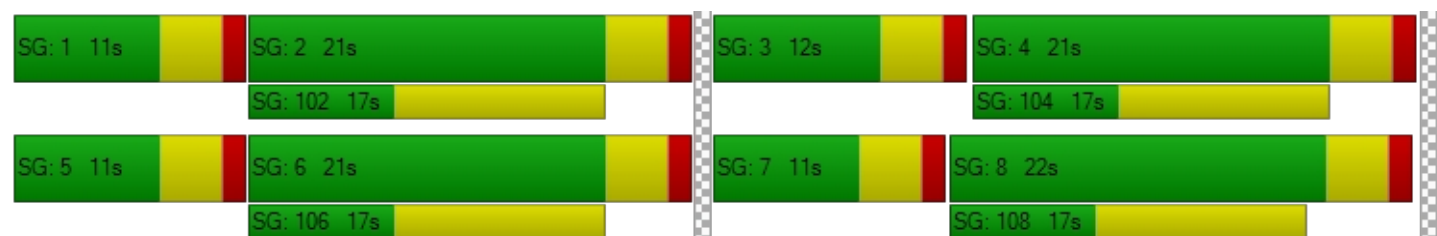
d_M, Delay for Movement [s/veh]	34.19	6.31	6.47	35.57	6.48	6.50	39.67	34.35	26.49	31.75	27.33	27.40
Movement LOS	C	A	A	D	A	A	D	C	C	C	C	C
d_A, Approach Delay [s/veh]	11.67			17.06			34.27			27.91		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	26.49											
Intersection LOS	C											
Intersection V/C	0.186											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	22.43			22.43			22.43			22.43		
I_p,int, Pedestrian LOS Score for Intersection	2.159			2.140			2.424			2.327		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	523			523			554			523		
d_b, Bicycle Delay [s]	17.72			17.72			16.99			17.72		
I_b,int, Bicycle LOS Score for Intersection	1.716			1.614			1.809			1.876		
Bicycle LOS	A			A			A			A		

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 5: Redlands Ave (NS) at Placentia Ave (EW)**

Control Type:	All-way stop	Delay (sec / veh):	8.2
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.102

**Intersection Setup**

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name												
Base Volume Input [veh/h]	67	72	8	2	56	7	19	14	29	18	32	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	67	72	8	2	56	7	19	14	29	18	32	5
Peak Hour Factor	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	19	2	1	15	2	5	4	8	5	8	1
Total Analysis Volume [veh/h]	71	76	8	2	59	7	20	15	31	19	34	5
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings****Lanes**

Capacity per Entry Lane [veh/h]	655	721	742	638	700	810	632	692	799	630	702
Degree of Utilization, x	0.10	0.06	0.05	0.00	0.08	0.01	0.03	0.02	0.04	0.03	0.05

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.34	0.18	0.17	0.01	0.26	0.03	0.09	0.06	0.11	0.09	0.17
95th-Percentile Queue Length [ft]	8.53	4.40	4.27	0.24	6.52	0.65	2.32	1.55	2.82	2.21	4.17
Approach Delay [s/veh]	8.32			8.17			7.88			8.27	
Approach LOS	A			A			A			A	
Intersection Delay [s/veh]	8.20										
Intersection LOS	A										

Redlands Avenue East Industrial Project

Vistro File: C:\...\PME.vistro  
Report File: C:\...\PME.pdf

Scenario 1 Existing PM Peak Hour  
7/23/2021

**Intersection Analysis Summary**

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Redlands Ave (NS) at Rider St (EW)	Signalized	HCM 6th Edition	EB Left	0.449	23.7	C
5	Redlands Ave (NS) at Placentia Ave (EW)	All-way stop	HCM 6th Edition	SB Thru	0.192	9.0	A

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

**Intersection Level Of Service Report****Intersection 1: Redlands Ave (NS) at Rider St (EW)**

Control Type:	Signalized	Delay (sec / veh):	23.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.449

**Intersection Setup**

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name												
Base Volume Input [veh/h]	18	33	76	31	42	15	4	422	24	85	287	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	33	76	31	42	15	4	422	24	85	287	15
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	9	20	8	11	4	1	110	6	22	75	4
Total Analysis Volume [veh/h]	19	34	79	32	44	16	4	440	25	89	299	16
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	120	120	0	120	120	0	120	120	0	120	120	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	21	0	11	21	0	12	22	0	11	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	65	65	65	65	65	65	65	65	65	65	65	65
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	24	24	3	25	25	1	17	17	6	22	22
g / C, Green / Cycle	0.03	0.37	0.37	0.05	0.38	0.38	0.01	0.25	0.25	0.09	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.01	0.02	0.05	0.02	0.02	0.01	0.00	0.23	0.02	0.05	0.08	0.08
s, saturation flow rate [veh/h]	1781	1870	1589	1781	1870	1589	1781	1870	1589	1781	1870	1838
c, Capacity [veh/h]	56	690	587	85	721	613	15	471	400	153	615	605
d1, Uniform Delay [s]	30.90	13.21	13.63	30.08	12.59	12.43	32.12	23.57	18.53	28.61	15.97	15.98
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.29	0.13	0.46	2.60	0.15	0.07	8.91	6.89	0.06	3.16	0.21	0.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.32	0.05	0.13	0.36	0.06	0.02	0.26	0.90	0.06	0.56	0.25	0.25
d, Delay for Lane Group [s/veh]	34.19	13.34	14.09	32.69	12.75	12.50	41.03	30.46	18.60	31.77	16.18	16.19
Lane Group LOS	C	B	B	C	B	B	D	C	B	C	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.31	0.30	0.74	0.51	0.38	0.13	0.10	6.31	0.25	1.29	1.45	1.43
50th-Percentile Queue Length [ft/ln]	7.83	7.61	18.45	12.68	9.38	3.35	2.39	157.87	6.22	32.32	36.16	35.79
95th-Percentile Queue Length [veh/ln]	0.56	0.55	1.33	0.91	0.68	0.24	0.17	10.44	0.45	2.33	2.60	2.58
95th-Percentile Queue Length [ft/ln]	14.10	13.70	33.21	22.82	16.89	6.03	4.30	260.89	11.20	58.17	65.08	64.43

**Movement, Approach, & Intersection Results**

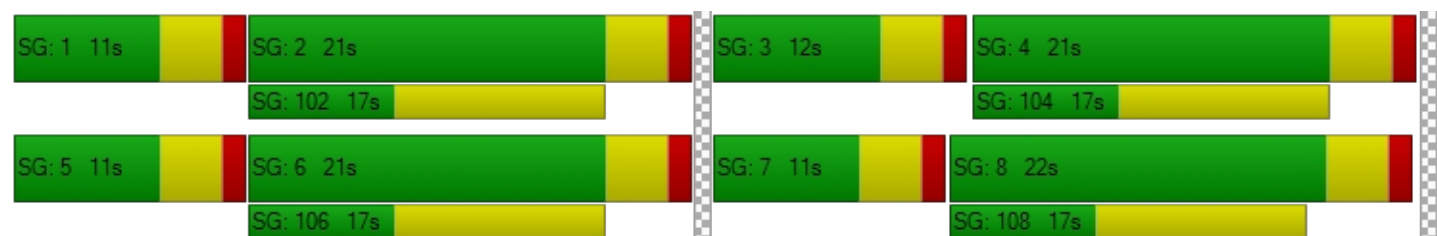
d_M, Delay for Movement [s/veh]	34.19	13.34	14.09	32.69	12.75	12.50	41.03	30.46	18.60	31.77	16.19	16.19
Movement LOS	C	B	B	C	B	B	D	C	B	C	B	B
d_A, Approach Delay [s/veh]	16.74			19.73			29.92			19.61		
Approach LOS	B			B			C			B		
d_I, Intersection Delay [s/veh]	23.69											
Intersection LOS	C											
Intersection V/C	0.449											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	22.43			22.43			22.43			22.43		
I_p,int, Pedestrian LOS Score for Intersection	2.192			2.153			2.507			2.448		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	523			523			554			523		
d_b, Bicycle Delay [s]	17.72			17.72			16.99			17.72		
I_b,int, Bicycle LOS Score for Intersection	1.769			1.705			2.302			1.879		
Bicycle LOS	A			A			B			A		

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 5: Redlands Ave (NS) at Placentia Ave (EW)**

Control Type:	All-way stop	Delay (sec / veh):	9.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.192

**Intersection Setup**

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name												
Base Volume Input [veh/h]	63	105	19	11	124	15	17	84	73	17	43	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	63	105	19	11	124	15	17	84	73	17	43	5
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	27	5	3	32	4	4	22	19	4	11	1
Total Analysis Volume [veh/h]	66	109	20	11	129	16	18	88	76	18	45	5
Pedestrian Volume [ped/h]	0			0			0			0		



**Intersection Settings****Lanes**

Capacity per Entry Lane [veh/h]	598	652	678	594	647	739	595	648	740	576	634
Degree of Utilization, x	0.11	0.10	0.09	0.02	0.19	0.02	0.03	0.13	0.10	0.03	0.08

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.35	0.31	0.30	0.06	0.71	0.06	0.09	0.45	0.33	0.09	0.25
95th-Percentile Queue Length [ft]	8.82	7.87	7.54	1.42	17.75	1.55	2.21	11.16	8.20	2.28	6.14
Approach Delay [s/veh]	8.93			9.35			8.66			8.92	
Approach LOS	A			A			A			A	
Intersection Delay [s/veh]	8.95										
Intersection LOS	A										

## EXISTING PLUS PROJECT

Vistro File: Z:\...\AME.vistro  
Report File: Z:\...\AMEP.pdf

Scenario 2 Existing Plus Project AM Peak Hour  
1/4/2022

### Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Redlands Ave (NS) at Rider St (EW)	Signalized	HCM 6th Edition	EB Left	0.189	25.7	C
2	Redlands Ave (NS) at Project North Dwy (EW)	Two-way stop	HCM 6th Edition	WB Right	0.003	8.6	A
3	Redlands Ave (NS) at Project Central Dwy (EW)	Two-way stop	HCM 6th Edition	WB Right	0.007	8.7	A
4	Redlands Ave (NS) at Project South Dwy (EW)	Two-way stop	HCM 6th Edition	WB Right	0.000	8.6	A
5	Redlands Ave (NS) at Placentia Ave (EW)	All-way stop	HCM 6th Edition	NB Left	0.103	8.3	A

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

**Intersection Level Of Service Report****Intersection 1: Redlands Ave (NS) at Rider St (EW)**





Control Type:  
Analysis Method:  
Analysis Period:

Signalized  
HCM 6th Edition  
1 hour

Delay (sec / veh):  
Level Of Service:  
Volume to Capacity (v/c):

25.7  
C  
0.189

**Intersection Setup**

Name													
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00				35.00			45.00			45.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	Yes				Yes			Yes			Yes		

**Volumes**

Name													
Base Volume Input [veh/h]	0	18	29	48	12	10	11	5	141	5	50	307	27
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	1	5	1	0	17	0	0	0	6	3	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	19	34	49	12	27	11	5	141	11	53	307	27
Peak Hour Factor	1.000	0.931	0.931	0.931	0.9310	0.9310	0.9310	0.9310	0.9310	0.9310	0.9310	0.9310	0.9310
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	5	9	13	3	7	3	1	38	3	14	82	7
Total Analysis Volume [veh/h]	3	20	37	53	13	29	12	5	151	12	57	330	29
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups													
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	0	120	120	0	120	120	0	120	120	0	120	120	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	11	21	0	11	21	0	12	22	0	11	21	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No	No		No	No		No	No		No	No	
Maximum Recall		No	No		No	No		No	No		No	No	
Pedestrian Recall		No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	65	65	65	65	65	65	65	65	65	65	65	65
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	37	37	1	36	36	1	7	7	4	10	10
g / C, Green / Cycle	0.04	0.56	0.56	0.02	0.55	0.55	0.01	0.10	0.10	0.07	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.01	0.02	0.03	0.01	0.01	0.01	0.00	0.08	0.01	0.03	0.09	0.09
s, saturation flow rate [veh/h]	1781	1870	1589	1781	1870	1589	1781	1870	1589	1781	1870	1818
c, Capacity [veh/h]	66	1051	893	40	1024	870	19	191	163	121	299	291
d1, Uniform Delay [s]	30.62	6.37	6.45	31.37	6.78	6.72	32.02	28.42	26.46	29.19	25.29	25.32
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.97	0.06	0.12	4.19	0.05	0.03	7.65	5.64	0.17	2.49	1.68	1.77
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.33	0.03	0.05	0.30	0.03	0.01	0.27	0.74	0.07	0.44	0.56	0.57
d, Delay for Lane Group [s/veh]	33.59	6.43	6.57	35.57	6.82	6.75	39.67	34.06	26.63	31.68	26.97	27.09
Lane Group LOS	C	A	A	D	A	A	D	C	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.37	0.18	0.27	0.22	0.15	0.06	0.11	2.23	0.15	0.81	2.30	2.26
50th-Percentile Queue Length [ft/ln]	9.33	4.56	6.77	5.56	3.79	1.56	2.79	55.84	3.71	20.26	57.40	56.57
95th-Percentile Queue Length [veh/ln]	0.67	0.33	0.49	0.40	0.27	0.11	0.20	4.02	0.27	1.46	4.13	4.07
95th-Percentile Queue Length [ft/ln]	16.79	8.20	12.18	10.02	6.82	2.80	5.01	100.52	6.67	36.47	103.32	101.82

**Movement, Approach, & Intersection Results**

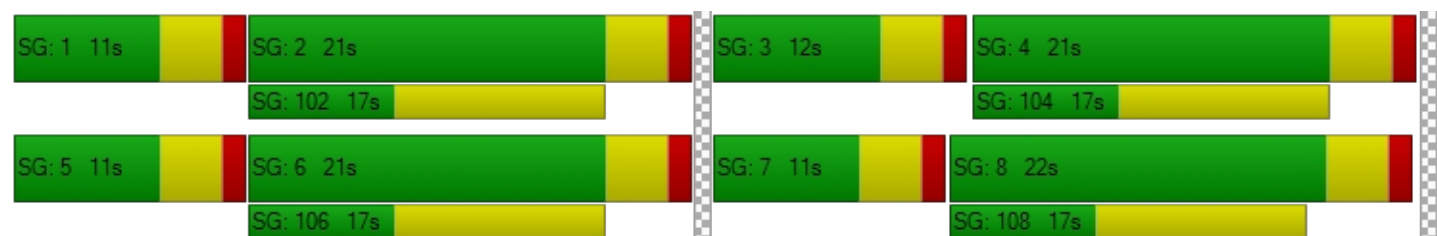
d_M, Delay for Movement [s/veh]	33.59	33.59	6.43	6.57	35.57	6.82	6.75	39.67	34.06	26.63	31.68	27.02	27.09
Movement LOS	C	C	A	A	D	A	A	D	C	C	C	C	C
d_A, Approach Delay [s/veh]	12.19				13.71			33.72			27.67		
Approach LOS	B				B			C			C		
d_I, Intersection Delay [s/veh]	25.70												
Intersection LOS	C												
Intersection V/C	0.189												

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0				11.0				11.0				11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00				0.00				0.00				0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00				0.00				0.00				0.00
d_p, Pedestrian Delay [s]	22.43				22.43				22.43				22.43
I_p,int, Pedestrian LOS Score for Intersection	2.169				2.146				2.426				2.328
Crosswalk LOS	B				B				B				B
s_b, Saturation Flow Rate of the bicycle lane	2000				2000				2000				2000
c_b, Capacity of the bicycle lane [bicycles/h]	523				523				554				523
d_b, Bicycle Delay [s]	17.72				17.72				16.99				17.72
I_b,int, Bicycle LOS Score for Intersection	1.728				1.642				1.819				1.879
Bicycle LOS	A				A				A				A

**Sequence**





Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report****Intersection 2: Redlands Ave (NS) at Project North Dwy (EW)**

Control Type:	Two-way stop	Delay (sec / veh):	8.6
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.003

**Intersection Setup**

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name												
Base Volume Input [veh/h]	0	95	0	0	65	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	7	0	0	29	0	0	0	0	0	0	3
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	102	0	0	94	0	0	0	0	0	0	3
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	27	0	0	25	0	0	0	0	0	0	1
Total Analysis Volume [veh/h]	0	107	0	0	99	0	0	0	0	0	0	3
Pedestrian Volume [ped/h]	0			0			0			0		



**Intersection Settings**

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




**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.56	0.00	0.00	8.59
Movement LOS	A	A	A		A	A			A			A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22
d_A, Approach Delay [s/veh]	0.00			0.00			8.56			8.59		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	0.13											
Intersection LOS	A											

**Intersection Level Of Service Report****Intersection 3: Redlands Ave (NS) at Project Central Dwy (EW)**

Control Type:	Two-way stop	Delay (sec / veh):	8.7
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.007

**Intersection Setup**

Name	Northbound		Southbound		Westbound	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

**Volumes**

Name	Northbound		Southbound		Westbound	
Base Volume Input [veh/h]	95	0	0	65	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	29	0	29	0	7
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	95	29	0	94	0	7
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	8	0	25	0	2
Total Analysis Volume [veh/h]	100	31	0	99	0	7
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

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




**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	8.66
Movement LOS	A	A		A		A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.02
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.53
d_A, Approach Delay [s/veh]	0.00		0.00		8.66	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.27					
Intersection LOS	A					

**Intersection Level Of Service Report****Intersection 4: Redlands Ave (NS) at Project South Dwy (EW)**

Control Type:	Two-way stop	Delay (sec / veh):	8.6
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.000

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

**Volumes**

Name						
Base Volume Input [veh/h]	95	0	0	65	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	29	0	10	19	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	124	0	10	84	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	0	3	22	0	0
Total Analysis Volume [veh/h]	131	0	11	88	0	0
Pedestrian Volume [ped/h]	0		0		0	



**Intersection Settings**

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

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.48	0.00	0.00	8.64
Movement LOS	A	A	A	A		A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.02	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.52	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.80		8.64	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.34					
Intersection LOS	A					

**Intersection Level Of Service Report**  
**Intersection 5: Redlands Ave (NS) at Placentia Ave (EW)**

Control Type:	All-way stop	Delay (sec / veh):	8.3
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.103

**Intersection Setup**

Name													
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵				↵↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00				25.00			25.00		
Grade [%]	0.00			0.00				0.00			0.00		
Crosswalk	Yes			Yes				Yes			Yes		

**Volumes**

Name													
Base Volume Input [veh/h]	67	72	8	0	2	56	7	19	14	29	18	32	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	6	0	16	0	1	2	7	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	67	78	8	16	2	57	9	26	14	29	18	32	5
Peak Hour Factor	0.9450	0.9450	0.9450	1.000	0.945	0.945	0.945	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	21	2	4	1	15	2	7	4	8	5	8	1
Total Analysis Volume [veh/h]	71	83	8	16	2	60	10	28	15	31	19	34	5
Pedestrian Volume [ped/h]	0			0				0			0		

**Intersection Settings****Lanes**

Capacity per Entry Lane [veh/h]	649	713	731	634	695	804	626	685	790	623	693
Degree of Utilization, x	0.10	0.06	0.06	0.03	0.08	0.01	0.04	0.02	0.04	0.03	0.05

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.35	0.19	0.19	0.09	0.27	0.03	0.13	0.06	0.11	0.09	0.17
95th-Percentile Queue Length [ft]	8.64	4.82	4.68	2.19	6.70	0.85	3.25	1.56	2.86	2.23	4.23
Approach Delay [s/veh]	8.39			8.27			8.04			8.34	
Approach LOS	A			A			A			A	
Intersection Delay [s/veh]	8.29										
Intersection LOS	A										

## Redlands Avenue West Industrial Project

Vistro File: Z:\...\PME.vistro

Scenario 2 Existing Plus Project PM Peak Hour

Report File: Z:\...\PMEP.pdf

1/4/2022

**Intersection Analysis Summary**

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Redlands Ave (NS) at Rider St (EW)	Signalized	HCM 6th Edition	EB Left	0.454	23.7	C
2	Redlands Ave (NS) at Project North Dwy (EW)	Two-way stop	HCM 6th Edition	EB Right	0.000	8.8	A
3	Redlands Ave (NS) at Project Central Dwy (EW)	Two-way stop	HCM 6th Edition	WB Right	0.039	8.9	A
4	Redlands Ave (NS) at Project South Dwy (EW)	Two-way stop	HCM 6th Edition	WB Right	0.000	8.6	A
5	Redlands Ave (NS) at Placentia Ave (EW)	All-way stop	HCM 6th Edition	SB Thru	0.205	9.1	A

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



**Intersection Level Of Service Report****Intersection 1: Redlands Ave (NS) at Rider St (EW)**





Control Type:  
Analysis Method:  
Analysis Period:

Signalized  
HCM 6th Edition  
1 hour

Delay (sec / veh):  
Level Of Service:  
Volume to Capacity (v/c):

23.7  
C  
0.454

**Intersection Setup**

Name													
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00				35.00			45.00			45.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	Yes				Yes			Yes			Yes		

**Volumes**

Name													
Base Volume Input [veh/h]	0	18	33	76	31	42	15	4	422	24	85	287	15
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	16	8	13	4	0	9	0	0	0	5	2	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	26	46	80	31	51	15	4	422	29	87	287	15
Peak Hour Factor	1.000	0.960	0.960	0.960	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	7	12	21	8	13	4	1	110	8	23	75	4
Total Analysis Volume [veh/h]	16	27	48	83	32	53	16	4	440	30	91	299	16
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups													
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	0	120	120	0	120	120	0	120	120	0	120	120	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	11	21	0	11	21	0	12	22	0	11	21	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No	No		No	No		No	No		No	No	
Maximum Recall		No	No		No	No		No	No		No	No	
Pedestrian Recall		No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	65	65	65	65	65	65	65	65	65	65	65	65
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	24	24	3	23	23	1	17	17	6	22	22
g / C, Green / Cycle	0.06	0.37	0.37	0.05	0.36	0.36	0.01	0.25	0.25	0.09	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.02	0.02	0.05	0.02	0.03	0.01	0.00	0.23	0.02	0.05	0.08	0.08
s, saturation flow rate [veh/h]	1781	1870	1589	1781	1870	1589	1781	1870	1589	1781	1870	1838
c, Capacity [veh/h]	105	689	585	85	668	568	15	471	400	154	617	606
d1, Uniform Delay [s]	29.57	13.34	13.70	30.08	13.85	13.60	32.12	23.58	18.59	28.59	15.93	15.94
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.46	0.19	0.49	2.60	0.22	0.09	8.91	6.89	0.08	3.23	0.21	0.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.40	0.07	0.14	0.36	0.08	0.03	0.26	0.90	0.07	0.56	0.25	0.25
d, Delay for Lane Group [s/veh]	32.03	13.53	14.19	32.69	14.07	13.69	41.03	30.47	18.67	31.82	16.14	16.15
Lane Group LOS	C	B	B	C	B	B	D	C	B	C	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.67	0.43	0.78	0.51	0.49	0.14	0.10	6.32	0.30	1.32	1.44	1.43
50th-Percentile Queue Length [ft/ln]	16.77	10.71	19.52	12.68	12.21	3.57	2.39	157.88	7.55	33.11	36.09	35.73
95th-Percentile Queue Length [veh/ln]	1.21	0.77	1.41	0.91	0.88	0.26	0.17	10.44	0.54	2.38	2.60	2.57
95th-Percentile Queue Length [ft/ln]	30.18	19.28	35.13	22.82	21.98	6.42	4.30	260.91	13.58	59.60	64.97	64.31

**Movement, Approach, & Intersection Results**

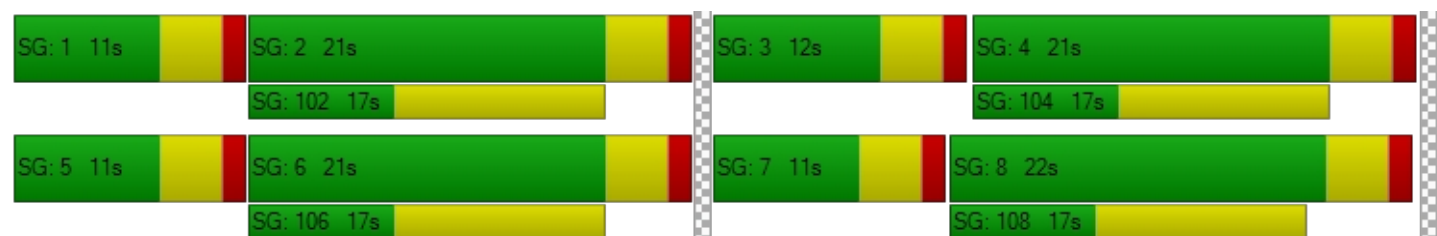
d_M, Delay for Movement [s/veh]	32.03	32.03	13.53	14.19	32.69	14.07	13.69	41.03	30.47	18.67	31.82	16.15	16.15
Movement LOS	C	C	B	B	C	B	B	D	C	B	C	B	B
d_A, Approach Delay [s/veh]	18.47				19.96			29.81			19.65		
Approach LOS	B				B			C			B		
d_I, Intersection Delay [s/veh]	23.67												
Intersection LOS	C												
Intersection V/C	0.454												

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0				11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00				0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00				0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	22.43				22.43			22.43			22.43		
I_p,int, Pedestrian LOS Score for Intersection	2.208				2.159			2.511			2.450		
Crosswalk LOS	B				B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000				2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	523				523			554			523		
d_b, Bicycle Delay [s]	17.72				17.72			16.99			17.72		
I_b,int, Bicycle LOS Score for Intersection	1.810				1.720			2.310			1.881		
Bicycle LOS	A				A			B			A		

**Sequence**





Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report****Intersection 2: Redlands Ave (NS) at Project North Dwy (EW)**

Control Type:	Two-way stop	Delay (sec / veh):	8.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.000

**Intersection Setup**

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name												
Base Volume Input [veh/h]	0	127	0	0	151	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	38	0	0	32	0	0	0	0	0	0	3
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	165	0	0	183	0	0	0	0	0	0	3
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	43	0	0	48	0	0	0	0	0	0	1
Total Analysis Volume [veh/h]	0	174	0	0	193	0	0	0	0	0	0	3
Pedestrian Volume [ped/h]	0			0			0			0		



**Intersection Settings**

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




**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.80	0.00	0.00	8.76
Movement LOS	A	A	A		A	A			A			A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23
d_A, Approach Delay [s/veh]	0.00			0.00			8.80			8.76		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	0.07											
Intersection LOS	A											

**Intersection Level Of Service Report****Intersection 3: Redlands Ave (NS) at Project Central Dwy (EW)**

Control Type:	Two-way stop	Delay (sec / veh):	8.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.039

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

**Volumes**

Name						
Base Volume Input [veh/h]	127	0	0	151	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	24	0	32	0	38
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	127	24	0	183	0	38
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	6	0	48	0	10
Total Analysis Volume [veh/h]	134	25	0	193	0	40
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

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




**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.04
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	8.86
Movement LOS	A	A		A		A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.12
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	3.06
d_A, Approach Delay [s/veh]	0.00		0.00		8.86	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.91					
Intersection LOS	A					

**Intersection Level Of Service Report****Intersection 4: Redlands Ave (NS) at Project South Dwy (EW)**

Control Type:	Two-way stop	Delay (sec / veh):	8.6
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.000

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

**Volumes**

Name						
Base Volume Input [veh/h]	95	0	0	65	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	24	0	3	29	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	119	0	3	94	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	0	1	25	0	0
Total Analysis Volume [veh/h]	125	0	3	99	0	0
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

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

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.46	0.00	0.00	8.62
Movement LOS	A	A	A	A		A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.01	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.15	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.23		8.62	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.10					
Intersection LOS	A					



**Intersection Level Of Service Report**  
**Intersection 5: Redlands Ave (NS) at Placentia Ave (EW)**

Control Type:	All-way stop	Delay (sec / veh):	9.1
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.205

**Intersection Setup**

Name													
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵				↵↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00				25.00			25.00		
Grade [%]	0.00			0.00				0.00			0.00		
Crosswalk	Yes			Yes				Yes			Yes		

**Volumes**

Name													
Base Volume Input [veh/h]	63	105	19	0	11	124	15	17	84	73	17	43	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	5	0	13	0	8	8	6	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	63	110	19	13	11	132	23	23	84	73	17	43	5
Peak Hour Factor	0.9600	0.9600	0.9600	1.000	0.960	0.960	0.960	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	29	5	3	3	34	6	6	22	19	4	11	1
Total Analysis Volume [veh/h]	66	115	20	13	11	138	24	24	88	76	18	45	5
Pedestrian Volume [ped/h]	0			0				0			0		

**Intersection Settings****Lanes**

Capacity per Entry Lane [veh/h]	591	643	668	590	643	734	588	640	728	571	627
Degree of Utilization, x	0.11	0.10	0.10	0.04	0.21	0.03	0.04	0.13	0.10	0.03	0.08

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.36	0.33	0.32	0.13	0.77	0.10	0.12	0.45	0.33	0.09	0.25
95th-Percentile Queue Length [ft]	8.94	8.34	8.00	3.18	19.32	2.43	3.05	11.33	8.34	2.30	6.22
Approach Delay [s/veh]	9.03			9.40			8.77			8.99	
Approach LOS	A			A			A			A	
Intersection Delay [s/veh]	9.06										
Intersection LOS	A										

## **OPENING YEAR (2023) WITHOUT PROJECT**

## Redlands Avenue East Industrial Project

Vistro File: Z:\...\AME.vistro

Scenario 3 Opening Year (2023) Without Project AM Peak  
Hour

Report File: Z:\...\AMOYWO.pdf

1/4/2022

**Intersection Analysis Summary**

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Redlands Ave (NS) at Rider St (EW)	Signalized	HCM 6th Edition	EB Left	0.254	24.7	C
5	Redlands Ave (NS) at Placentia Ave (EW)	All-way stop	HCM 6th Edition	NB Left	0.107	8.4	A

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

**Intersection Level Of Service Report****Intersection 1: Redlands Ave (NS) at Rider St (EW)**





Control Type:  
Analysis Method:  
Analysis Period:

Signalized  
HCM 6th Edition  
1 hour

Delay (sec / veh):  
Level Of Service:  
Volume to Capacity (v/c):

24.7  
C  
0.254

**Intersection Setup**

Name													
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00				35.00			45.00			45.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	Yes				Yes			Yes			Yes		

**Volumes**

Name													
Base Volume Input [veh/h]	0	18	29	48	12	10	11	5	141	5	50	307	27
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	3	8	17	12	35	2	7	52	9	11	28	3
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	21	37	65	24	45	13	12	193	14	61	335	30
Peak Hour Factor	1.000	0.931	0.931	0.931	0.9310	0.9310	0.9310	0.9310	0.9310	0.9310	0.9310	0.9310	0.9310
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	6	10	17	6	12	3	3	52	4	16	90	8
Total Analysis Volume [veh/h]	0	23	40	70	26	48	14	13	207	15	66	360	32
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups													
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	0	120	120	0	120	120	0	120	120	0	120	120	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	11	21	0	11	21	0	12	22	0	11	21	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No	No		No	No		No	No		No	No	
Maximum Recall		No	No		No	No		No	No		No	No	
Pedestrian Recall		No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	65	65	65	65	65	65	65	65	65	65	65	65
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	33	33	3	33	33	1	9	9	5	12	12
g / C, Green / Cycle	0.03	0.51	0.51	0.04	0.51	0.51	0.02	0.13	0.13	0.07	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.01	0.02	0.04	0.01	0.02	0.01	0.01	0.10	0.01	0.03	0.10	0.10
s, saturation flow rate [veh/h]	1781	1870	1589	1781	1870	1589	1781	1870	1589	1781	1870	1817
c, Capacity [veh/h]	63	949	807	70	957	813	40	250	213	131	346	336
d1, Uniform Delay [s]	30.69	8.06	8.24	30.49	7.97	7.84	31.37	27.28	24.68	28.98	24.02	24.05
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.04	0.08	0.20	2.86	0.09	0.04	4.19	5.17	0.13	2.58	1.28	1.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.33	0.04	0.08	0.34	0.05	0.02	0.30	0.77	0.07	0.47	0.53	0.54
d, Delay for Lane Group [s/veh]	33.73	8.14	8.43	33.35	8.06	7.87	35.57	32.45	24.81	31.56	25.30	25.39
Lane Group LOS	C	A	A	C	A	A	D	C	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.36	0.24	0.43	0.40	0.29	0.08	0.22	2.97	0.18	0.93	2.41	2.37
50th-Percentile Queue Length [ft/ln]	8.96	5.94	10.85	10.08	7.17	2.07	5.43	74.15	4.47	23.20	60.26	59.25
95th-Percentile Queue Length [veh/ln]	0.64	0.43	0.78	0.73	0.52	0.15	0.39	5.34	0.32	1.67	4.34	4.27
95th-Percentile Queue Length [ft/ln]	16.12	10.69	19.53	18.14	12.91	3.72	9.77	133.47	8.04	41.76	108.47	106.66

**Movement, Approach, & Intersection Results**

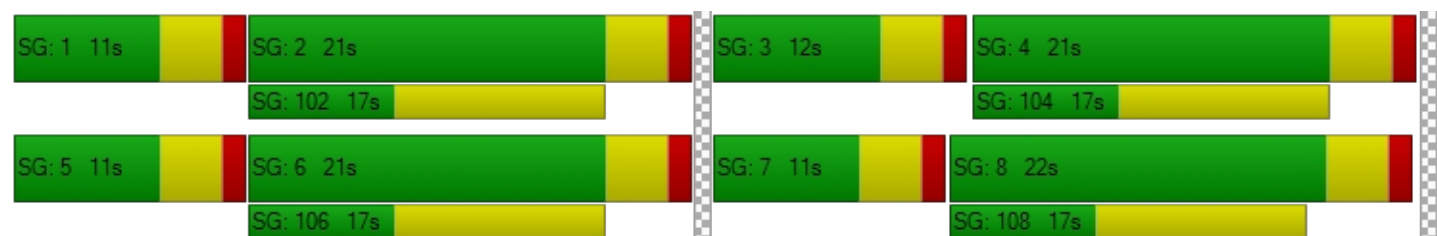
d_M, Delay for Movement [s/veh]	33.73	33.73	8.14	8.43	33.35	8.06	7.87	35.57	32.45	24.81	31.56	25.34	25.39
Movement LOS	C	C	A	A	C	A	A	D	C	C	C	C	C
d_A, Approach Delay [s/veh]	12.66				15.43			32.13			26.24		
Approach LOS	B				B			C			C		
d_I, Intersection Delay [s/veh]	24.75												
Intersection LOS	C												
Intersection V/C	0.254												

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0				11.0				11.0				11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00				0.00				0.00				0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00				0.00				0.00				0.00
d_p, Pedestrian Delay [s]	22.43				22.43				22.43				22.43
I_p,int, Pedestrian LOS Score for Intersection	2.182				2.159				2.454				2.372
Crosswalk LOS	B				B				B				B
s_b, Saturation Flow Rate of the bicycle lane	2000				2000				2000				2000
c_b, Capacity of the bicycle lane [bicycles/h]	523				523				554				523
d_b, Bicycle Delay [s]	17.72				17.72				16.99				17.72
I_b,int, Bicycle LOS Score for Intersection	1.763				1.695				1.921				1.911
Bicycle LOS	A				A				A				A

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report****Intersection 5: Redlands Ave (NS) at Placentia Ave (EW)**





Control Type:  
Analysis Method:  
Analysis Period:

All-way stop  
HCM 6th Edition  
1 hour

Delay (sec / veh):  
Level Of Service:  
Volume to Capacity (v/c):

8.4  
A  
0.107

**Intersection Setup**

Name													
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00				25.00			25.00		
Grade [%]	0.00			0.00				0.00			0.00		
Crosswalk	Yes			Yes				Yes			Yes		

**Volumes**

Name													
Base Volume Input [veh/h]	67	72	8	0	2	56	7	19	14	29	18	32	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	16	0	5	0	7	8	29	1	0	0	8	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	68	88	8	5	2	63	15	48	15	29	18	40	5
Peak Hour Factor	0.9450	0.9450	0.9450	1.000	0.945	0.945	0.945	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	23	2	1	1	17	4	13	4	8	5	11	1
Total Analysis Volume [veh/h]	72	93	8	5	2	67	16	51	16	31	19	42	5
Pedestrian Volume [ped/h]	0			0				0			0		

**Intersection Settings****Lanes**

Capacity per Entry Lane [veh/h]	637	699	715	621	680	782	621	678	781	614	680
Degree of Utilization, x	0.11	0.07	0.07	0.01	0.09	0.02	0.08	0.02	0.04	0.03	0.07

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.36	0.22	0.22	0.03	0.31	0.06	0.25	0.07	0.12	0.09	0.21
95th-Percentile Queue Length [ft]	8.96	5.53	5.40	0.85	7.65	1.47	6.28	1.70	2.89	2.27	5.31
Approach Delay [s/veh]	8.52			8.34			8.38			8.48	
Approach LOS	A			A			A			A	
Intersection Delay [s/veh]	8.44										
Intersection LOS	A										



## Redlands Avenue West Industrial Project

Vistro File: Z:\...\PME.vistro

Scenario 3 Opening Year (2023) Without Project PM Peak  
Hour

Report File: Z:\...\PMOYWO.pdf

1/4/2022

**Intersection Analysis Summary**





ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Redlands Ave (NS) at Rider St (EW)	Signalized	HCM 6th Edition	EB Left	0.512	23.4	C
5	Redlands Ave (NS) at Placentia Ave (EW)	All-way stop	HCM 6th Edition	SB Thru	0.227	9.3	A

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

**Intersection Level Of Service Report****Intersection 1: Redlands Ave (NS) at Rider St (EW)**

Control Type:	Signalized	Delay (sec / veh):	23.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.512

**Intersection Setup**

Name													
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00				35.00			45.00			45.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	Yes				Yes			Yes			Yes		

**Volumes**

Name													
Base Volume Input [veh/h]	0	18	33	76	31	42	15	4	422	24	85	287	15
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	8	24	14	4	17	9	4	46	6	21	51	10
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	26	57	90	35	59	24	8	468	30	106	338	25
Peak Hour Factor	1.000	0.960	0.960	0.960	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	7	15	23	9	15	6	2	122	8	28	88	7
Total Analysis Volume [veh/h]	0	27	59	94	36	61	25	8	488	31	110	352	26
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups													
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	0	120	120	0	120	120	0	120	120	0	120	120	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	11	21	0	11	21	0	12	22	0	11	21	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No	No		No	No		No	No		No	No	
Maximum Recall		No	No		No	No		No	No		No	No	
Pedestrian Recall		No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	65	65	65	65	65	65	65	65	65	65	65	65
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	22	22	3	22	22	1	18	18	6	23	23
g / C, Green / Cycle	0.04	0.34	0.34	0.05	0.35	0.35	0.01	0.28	0.28	0.09	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.01	0.03	0.06	0.02	0.03	0.02	0.00	0.25	0.02	0.06	0.10	0.10
s, saturation flow rate [veh/h]	1781	1870	1589	1781	1870	1589	1781	1870	1589	1781	1870	1825
c, Capacity [veh/h]	73	629	535	91	648	551	26	513	436	164	658	642
d1, Uniform Delay [s]	30.37	14.77	15.18	29.88	14.34	14.10	31.71	22.83	17.45	28.50	15.15	15.16
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.97	0.29	0.68	2.69	0.28	0.15	6.37	7.47	0.07	4.29	0.23	0.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.36	0.09	0.17	0.39	0.09	0.04	0.30	0.91	0.07	0.65	0.28	0.28
d, Delay for Lane Group [s/veh]	33.34	15.06	15.86	32.57	14.62	14.25	38.09	30.31	17.51	32.79	15.37	15.39
Lane Group LOS	C	B	B	C	B	B	D	C	B	C	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.44	0.57	0.95	0.57	0.58	0.23	0.16	7.01	0.30	1.64	1.69	1.66
50th-Percentile Queue Length [ft/ln]	10.88	14.31	23.72	14.22	14.51	5.87	4.03	175.26	7.48	41.06	42.28	41.59
95th-Percentile Queue Length [veh/ln]	0.78	1.03	1.71	1.02	1.04	0.42	0.29	11.35	0.54	2.96	3.04	2.99
95th-Percentile Queue Length [ft/ln]	19.58	25.75	42.70	25.60	26.11	10.57	7.25	283.81	13.46	73.90	76.11	74.87

**Movement, Approach, & Intersection Results**

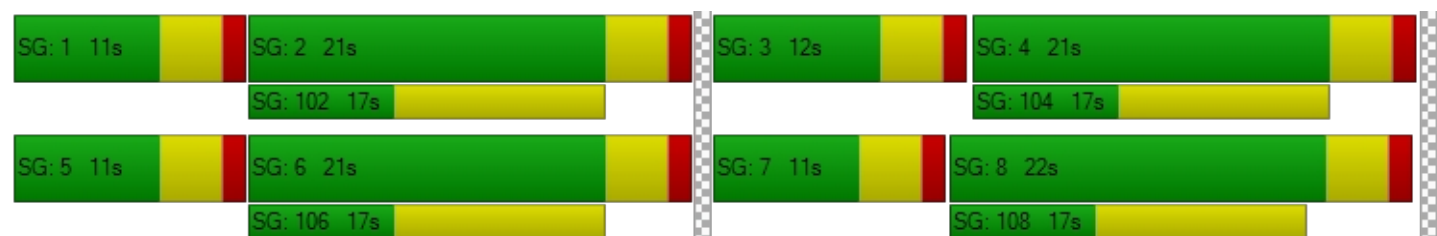
d_M, Delay for Movement [s/veh]	33.34	33.34	15.06	15.86	32.57	14.62	14.25	38.09	30.31	17.51	32.79	15.38	15.39
Movement LOS	C	C	B	B	C	B	B	D	C	B	C	B	B
d_A, Approach Delay [s/veh]	18.22				19.87			29.67			19.32		
Approach LOS	B				B			C			B		
d_I, Intersection Delay [s/veh]	23.36												
Intersection LOS	C												
Intersection V/C	0.512												

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0				11.0				11.0				11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00				0.00				0.00				0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00				0.00				0.00				0.00
d_p, Pedestrian Delay [s]	22.43				22.43				22.43				22.43
I_p,int, Pedestrian LOS Score for Intersection	2.218				2.172				2.543				2.501
Crosswalk LOS	B				B				B				B
s_b, Saturation Flow Rate of the bicycle lane	2000				2000				2000				2000
c_b, Capacity of the bicycle lane [bicycles/h]	523				523				554				523
d_b, Bicycle Delay [s]	17.72				17.72				16.99				17.72
I_b,int, Bicycle LOS Score for Intersection	1.845				1.754				2.395				1.947
Bicycle LOS	A				A				B				A

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report****Intersection 5: Redlands Ave (NS) at Placentia Ave (EW)**

Control Type:  
Analysis Method:  
Analysis Period:

All-way stop  
HCM 6th Edition  
1 hour

Delay (sec / veh):  
Level Of Service:  
Volume to Capacity (v/c):

9.3  
A  
0.227

**Intersection Setup**

Name													
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵				↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00				25.00			25.00		
Grade [%]	0.00			0.00				0.00			0.00		
Crosswalk	Yes			Yes				Yes			Yes		

**Volumes**

Name													
Base Volume Input [veh/h]	63	105	19	0	11	124	15	17	84	73	17	43	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	0	17	0	19	32	16	3	1	0	19	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	63	117	19	17	11	143	47	33	87	74	17	62	5
Peak Hour Factor	0.9600	0.9600	0.9600	1.000	0.960	0.960	0.960	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	30	5	4	3	37	12	9	23	19	4	16	1
Total Analysis Volume [veh/h]	66	122	20	17	11	149	49	34	91	77	18	65	5
Pedestrian Volume [ped/h]	0			0				0			0		

**Intersection Settings****Lanes**

Capacity per Entry Lane [veh/h]	576	625	647	579	629	717	575	624	708	562	614
Degree of Utilization, x	0.11	0.11	0.11	0.05	0.23	0.07	0.06	0.14	0.10	0.03	0.11

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.37	0.37	0.35	0.15	0.88	0.21	0.18	0.49	0.35	0.09	0.37
95th-Percentile Queue Length [ft]	9.21	9.14	8.80	3.81	21.96	5.26	4.56	12.14	8.75	2.34	9.18
Approach Delay [s/veh]	9.26			9.55			9.00			9.29	
Approach LOS	A			A			A			A	
Intersection Delay [s/veh]	9.28										
Intersection LOS	A										

## **OPENING YEAR (2023) WITH PROJECT**

## Redlands Avenue East Industrial Project

Vistro File: Z:\...\AME.vistro

Scenario 4 Opening Year (2023) With Project AM Peak Hour

Report File: Z:\...\AMOYW.pdf

1/4/2022

## Intersection Analysis Summary



ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Redlands Ave (NS) at Rider St (EW)	Signalized	HCM 6th Edition	EB Left	0.257	24.3	C
2	Redlands Ave (NS) at Project North Dwy (EW)	Two-way stop	HCM 6th Edition	WB Right	0.003	8.7	A
3	Redlands Ave (NS) at Project Central Dwy (EW)	Two-way stop	HCM 6th Edition	WB Right	0.007	8.8	A
4	Redlands Ave (NS) at Project South Dwy (EW)	Two-way stop	HCM 6th Edition	WB Right	0.000	8.8	A
5	Redlands Ave (NS) at Placentia Ave (EW)	All-way stop	HCM 6th Edition	EB Left	0.108	8.5	A

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

**Intersection Level Of Service Report****Intersection 1: Redlands Ave (NS) at Rider St (EW)**

Control Type:	Signalized	Delay (sec / veh):	24.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.257

**Intersection Setup**

Name													
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00				35.00			45.00			45.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	Yes				Yes			Yes			Yes		

**Volumes**

Name													
Base Volume Input [veh/h]	0	18	29	48	12	10	11	5	141	5	50	307	27
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	4	13	18	12	52	2	7	52	15	14	28	3
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	22	42	66	24	62	13	12	193	20	64	335	30
Peak Hour Factor	1.000	0.931	0.931	0.931	0.9310	0.9310	0.9310	0.9310	0.9310	0.9310	0.9310	0.9310	0.9310
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	6	11	18	6	17	3	3	52	5	17	90	8
Total Analysis Volume [veh/h]	3	24	45	71	26	67	14	13	207	21	69	360	32
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups													
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	0	120	120	0	120	120	0	120	120	0	120	120	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	11	21	0	11	21	0	12	22	0	11	21	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No	No		No	No		No	No		No	No	
Maximum Recall		No	No		No	No		No	No		No	No	
Pedestrian Recall		No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	65	65	65	65	65	65	65	65	65	65	65	65
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	33	33	3	33	33	1	9	9	5	12	12
g / C, Green / Cycle	0.04	0.51	0.51	0.04	0.51	0.51	0.02	0.13	0.13	0.07	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.01	0.02	0.04	0.01	0.03	0.01	0.01	0.10	0.01	0.04	0.10	0.10
s, saturation flow rate [veh/h]	1781	1870	1589	1781	1870	1589	1781	1870	1589	1781	1870	1817
c, Capacity [veh/h]	73	945	803	70	943	801	40	251	213	134	350	340
d1, Uniform Delay [s]	30.43	8.16	8.32	30.49	8.29	8.08	31.37	27.25	24.75	28.91	23.89	23.91
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.81	0.09	0.20	2.86	0.13	0.04	4.19	5.08	0.19	2.63	1.23	1.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.34	0.04	0.08	0.34	0.07	0.02	0.30	0.77	0.09	0.48	0.53	0.53
d, Delay for Lane Group [s/veh]	33.24	8.25	8.52	33.35	8.42	8.12	35.57	32.33	24.94	31.54	25.12	25.20
Lane Group LOS	C	A	A	C	A	A	D	C	C	C	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.42	0.27	0.44	0.40	0.41	0.08	0.22	2.96	0.26	0.97	2.40	2.36
50th-Percentile Queue Length [ft/ln]	10.45	6.81	11.10	10.08	10.22	2.11	5.43	73.98	6.41	24.31	59.97	58.96
95th-Percentile Queue Length [veh/ln]	0.75	0.49	0.80	0.73	0.74	0.15	0.39	5.33	0.46	1.75	4.32	4.24
95th-Percentile Queue Length [ft/ln]	18.81	12.26	19.99	18.14	18.39	3.81	9.77	133.17	11.53	43.75	107.95	106.12

**Movement, Approach, & Intersection Results**

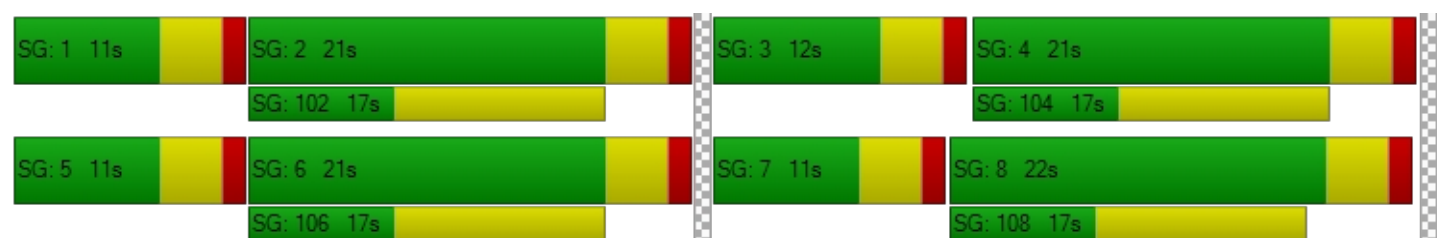
d_M, Delay for Movement [s/veh]	33.24	33.24	8.25	8.52	33.35	8.42	8.12	35.57	32.33	24.94	31.54	25.16	25.20
Movement LOS	C	C	A	A	C	A	A	D	C	C	C	C	C
d_A, Approach Delay [s/veh]	13.08				14.43			31.85			26.11		
Approach LOS	B				B			C			C		
d_I, Intersection Delay [s/veh]	24.31												
Intersection LOS	C												
Intersection V/C	0.257												

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0				11.0				11.0				11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00				0.00				0.00				0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00				0.00				0.00				0.00
d_p, Pedestrian Delay [s]	22.43				22.43				22.43				22.43
I_p,int, Pedestrian LOS Score for Intersection	2.192				2.165				2.456				2.373
Crosswalk LOS	B				B				B				B
s_b, Saturation Flow Rate of the bicycle lane	2000				2000				2000				2000
c_b, Capacity of the bicycle lane [bicycles/h]	523				523				554				523
d_b, Bicycle Delay [s]	17.72				17.72				16.99				17.72
I_b,int, Bicycle LOS Score for Intersection	1.774				1.723				1.931				1.914
Bicycle LOS	A				A				A				A

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report****Intersection 2: Redlands Ave (NS) at Project North Dwy (EW)**

Control Type:	Two-way stop	Delay (sec / veh):	8.7
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.003

**Intersection Setup**

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name												
Base Volume Input [veh/h]	0	95	0	0	65	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	16	41	0	0	40	20	0	0	9	0	0	3
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	136	0	0	105	20	0	0	9	0	0	3
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	36	0	0	28	5	0	0	2	0	0	1
Total Analysis Volume [veh/h]	17	143	0	0	111	21	0	0	9	0	0	3
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

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

**Movement, Approach, & Intersection Results**




V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.67	0.00	0.00	8.68
Movement LOS	A	A	A		A	A			A			A
95th-Percentile Queue Length [veh/ln]	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.01
95th-Percentile Queue Length [ft/ln]	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.69	0.00	0.00	0.23
d_A, Approach Delay [s/veh]	0.79			0.00			8.67			8.68		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	0.78											
Intersection LOS	A											



**Intersection Level Of Service Report****Intersection 3: Redlands Ave (NS) at Project Central Dwy (EW)**

Control Type:	Two-way stop	Delay (sec / veh):	8.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.007

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

**Volumes**

Name						
Base Volume Input [veh/h]	95	0	0	65	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	50	29	0	49	0	7
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	145	29	0	114	0	7
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	8	0	30	0	2
Total Analysis Volume [veh/h]	153	31	0	120	0	7
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

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




**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	8.80
Movement LOS	A	A		A		A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.02
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.55
d_A, Approach Delay [s/veh]	0.00		0.00		8.80	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.21					
Intersection LOS	A					

**Intersection Level Of Service Report****Intersection 4: Redlands Ave (NS) at Project South Dwy (EW)**

Control Type:	Two-way stop	Delay (sec / veh):	8.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.000

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

**Volumes**

Name						
Base Volume Input [veh/h]	95	0	0	65	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	79	0	10	39	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	174	0	10	104	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	46	0	3	27	0	0
Total Analysis Volume [veh/h]	183	0	11	109	0	0
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

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

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.59	0.00	0.00	8.77
Movement LOS	A	A	A	A		A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.02	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.54	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.67		8.77	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.26					
Intersection LOS	A					

**Intersection Level Of Service Report****Intersection 5: Redlands Ave (NS) at Placentia Ave (EW)**





Control Type:  
Analysis Method:  
Analysis Period:

All-way stop  
HCM 6th Edition  
1 hour

Delay (sec / veh):  
Level Of Service:  
Volume to Capacity (v/c):

8.5  
A  
0.108

**Intersection Setup**

Name													
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00				25.00			25.00		
Grade [%]	0.00			0.00				0.00			0.00		
Crosswalk	Yes			Yes				Yes			Yes		

**Volumes**

Name													
Base Volume Input [veh/h]	67	72	8	0	2	56	7	19	14	29	18	32	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	22	0	21	0	8	10	36	1	0	0	8	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	68	94	8	21	2	64	17	55	15	29	18	40	5
Peak Hour Factor	0.9450	0.9450	0.9450	1.000	0.945	0.945	0.945	0.9450	0.9450	0.9450	0.9450	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	25	2	5	1	17	4	15	4	8	5	11	1
Total Analysis Volume [veh/h]	72	99	8	21	2	68	18	58	16	31	19	42	5
Pedestrian Volume [ped/h]	0			0				0			0		



**Intersection Settings****Lanes**

Capacity per Entry Lane [veh/h]	630	690	705	617	675	776	615	672	771	607	672
Degree of Utilization, x	0.11	0.07	0.07	0.04	0.09	0.02	0.09	0.02	0.04	0.03	0.07

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.36	0.24	0.23	0.12	0.31	0.07	0.29	0.07	0.12	0.09	0.22
95th-Percentile Queue Length [ft]	9.07	5.98	5.85	2.90	7.85	1.68	7.36	1.71	2.93	2.29	5.38
Approach Delay [s/veh]	8.60			8.44			8.52			8.55	
Approach LOS	A			A			A			A	
Intersection Delay [s/veh]	8.54										
Intersection LOS	A										

## Redlands Avenue West Industrial Project

Vistro File: Z:\...\PME.vistro

Scenario 4 Opening Year (2023) With Project PM Peak Hour

Report File: Z:\...\PMOYW.pdf

1/4/2022

**Intersection Analysis Summary**





ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Redlands Ave (NS) at Rider St (EW)	Signalized	HCM 6th Edition	EB Left	0.517	23.4	C
2	Redlands Ave (NS) at Project North Dwy (EW)	Two-way stop	HCM 6th Edition	EB Right	0.033	9.1	A
3	Redlands Ave (NS) at Project Central Dwy (EW)	Two-way stop	HCM 6th Edition	WB Right	0.040	9.0	A
4	Redlands Ave (NS) at Project South Dwy (EW)	Two-way stop	HCM 6th Edition	WB Right	0.000	8.7	A
5	Redlands Ave (NS) at Placentia Ave (EW)	All-way stop	HCM 6th Edition	SB Thru	0.241	9.4	A

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

**Intersection Level Of Service Report****Intersection 1: Redlands Ave (NS) at Rider St (EW)**

Control Type:	Signalized	Delay (sec / veh):	23.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.517

**Intersection Setup**

Name													
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00				35.00			45.00			45.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	Yes				Yes			Yes			Yes		

**Volumes**

Name													
Base Volume Input [veh/h]	0	18	33	76	31	42	15	4	422	24	85	287	15
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	16	16	37	18	4	26	9	4	46	11	23	51	10
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	34	70	94	35	68	24	8	468	35	108	338	25
Peak Hour Factor	1.000	0.960	0.960	0.960	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	9	18	24	9	18	6	2	122	9	28	88	7
Total Analysis Volume [veh/h]	16	35	73	98	36	71	25	8	488	36	113	352	26
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups													
Lead / Lag	-	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	0	120	120	0	120	120	0	120	120	0	120	120	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	11	21	0	11	21	0	12	22	0	11	21	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No	No		No	No		No	No		No	No	
Maximum Recall		No	No		No	No		No	No		No	No	
Pedestrian Recall		No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	65	65	65	65	65	65	65	65	65	65	65	65
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	22	22	3	21	21	1	18	18	6	23	23
g / C, Green / Cycle	0.06	0.34	0.34	0.05	0.32	0.32	0.01	0.28	0.28	0.09	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.03	0.04	0.06	0.02	0.04	0.02	0.00	0.25	0.02	0.06	0.10	0.10
s, saturation flow rate [veh/h]	1781	1870	1589	1781	1870	1589	1781	1870	1589	1781	1870	1825
c, Capacity [veh/h]	115	628	534	91	603	512	26	513	436	165	659	643
d1, Uniform Delay [s]	29.29	14.90	15.25	29.88	15.50	15.17	31.71	22.84	17.51	28.50	15.12	15.13
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.60	0.36	0.72	2.69	0.38	0.17	6.37	7.48	0.08	4.42	0.23	0.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.44	0.11	0.18	0.39	0.11	0.05	0.30	0.91	0.08	0.65	0.28	0.28
d, Delay for Lane Group [s/veh]	31.89	15.26	15.97	32.57	15.88	15.34	38.09	30.32	17.58	32.92	15.35	15.37
Lane Group LOS	C	B	B	C	B	B	D	C	B	C	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.79	0.71	1.00	0.57	0.71	0.25	0.16	7.01	0.35	1.68	1.69	1.66
50th-Percentile Queue Length [ft/ln]	19.81	17.74	24.89	14.22	17.71	6.18	4.03	175.30	8.76	41.93	42.23	41.54
95th-Percentile Queue Length [veh/ln]	1.43	1.28	1.79	1.02	1.28	0.45	0.29	11.35	0.63	3.02	3.04	2.99
95th-Percentile Queue Length [ft/ln]	35.66	31.93	44.80	25.60	31.89	11.13	7.25	283.87	15.76	75.48	76.02	74.78



**Movement, Approach, & Intersection Results**

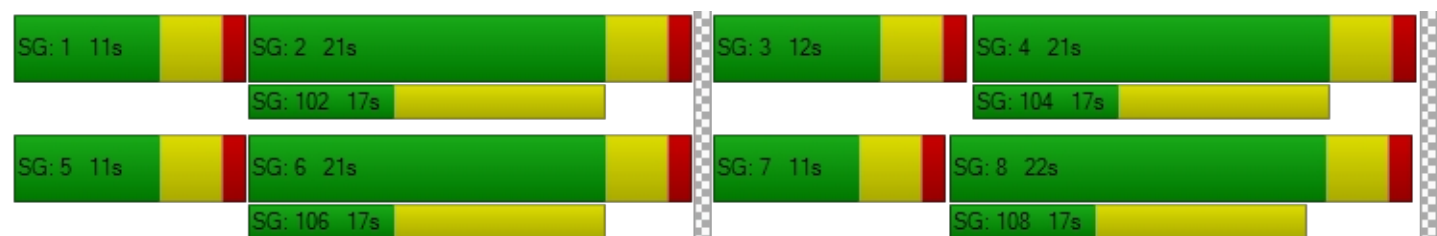
d_M, Delay for Movement [s/veh]	31.89	31.89	15.26	15.97	32.57	15.88	15.34	38.09	30.32	17.58	32.92	15.36	15.37
Movement LOS	C	C	B	B	C	B	B	D	C	B	C	B	B
d_A, Approach Delay [s/veh]	19.46				20.38			29.57			19.39		
Approach LOS	B				C			C			B		
d_I, Intersection Delay [s/veh]	23.42												
Intersection LOS	C												
Intersection V/C	0.517												

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0				11.0				11.0				11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00				0.00				0.00				0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00				0.00				0.00				0.00
d_p, Pedestrian Delay [s]	22.43				22.43				22.43				22.43
I_p,int, Pedestrian LOS Score for Intersection	2.234				2.179				2.547				2.504
Crosswalk LOS	B				B				B				B
s_b, Saturation Flow Rate of the bicycle lane	2000				2000				2000				2000
c_b, Capacity of the bicycle lane [bicycles/h]	523				523				554				523
d_b, Bicycle Delay [s]	17.72				17.72				16.99				17.72
I_b,int, Bicycle LOS Score for Intersection	1.886				1.769				2.403				1.948
Bicycle LOS	A				A				B				A

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report****Intersection 2: Redlands Ave (NS) at Project North Dwy (EW)**





Control Type:  
Analysis Method:  
Analysis Period:

Two-way stop  
HCM 6th Edition  
1 hour

Delay (sec / veh):  
Level Of Service:  
Volume to Capacity (v/c):

9.1  
A  
0.033

**Intersection Setup**

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name												
Base Volume Input [veh/h]	0	127	0	0	151	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	9	74	0	0	69	11	0	0	30	0	0	3
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	201	0	0	220	11	0	0	30	0	0	3
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	53	0	0	58	3	0	0	8	0	0	1
Total Analysis Volume [veh/h]	9	212	0	0	232	12	0	0	32	0	0	3
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

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




**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.07	0.00	0.00	8.86
Movement LOS	A	A	A		A	A			A			A
95th-Percentile Queue Length [veh/ln]	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.01
95th-Percentile Queue Length [ft/ln]	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.54	0.00	0.00	0.24
d_A, Approach Delay [s/veh]	0.33			0.00			9.07			8.86		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	0.78											
Intersection LOS	A											

**Intersection Level Of Service Report****Intersection 3: Redlands Ave (NS) at Project Central Dwy (EW)**

Control Type:	Two-way stop	Delay (sec / veh):	9.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.040

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

**Volumes**

Name						
Base Volume Input [veh/h]	127	0	0	151	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	45	24	0	99	0	38
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	172	24	0	250	0	38
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	6	0	66	0	10
Total Analysis Volume [veh/h]	181	25	0	263	0	40
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

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




**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.04
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	9.00
Movement LOS	A	A		A		A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.13
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	3.16
d_A, Approach Delay [s/veh]	0.00		0.00		9.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.71					
Intersection LOS	A					

**Intersection Level Of Service Report****Intersection 4: Redlands Ave (NS) at Project South Dwy (EW)**

Control Type:	Two-way stop	Delay (sec / veh):	8.7
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.000

**Intersection Setup**

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

**Volumes**

Name						
Base Volume Input [veh/h]	95	0	0	65	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	69	0	3	96	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	164	0	3	161	0	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	43	0	1	42	0	0
Total Analysis Volume [veh/h]	173	0	3	169	0	0
Pedestrian Volume [ped/h]	0		0		0	



**Intersection Settings**

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





**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.56	0.00	0.00	8.75
Movement LOS	A	A	A	A		A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.01	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.16	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.14		8.75	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.07					
Intersection LOS	A					

**Intersection Level Of Service Report****Intersection 5: Redlands Ave (NS) at Placentia Ave (EW)**

Control Type:	All-way stop	Delay (sec / veh):	9.4
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.241

**Intersection Setup**

Name													
Approach	Northbound			Southbound				Eastbound			Westbound		
Lane Configuration													
Turning Movement	Left	Thru	Right	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00			35.00				25.00			25.00		
Grade [%]	0.00			0.00				0.00			0.00		
Crosswalk	Yes			Yes				Yes			Yes		

**Volumes**

Name													
Base Volume Input [veh/h]	63	105	19	0	11	124	15	17	84	73	17	43	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	17	0	30	0	27	40	22	3	1	0	19	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	63	122	19	30	11	151	55	39	87	74	17	62	5
Peak Hour Factor	0.9600	0.9600	0.9600	1.000	0.960	0.960	0.960	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	32	5	8	3	39	14	10	23	19	4	16	1
Total Analysis Volume [veh/h]	66	127	20	30	11	157	57	41	91	77	18	65	5
Pedestrian Volume [ped/h]	0			0				0			0		

**Intersection Settings****Lanes**

Capacity per Entry Lane [veh/h]	569	618	638	577	626	712	569	617	698	557	608
Degree of Utilization, x	0.11	0.11	0.11	0.07	0.24	0.08	0.07	0.14	0.11	0.03	0.11

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.37	0.39	0.37	0.23	0.95	0.25	0.22	0.49	0.36	0.09	0.37
95th-Percentile Queue Length [ft]	9.31	9.64	9.30	5.74	23.75	6.28	5.52	12.30	8.88	2.36	9.28
Approach Delay [s/veh]	9.36			9.67			9.12			9.36	
Approach LOS	A			A			A			A	
Intersection Delay [s/veh]	9.40										
Intersection LOS	A										



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