LINSCOTT LAW & GREENSPAN engineers

REVISED TRAFFIC IMPACT ANALYSIS

PEPPERWOOD PLACE PROJECT

Anaheim, California

June 15, 2021

(Revision of the February 11, 2021 Report)

Prepared for:

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LLG Ref. 2-20-4355-1

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- ***Project Description*** – The proposed Project site is located at 910 S. Western Avenue (i.e. generally on the east side of Western Avenue and north of Ball Road), in the City of Anaheim, California. The Project site is currently occupied with a vacant single-family home that will be demolished. The proposed Project will consist of 12 single-family residential dwelling units on a private street with a "hammerhead" turnaround area. The proposed Project is expected to be completed in the Year 2022. Access to the proposed Project site will be provided via one (1) full-access private street driveway along Western Avenue (i.e. Project Access No. 1).

- ***Study Scope*** – The two (2) key study intersections selected for evaluation were determined based on coordination with City of Anaheim Traffic Engineering Department staff. The two (2) intersections listed below provide regional and local access to the study area and define the extent of the boundaries for this traffic impact investigation. All key study intersections are located within the City of Anaheim.

Key Study Intersections
1. Western Avenue at Orange Avenue
2. Western Avenue at Ball Road

- ***Existing Traffic Conditions*** – The two (2) key study intersections currently operate at acceptable LOS B during the AM and PM peak hours.

- ***Project Trip Generation*** – The proposed Project is forecast to generate approximately 113 daily trips, with 9 trips (2 inbound, 7 outbound) produced in the AM peak hour and 12 trips (8 inbound, 4 outbound) produced in the PM peak hour on a "typical" weekday.

- ***Cumulative Projects Traffic Characteristics*** – There are eighteen (18) cumulative projects in the City of Anaheim, three (3) cumulative projects in the City of Buena Park, five (5) cumulative projects in the City of Cypress, eight (8) cumulative projects in the City of Stanton, and one (1) cumulative project in the City of Garden Grove within the vicinity of the subject site. The thirty-five (35) cumulative projects are forecast to generate a total of 22,368 daily trips, with 1,154 trips (463 inbound and 691 outbound) forecast during the AM peak hour and 1,479 trips (824 inbound and 655 outbound) forecast during the PM peak hour.

- ***Existing Plus Cumulative Plus Project Traffic Conditions*** – The proposed Project ***will not*** cause an operational deficiency at either of the two (2) key study intersections when compared to the LOS standards and traffic impact criteria specified in this report. The two (2) key study intersections are forecast to continue to operate at an acceptable LOS C or better during the AM and PM peak hours with the addition of project generated traffic to existing traffic and cumulative traffic.

- ***Year 2022 Cumulative Plus Project Traffic Conditions*** – The proposed Project ***will not*** cause an operational deficiency at either of the two (2) key study intersections when compared to the LOS standards and traffic impact criteria specified in this report. The two (2) key study intersections are forecast to continue to operate at an acceptable LOS C or better during the AM and PM peak hours with the addition of project generated traffic in the Year 2022.

- ***Site Access Evaluation –*** The proposed Project access is forecast to operate at LOS C or better during the AM and PM peak hours under Year 2022 Cumulative Plus Project traffic conditions. As such, Project access will be adequate. Motorists entering and exiting the Project site will be able to do so without undue congestion. The on-site circulation layout of the proposed Project as illustrated in *Figure 2-2* on an overall basis is adequate. Curb return radii are generally adequate for small service/delivery (FedEx, UPS) trucks and trash trucks.

- ***Sight Distance Evaluation –*** The sight lines at Project Access No. 1 are expected to be adequate provided obstructions within the sight triangles are minimized. In addition, any future landscaping and/or hardscapes (i.e. monument signs) should be designed such that a driver's clear line of sight is not obstructed.

- ***Recommended Improvements –*** The results of the intersection capacity analysis shows that the proposed Project will not cause an operational deficiency at the two (2) key study intersections under the "Existing Plus Cumulative Plus Project" and "Year 2022 Plus Project" traffic scenarios. Given that there are no Project impacts, no improvements are required of the proposed project.

- ***Congestion Management Program (CMP) –*** The CMP requires that a traffic impact analysis be conducted for any project generating 2,400 or more daily trips, or 1,600 or more daily trips for projects that directly access the CMP Highway System (HS). As noted in Section 5.0 of this traffic study, the proposed Project is forecast to generate approximately 113 daily trip-ends and thus does not meet the criteria requiring a CMP TIA.

REVISED TRAFFIC IMPACT ANALYSIS

PEPPERWOOD PLACE PROJECT

June 15, 2021
(Revision of the February 11, 2021 Report)

1.0 INTRODUCTION

This traffic impact analysis addresses the potential traffic impacts and circulation needs associated with the Pepperwood Place Project (hereinafter referred to as Project). The proposed Project will consist of 12 single-family residential dwelling units on a private street with a "hammerhead" turnaround area. The proposed Project is expected to be completed in the Year 2022. The proposed project site is located at 910 S. Western Avenue (i.e. generally on the east side of Western Avenue and north of Ball Road), in the City of Anaheim, California. The Project site is currently occupied with a vacant single-family home that will be demolished.

This report documents the findings and recommendations of a traffic impact analysis conducted by Linscott, Law & Greenspan, Engineers (LLG) to determine the potential impacts associated with the Project. The traffic analysis evaluates the existing operating conditions at two (2) key study intersections within the project vicinity, estimates the trip generation potential of the Project, and forecasts future operating conditions without and with the proposed Project. Where necessary, intersection improvements/mitigation measures are identified.

This traffic report satisfies the City of Anaheim *Criteria for Preparation of Traffic Impact Studies* and is consistent with the requirements and procedures outlined in the most current *Congestion Management Program (CMP) for Orange County*. The Scope of Work for this traffic study, which is included in ***Appendix A***, was developed in conjunction with City of Anaheim Traffic Engineering Department staff.

The project site has been visited and an inventory of adjacent area roadways and intersections was performed. Existing traffic information has been collected at two (2) key study intersections on a "typical" weekday for use in the preparation of intersection level of service calculations. Information concerning cumulative projects (planned and/or approved) in the vicinity of the proposed Project has been researched at the City of Anaheim, the City of Buena Park, the City of Cypress, the City of Stanton, and the City of Garden Grove. Based on our research, there are eighteen (18) cumulative projects in the City of Anaheim, three (3) cumulative projects in the City of Buena Park, five (5) cumulative projects in the City of Cypress, eight (8) cumulative projects in the City of Stanton, and one (1) cumulative project in the City of Garden Grove within the vicinity of the subject site. These thirty-five (35) planned and/or approved cumulative projects were considered in the cumulative traffic analysis for this project.

This traffic report analyzes existing and future weekday AM peak hour and PM peak hour traffic conditions for a near-term (Year 2022 – Project Opening Year) traffic setting upon completion of the proposed Project. Peak hour traffic forecasts for the Year 2022 horizon year have been projected by

increasing existing traffic volumes by an annual growth rate of one percent (1.0%) per year and adding traffic volumes generated by thirty-five (35) cumulative projects.

1.1 Study Area

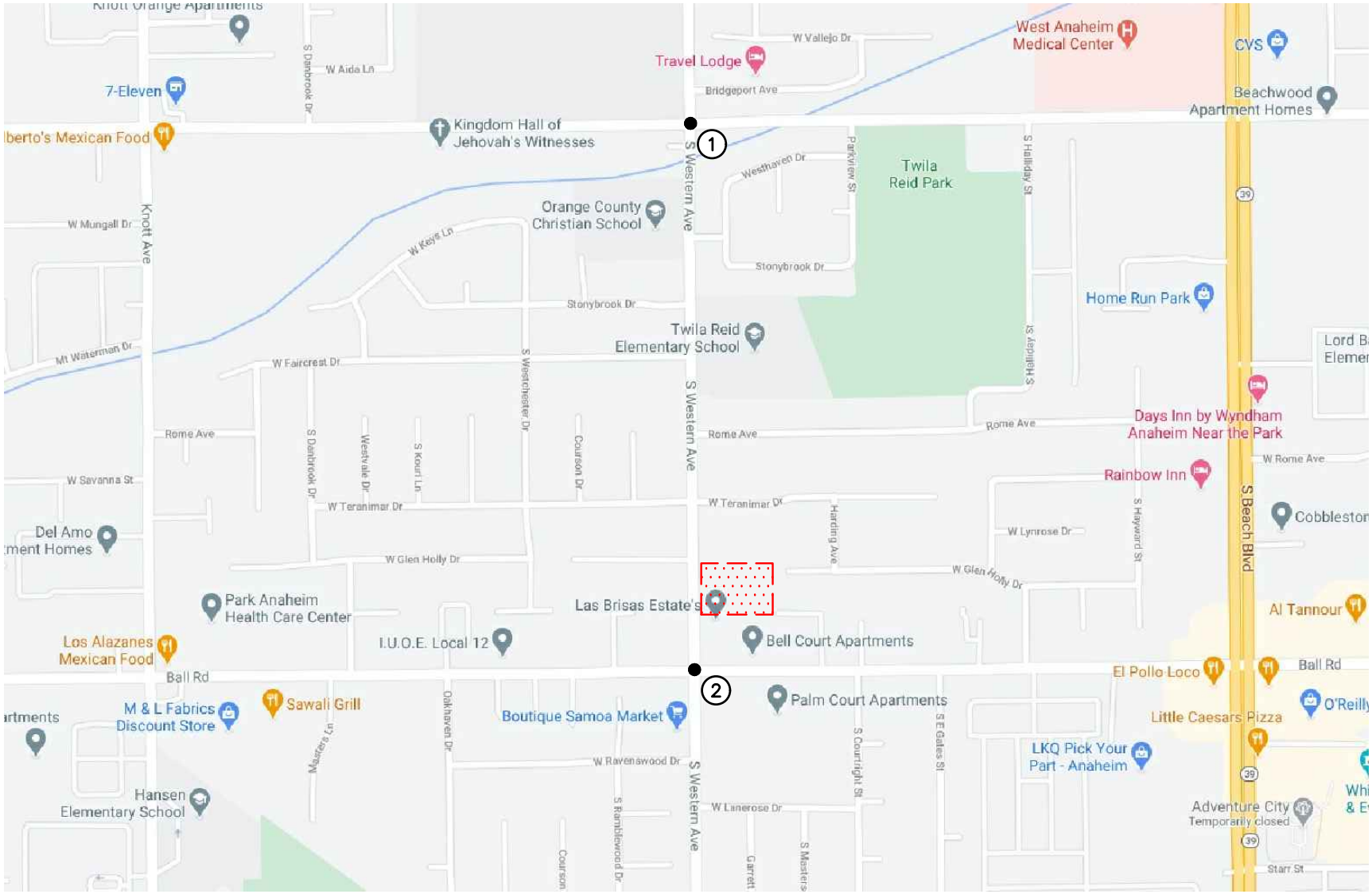
The two (2) key study intersections selected for evaluation were determined based on coordination with City of Anaheim Traffic Engineering Department staff. The two (2) intersections listed below provide regional and local access to the study area and define the extent of the boundaries for this traffic impact investigation. All key study intersections are located within the City of Anaheim.

Key Study Intersections
1. Western Avenue at Orange Avenue
2. Western Avenue at Ball Road

Figure 1-1 presents a Vicinity Map, which illustrates the general location of the proposed Project and depicts the study locations and surrounding street system. The Level of Service (LOS) investigations at these key locations were used to evaluate the potential traffic-related impacts associated with area growth, cumulative projects and the proposed Project. When necessary, this report recommends intersection improvements that may be required to accommodate future traffic volumes and restore/maintain an acceptable Level of Service and/or mitigate the impact of the project.

Included in this Traffic Impact Analysis are:

- Existing traffic counts,
- Estimated project traffic generation/distribution/assignment,
- Estimated cumulative project traffic generation/distribution/assignment,
- AM and PM peak hour capacity analyses for existing conditions,
- AM and PM peak hour capacity analyses for existing plus cumulative conditions without and with project traffic,
- AM and PM peak hour capacity analyses for future (Year 2022) conditions without and with project traffic,
- Site Access Evaluation,
- Recommended Improvements, and
- Congestion Management Program (CMP) Analysis.



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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

SOURCE: GOOGLE

KEY

(#) = STUDY INTERSECTION

= PROJECT SITE

FIGURE 1-1

VICINITY MAP

PEPPERWOOD PLACE, ANAHEIM

2.0 PROJECT DESCRIPTION

The proposed Project site is located at 910 S. Western Avenue (i.e. generally on the east side of Western Avenue and north of Ball Road), in the City of Anaheim, California. The Project site is currently occupied with a vacant single-family home that will be demolished. ***Figure 2-1*** presents the existing site.

The proposed Project will consist of 12 single-family residential dwelling units on a private street with a "hammerhead" turnaround area. The proposed Project is expected to be completed in the Year 2022. ***Figure 2-2*** presents the proposed site plan for the proposed Project.

2.1 Site Access

As shown in *Figure 2-2*, access to the proposed Project site will be provided via one (1) full-access private street driveway along Western Avenue (i.e. Project Access No. 1).

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N NO SCALE

SOURCE: GOOGLE

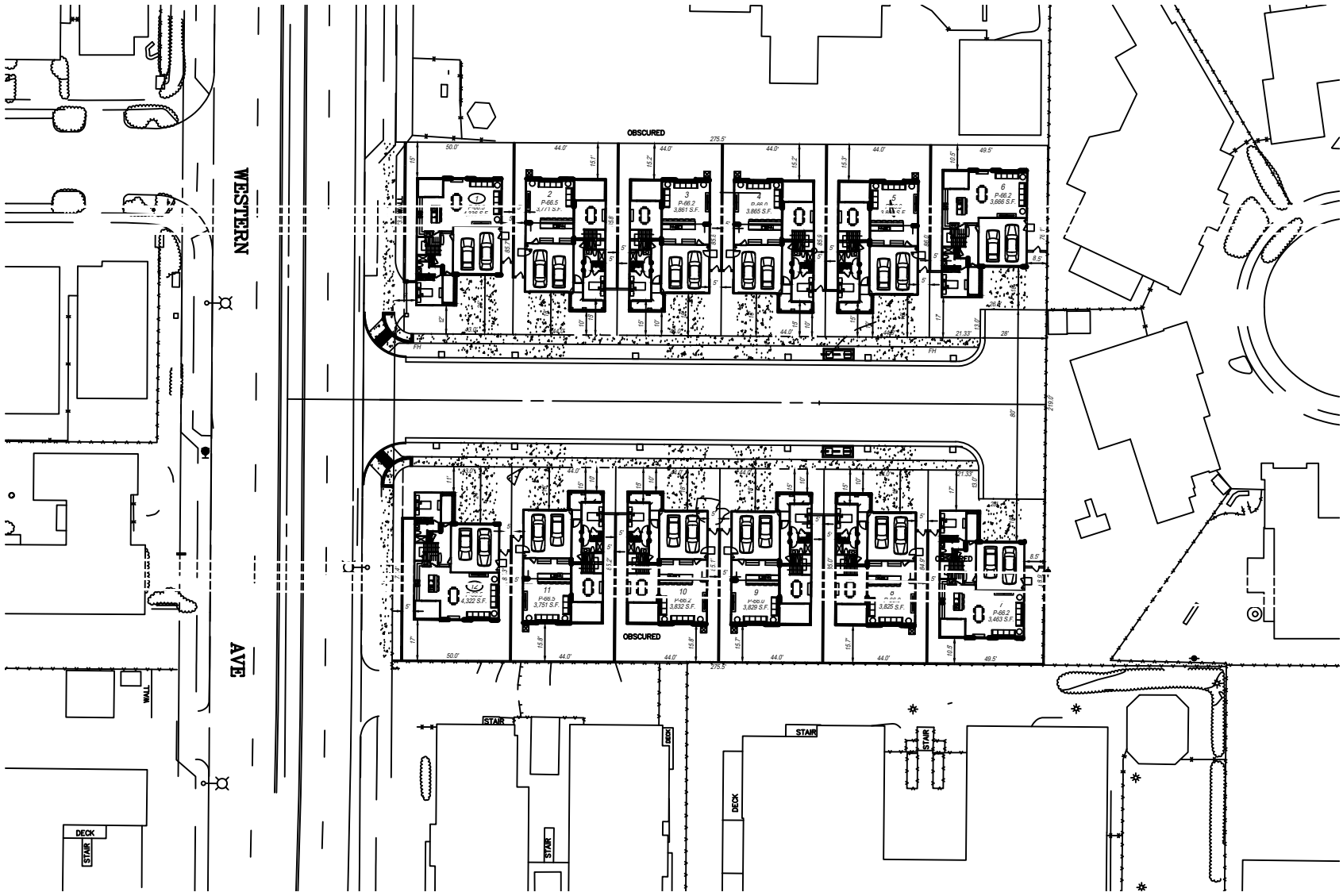
KEY

= PROJECT SITE

FIGURE 2-1

EXISTING SITE AERIAL

PEPPERWOOD PLACE, ANAHEIM



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SOURCE: MAYERS AND ASSOCIATES CIVIL ENGINEERING, INC.

FIGURE 2-2

PROPOSED SITE PLAN

PEPPERWOOD PLACE, ANAHEIM

3.0 EXISTING CONDITIONS

3.1 Existing Street System

The principal local network of streets serving the proposed Project includes Western Avenue, Orange Avenue, and Ball Road. The following discussion provides a brief synopsis of these key area streets. The descriptions are based on an inventory of existing roadway conditions.

Western Avenue is a four-lane, divided roadway oriented in the north-south direction, bordering the project site to the west. On-street parking is generally not permitted along this roadway within the vicinity of the Project, except for south of Faircrest Drive on the west side of the roadway. The posted speed limit on Western Avenue is 40 miles per hour (mph). A traffic signal controls the study intersections of Western Avenue at Orange Avenue and Ball Road.

Orange Avenue is a four-lane, divided roadway oriented in the east-west direction, located north of the Project site. On-street parking is generally permitted along this roadway, west of Western Avenue and not permitted along this roadway east of Western Avenue. The posted speed limit on Orange Avenue is 40 mph.

Ball Road is generally a four-lane, divided roadway oriented in the east-west direction. On-street parking is generally permitted along this roadway within the vicinity of the Project. The posted speed limit on Ball Road is 40 mph.

Figure 3-1 presents an inventory of the existing roadway conditions for the arterials and intersections evaluated in this report. This figure identifies the number of travel lanes for key arterials, as well as intersection configurations and controls for the key area study intersections.

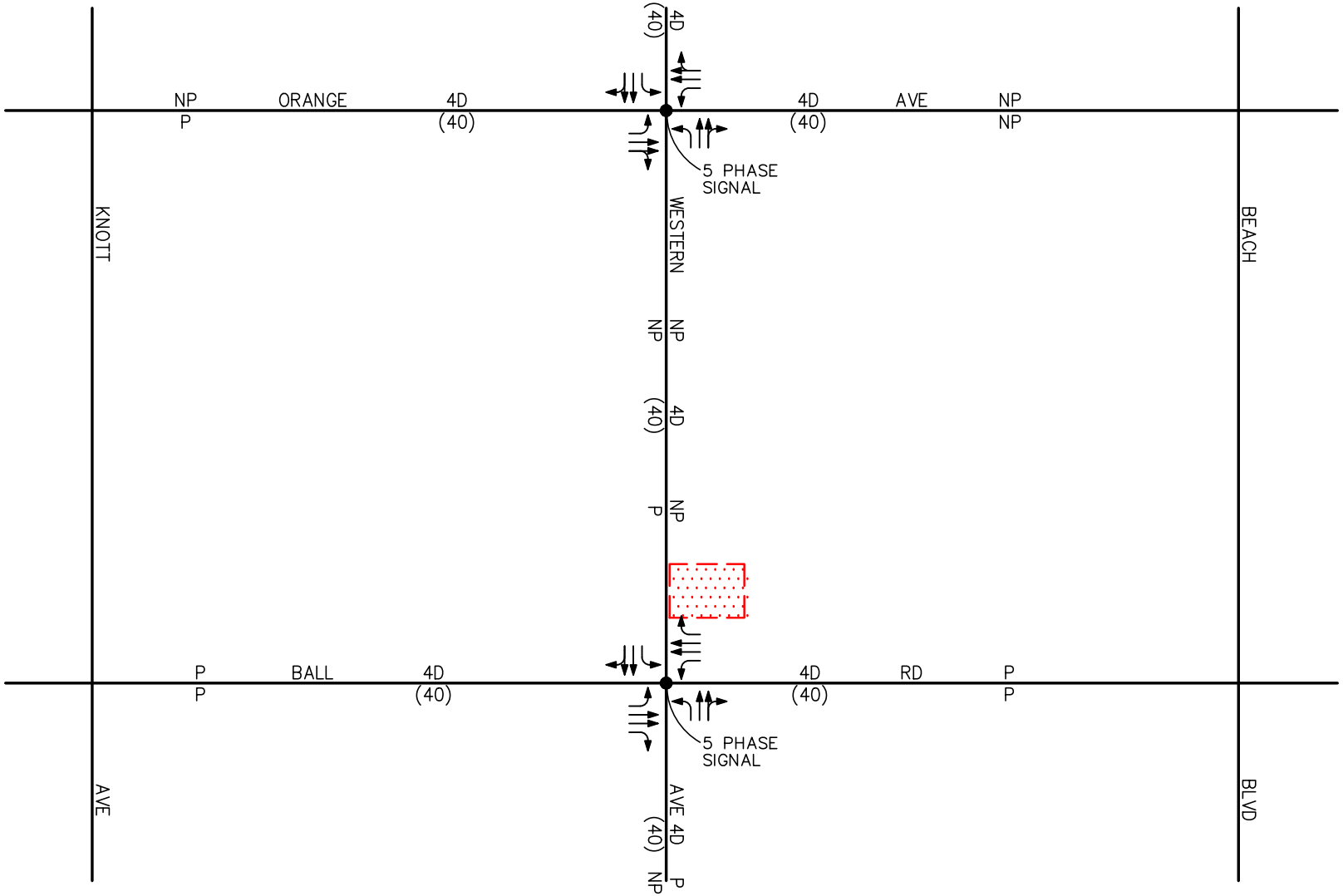
3.2 Existing Traffic Volumes

Due to the State of California "Stay at Home" order as a result of the COVID-19 Coronavirus Pandemic, historical counts were researched for the two (2) key study intersections evaluated in this report. Specifically, the historical traffic counts for intersection #1 and #2 were conducted by Counts Unlimited on December 10, 2019. The traffic counts for intersection #1 and #2 were factored up by the City-approved growth factor of 1.0% per year to reflect current Year 2021 existing baseline traffic conditions (i.e. 2% total growth).

Figures 3-2 and ***3-3*** illustrate the existing AM and PM peak hour traffic volumes at the three (3) key study intersections evaluated in this report, respectively. ***Appendix B*** contains the historical detailed peak hour traffic count sheets for the key intersections evaluated in this report.

3.3 Existing Intersection Conditions

Existing AM and PM peak hour operating conditions for the two (2) key study intersections were evaluated using the *Intersection Capacity Utilization* (ICU) methodology for signalized intersections and the methodology outlined in the *Highway Capacity Manual* (HCM) for unsignalized intersections.



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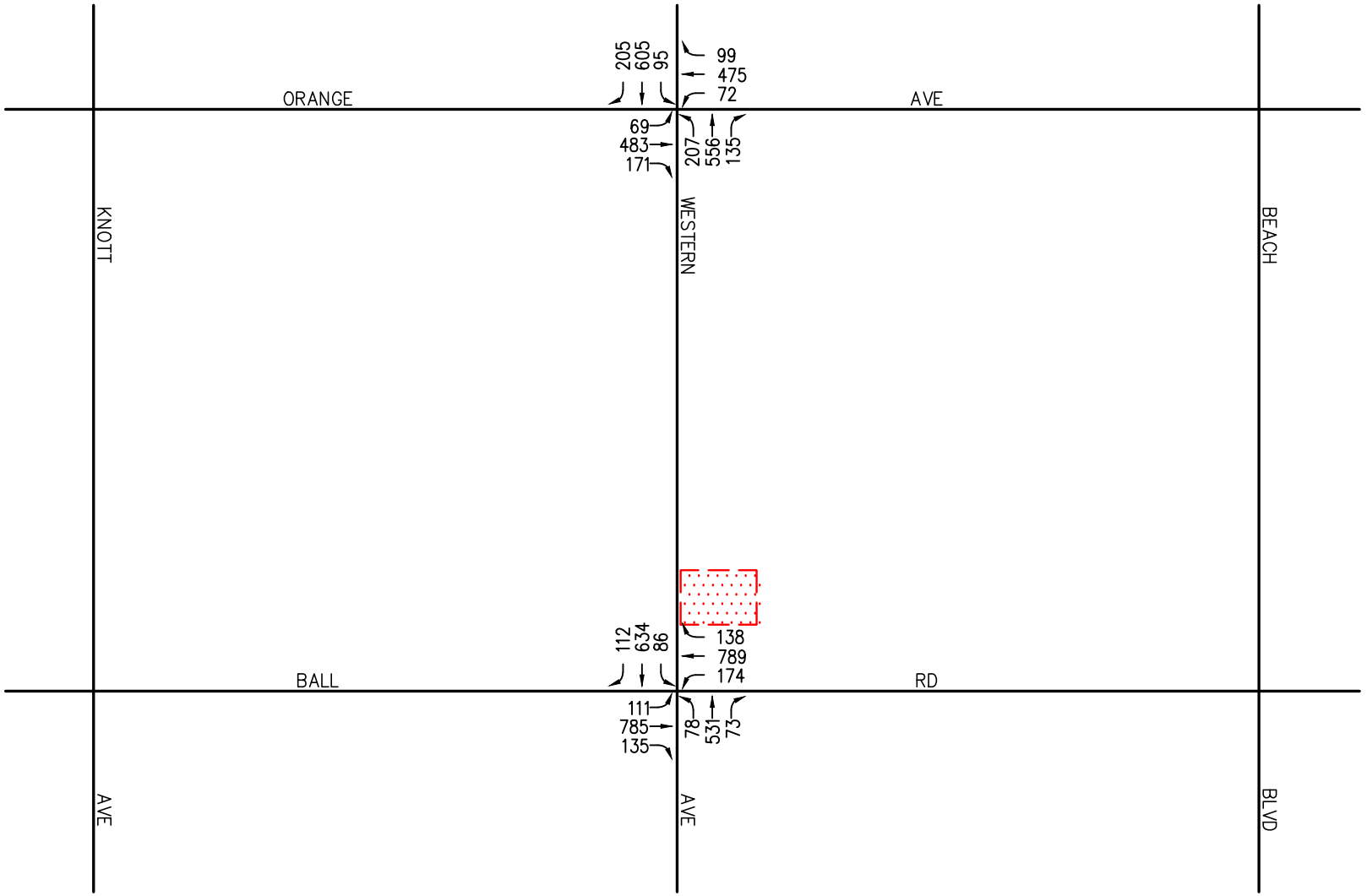
KEY

- ← = APPROACH LANE ASSIGNMENT
- ● = TRAFFIC SIGNAL
- P = PARKING, NP = NO PARKING
- U = UNDIVIDED, D = DIVIDED
- 2 = NUMBER OF TRAVEL LANES
- (XX)= POSTED SPEED LIMIT (MPH)
- ▭ = PROJECT SITE

FIGURE 3–1

EXISTING ROADWAY CONDITIONS AND INTERSECTION CONTROLS

PEPPERWOOD PLACE, ANAHEIM



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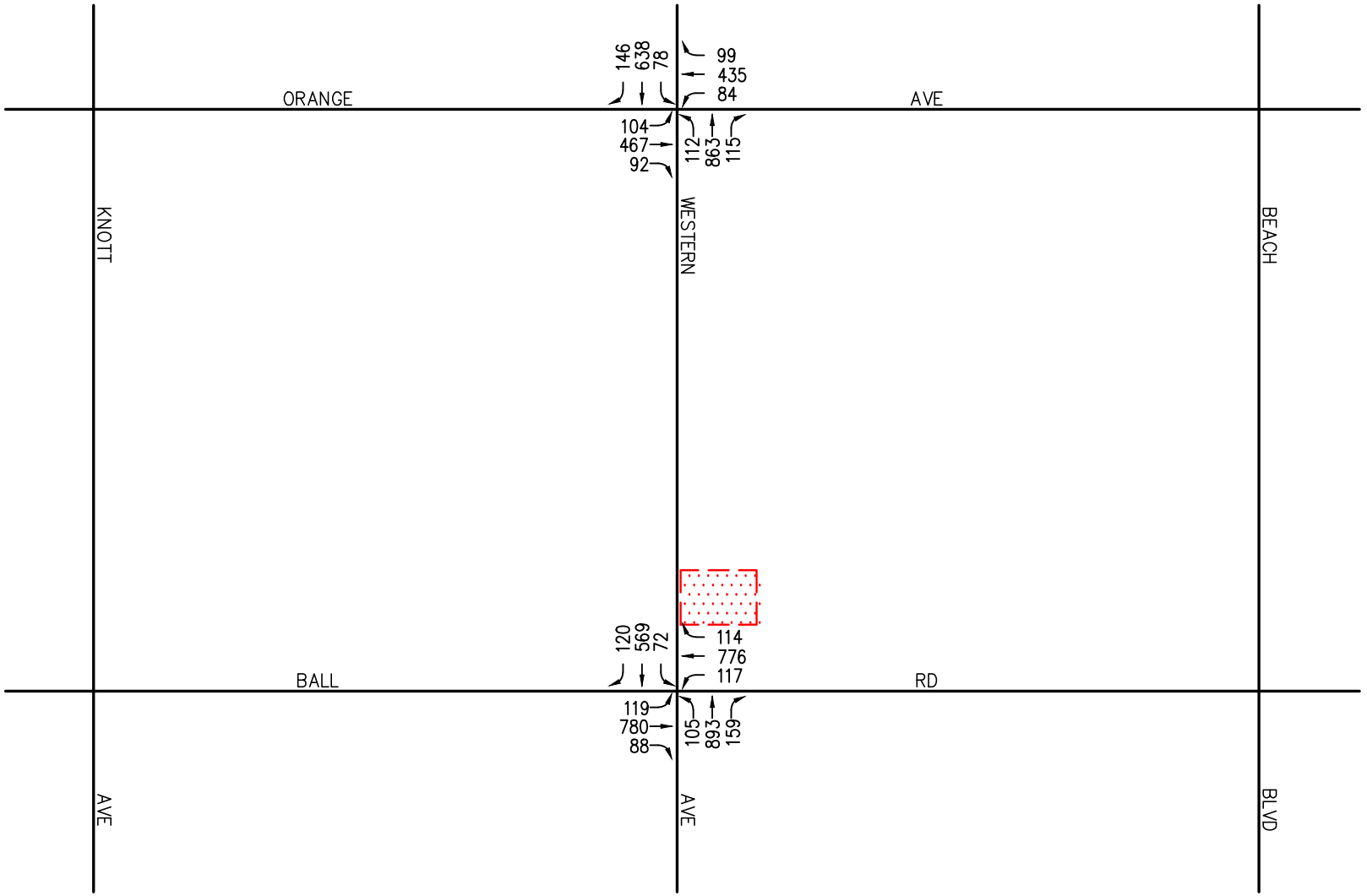
N NO SCALE

KEY
= PROJECT SITE

FIGURE 3-2

EXISTING AM PEAK HOUR TRAFFIC VOLUMES

PEPPERWOOD PLACE, ANAHEIM



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KEY
= PROJECT SITE

FIGURE 3-3

EXISTING PM PEAK HOUR TRAFFIC VOLUMES

PEPPERWOOD PLACE, ANAHEIM

3.3.1 *Intersection Capacity Utilization (ICU) Method of Analysis (Signalized Intersections)*

In conformance with the City of Anaheim, existing AM and PM peak hour operating conditions for the key signalized study intersections were evaluated using the Intersection Capacity Utilization (ICU) method. The ICU technique is intended for signalized intersection analysis and estimates the volume to capacity (V/C) relationship for an intersection based on the individual V/C ratios for key conflicting traffic movements.

The ICU numerical value represents the percent signal (green) time and thus capacity, required by existing and/or future traffic. It should be noted that the ICU methodology assumes uniform traffic distribution per intersection approach lane and optimal signal timing.

Per City of Anaheim requirements, the ICU calculations use a lane capacity of 1,700 vehicles per hour (vph) for through and all turn lanes. A clearance adjustment factor of 0.05 was added to each Level of Service calculation.

The ICU value translates to a Level of Service (LOS) estimate, which is a relative measure of the intersection performance. The ICU value is the sum of the critical volume to capacity ratios at an intersection; it is not intended to be indicative of the LOS of each of the individual turning movements. The six qualitative categories of Level of Service have been defined along with the corresponding ICU value range and are shown in ***Table 3-1***.

3.3.2 *Highway Capacity Manual 6 (HCM 6) Method of Analysis (Unsignalized Intersections)*

The HCM unsignalized methodology for stop-controlled intersections was utilized for the analysis of the unsignalized intersections (i.e. proposed Project Access). This methodology estimates the average control delay for each of the subject movements and determines the level of service for each movement. For all-way stop controlled intersections, the overall average control delay measured in seconds per vehicle, and level of service is calculated for the entire intersection. For one-way and two-way stop-controlled (minor street stop-controlled) intersections, this methodology estimates the worst side street delay, measured in seconds per vehicle and determines the level of service for that approach. The HCM control delay value translates to a Level of Service (LOS) estimate, which is a relative measure of the intersection performance. The six qualitative categories of Level of Service have been defined along with the corresponding HCM control delay value range, as shown in ***Table 3-2***.

3.4 Level of Service Criteria

According to the City of Anaheim's Circulation Element and stated in the *City of Anaheim Criteria for Preparation of Traffic Impact Studies*, LOS D is the minimum acceptable condition that should be maintained during the morning and evening peak commute hours on all City intersections.

3.5 Existing Level of Service Results

3.5.1 *Intersections*

Table 3-3 summarizes the existing peak hour service level calculations for the two (2) key study intersections based on existing traffic volumes and current street geometry. Review of *Table 3-3*

indicates that the two (2) key study intersections currently operate at acceptable LOS B during the AM and PM peak hours.

Appendix C presents the ICU/LOS calculations for the two (2) key study intersections for the AM peak hour and PM peak hour.

TABLE 3-1

LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS[1]

Level of Service (LOS)	Intersection Capacity Utilization Value (V/C)	Level of Service Description
A	≤ 0.60	EXCELLENT. No vehicle waits longer than one red light, and no approach phase is fully used.
B	0.61 – 0.70	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.
C	0.71 – 0.80	GOOD. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	0.81 – 0.90	FAIR. Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.
E	0.91 – 1.00	POOR. Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.
F	> 1.00	FAILURE. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Potentially very long delays with continuously increasing queue lengths.

[1] Source: *Transportation Research Board Circular 212 – Interim Materials on Highway Capacity*.

TABLE 3-2

LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS (HCM 6 METHODOLOGY)[2,3]

Level of Service (LOS)	Highway Capacity Manual Delay Value (sec/veh)	Level of Service Description
A	≤ 10.0	Little or no delay
B	> 10.0 and ≤ 15.0	Short traffic delays
C	> 15.0 and ≤ 25.0	Average traffic delays
D	> 25.0 and ≤ 35.0	Long traffic delays
E	> 35.0 and ≤ 50.0	Very long traffic delays
F	> 50.0	Severe congestion

2 Source: *Highway Capacity Manual 6*, Chapter 20: Two-Way Stop-Controlled Intersections. The LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches or for the intersection as a whole.

3 Source: *Highway Capacity Manual 6*, Chapter 21: All-Way Stop-Controlled Intersections. For approaches and intersection-wide assessment, LOS is defined solely by control delay.

TABLE 3-3
EXISTING PEAK HOUR LEVELS OF SERVICE SUMMARY

Key Intersections	Time Period	Minimum Acceptable LOS	Control Type	ICU	LOS
1. Western Avenue at Orange Avenue	AM	D	5∅ Traffic Signal	0.645	B
	PM			0.602	B
2. Western Avenue at Ball Road	AM	D	5∅ Traffic Signal	0.649	B
	PM			0.700	B

Notes:
- **Bold LOS values** indicate adverse service levels based on City LOS standards
- ICU = Intersection Capacity Utilization
- ∅ = Phase

4.0 TRAFFIC FORECASTING METHODOLOGY

In order to estimate the traffic impact characteristics of the proposed Project, a multi-step process has been utilized. The first step is trip generation, which estimates the total arriving and departing traffic on a peak hour and daily basis. The traffic generation potential is forecast by applying the appropriate vehicle trip generation equations or rates to the project development tabulation.

The second step of the forecasting process is trip distribution, which identifies the origins and destinations of inbound and outbound project traffic. These origins and destinations are typically based on demographics and existing/anticipated travel patterns in the study area.

The third step is traffic assignment, which involves the allocation of project traffic to study area streets and intersections. Traffic assignment is typically based on minimization of travel time, which may or may not involve the shortest route, depending on prevailing operating conditions and travel speeds. Traffic distribution patterns are indicated by general percentage orientation, while traffic assignment allocates specific volume forecasts to individual roadway links and intersection turning movements throughout the study area.

With the forecasting process complete and project traffic assignments developed, the impact of the proposed Project is isolated by comparing operational (LOS) conditions at selected key intersections using expected future traffic volumes with and without forecast project traffic. The need for site-specific and/or cumulative local area traffic improvements can then be evaluated and the significance of the project's impacts identified.

5.0 PROJECT TRAFFIC CHARACTERISTICS

5.1 Project Traffic Generation

Traffic generation is expressed in vehicle trip ends, defined as one-way vehicular movements, either entering or exiting the generating land use. Generation equations and/or rates used in the traffic forecasting procedure are found in the 10th Edition of *Trip Generation*, published by the Institute of Transportation Engineers (ITE) [Washington D.C., 2017].

Table 5-1 summarizes the trip generation rates used in forecasting the vehicular trips generated by the proposed Project and also presents the forecast daily and peak hour project traffic volumes for a "typical" weekday. As shown in the middle portion of *Table 5-1*, the trip generation potential for the proposed Project was estimated using ITE Land Use 210: Single-Family Detached Housing trip rates. Review of the lower portion of *Table 5-1* indicates that the proposed Project is forecast to generate approximately 113 daily trips, with 9 trips (2 inbound, 7 outbound) produced in the AM peak hour and 12 trips (8 inbound, 4 outbound) produced in the PM peak hour on a "typical" weekday.

5.2 Project Traffic Distribution and Assignment

Figure 5-1 presents the traffic distribution pattern for the proposed Project. Project traffic volumes both entering and exiting the site have been distributed and assigned to the adjacent street system based on the following considerations:

- the site's proximity to major traffic carriers (i.e. Western Avenue, Orange Avenue, Ball Road, etc.),
- expected localized traffic flow patterns based on adjacent street channelization and presence of traffic signals,
- existing intersection traffic volumes, and
- ingress/egress availability at the project site.

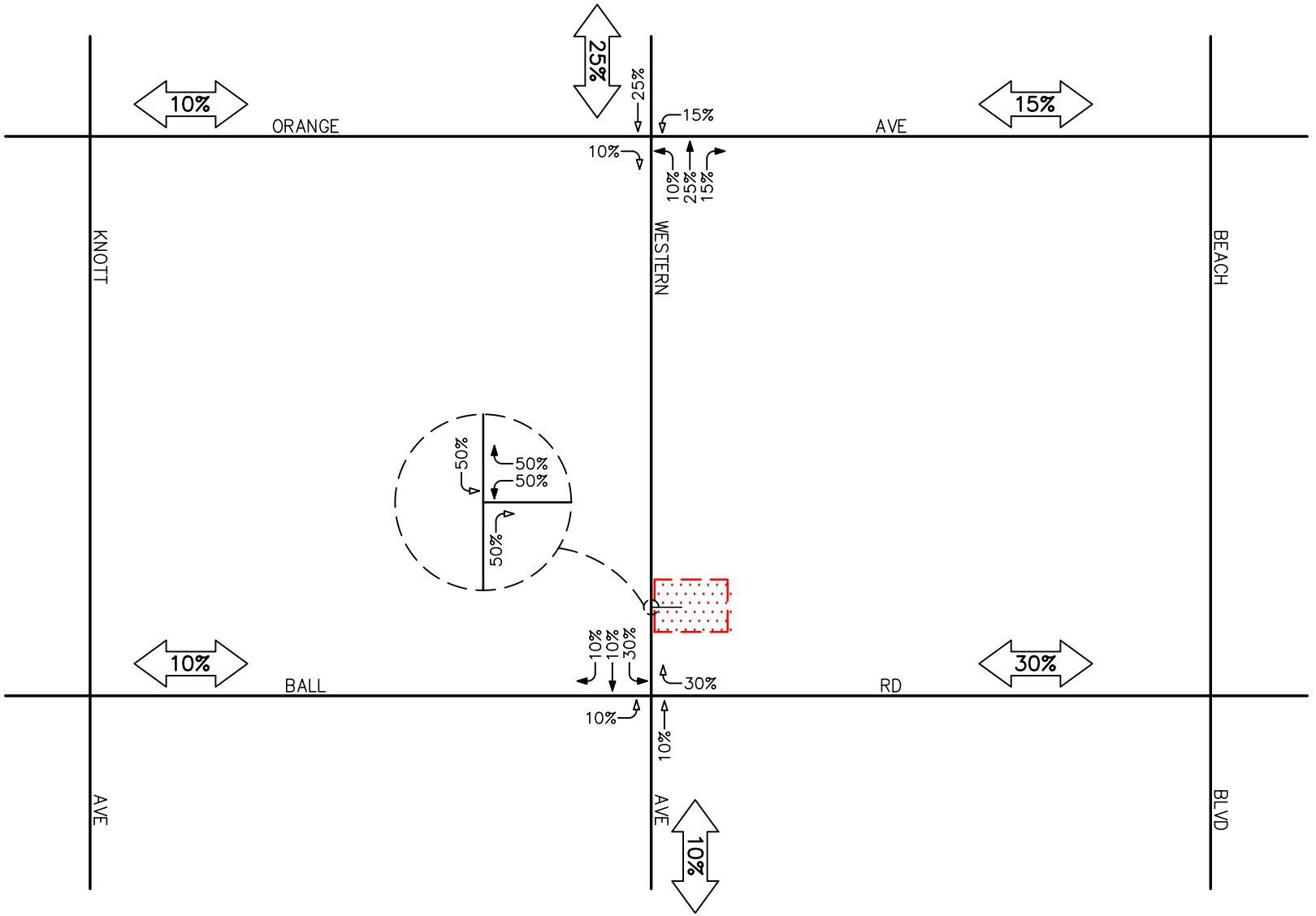
The anticipated AM and PM peak hour traffic volumes associated with the Project are presented in ***Figures 5-2*** and ***5-3***, respectively. The traffic volume assignments presented in *Figures 5-2* and *5-3* reflect the traffic distribution characteristics shown in *Figure 5-1* and the traffic generation forecast presented in *Table 5-1*.

TABLE 5-1
PROJECT TRAFFIC GENERATION FORECAST[4]

ITE Land Use Code / Project Description	Daily 2-Way	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Generation Factors:							
▪ 210: Single-Family Detached Housing (TE/DU)	9.44	25%	75%	0.74	63%	37%	0.99
Proposed Project Generation Forecast:							
▪ Pepperwood Place (12 DU)	113	2	7	9	8	4	12

Notes:
- TE/DU = trip end per dwelling unit

[4] Source: *Trip Generation*, 10th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2017).



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N NO SCALE

KEY

= INBOUND PERCENTAGE

= OUTBOUND PERCENTAGE

= PROJECT SITE

FIGURE 5-1

PROJECT TRIP DISTRIBUTION PATTERN

PEPPERWOOD PLACE, ANAHEIM

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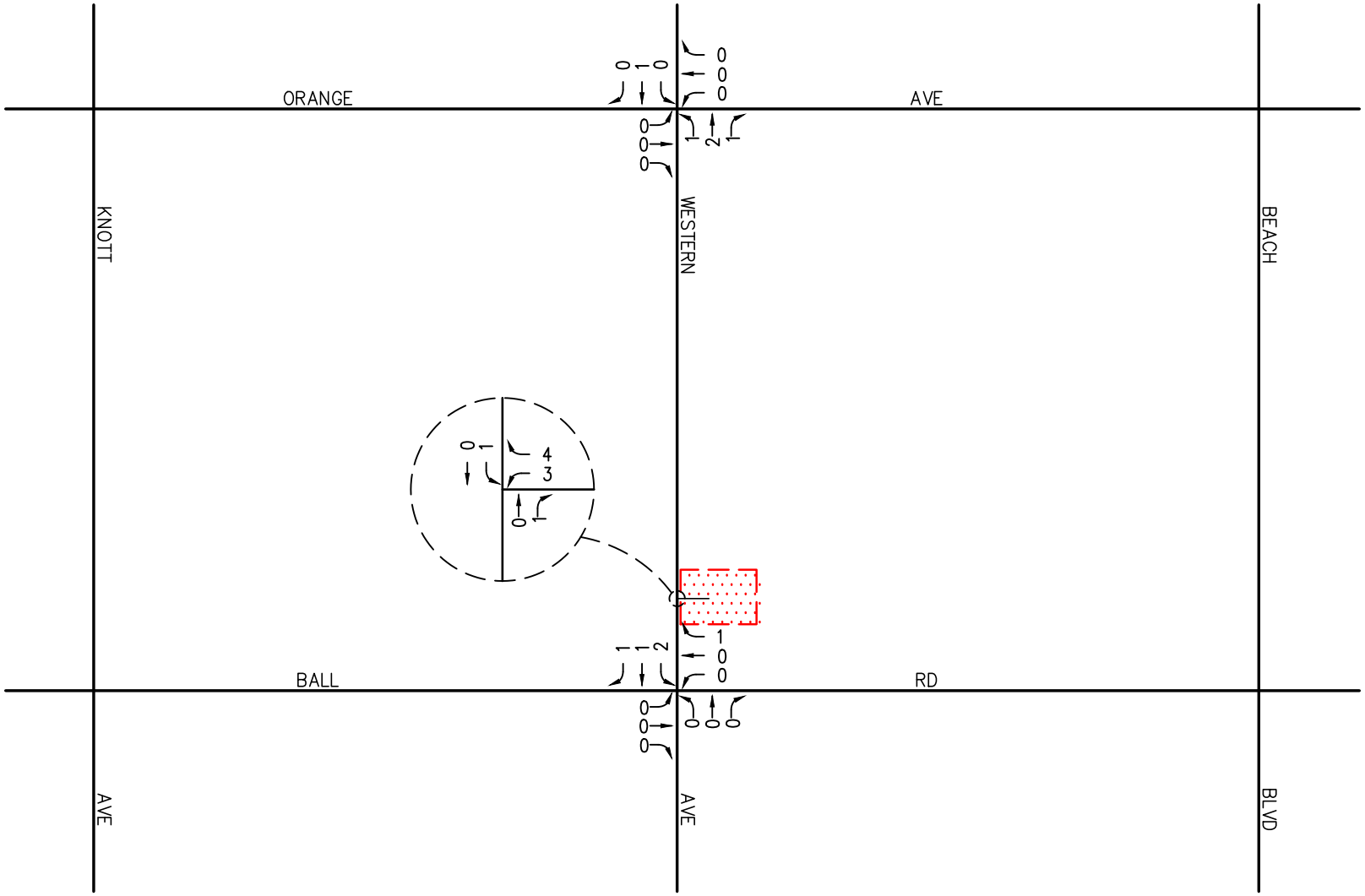

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KEY
= PROJECT SITE

FIGURE 5-2

AM PEAK HOUR PROJECT TRAFFIC VOLUMES

PEPPERWOOD PLACE, ANAHEIM

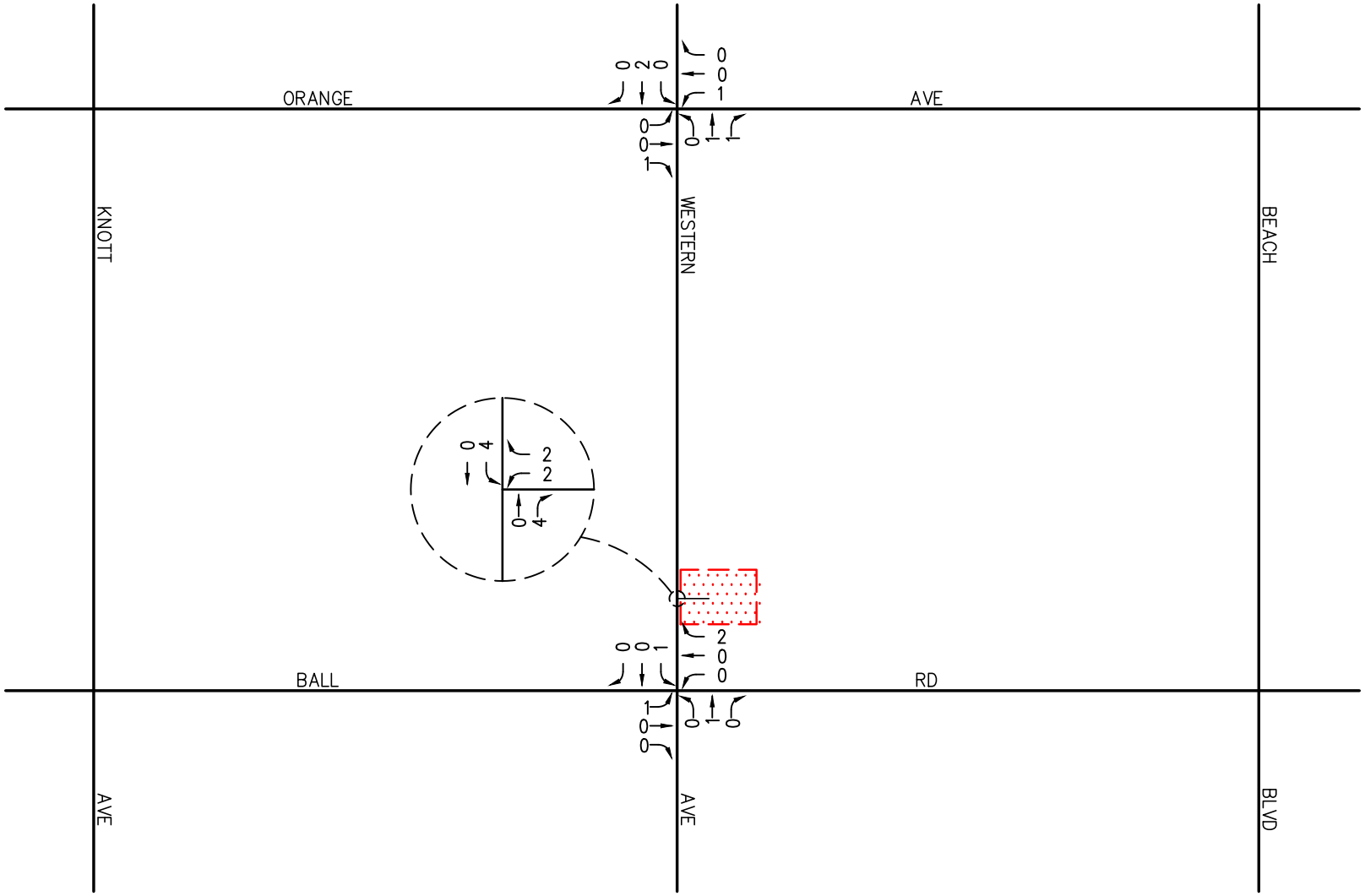

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FIGURE 5-3

PM PEAK HOUR PROJECT TRAFFIC VOLUMES

PEPPERWOOD PLACE, ANAHEIM

6.0 FUTURE TRAFFIC CONDITIONS

6.1 Ambient Traffic Growth

Horizon year, background traffic growth estimates have been calculated using an ambient traffic growth factor. The ambient traffic growth factor is intended to include unknown and future cumulative projects in the study area, as well as account for regular growth in traffic volumes due to the development of projects outside the study area. The future growth in traffic volumes has been calculated at one percent (1.0%) per year. Applied to the Year 2021 existing traffic volumes, this factor results in a 1.0% growth in existing volumes to the near-term horizon Year 2022.

6.2 Cumulative Projects Traffic Characteristics

In order to make a realistic estimate of future on-street conditions prior to implementation of the proposed Project, the status of other known development projects (cumulative projects) in the vicinity of the proposed Project has been researched at the City of Anaheim, the City of Buena Park, the City of Cypress, the City of Stanton, and the City of Garden Grove. With this information, the potential impact of the proposed Project can be evaluated within the context of the cumulative impact of all ongoing development. Based on our research, there are eighteen (18) cumulative projects in the City of Anaheim, three (3) cumulative projects in the City of Buena Park, five (5) cumulative projects in the City of Cypress, eight (8) cumulative projects in the City of Stanton, and one (1) cumulative project in the City of Garden Grove within the vicinity of the subject site. These thirty-five (35) planned and/or approved cumulative projects were considered in the cumulative traffic analysis for this project.

Table 6-1 provides a brief description for each of the thirty-five (35) cumulative projects. ***Figure 6-1*** graphically illustrates the location of the cumulative projects. These cumulative projects are expected to generate vehicular traffic, which may affect the operating conditions of the key study intersections and key roadway segments.

Table 6-2 presents the trip generation for the thirty-five (35) cumulative projects. As shown in *Table 6-2*, the thirty-five (35) cumulative projects are forecast to generate a total of 22,368 daily trips, with 1,154 trips (463 inbound and 691 outbound) forecast during the AM peak hour and 1,479 trips (824 inbound and 655 outbound) forecast during the PM peak hour.

It should be noted that distribution patterns for each of the cumulative projects were developed based on the location of the trip attractors, type of land use, the site's proximity to major traffic carriers and previously completed traffic studies. It should also be noted that the analysis does not assume any roadway network improvements/mitigation measures associated with any of the thirty-five (35) cumulative projects. The AM and PM peak hour traffic volumes associated with the thirty-five (35) cumulative projects are presented in ***Figures 6-2*** and ***6-3***, respectively.

Figures 6-4 and ***6-5*** present the existing plus cumulative projects AM and PM peak hour traffic volumes at the two (2) key study intersections.

Figures 6-6 and ***6-7*** present the existing plus cumulative projects plus Project AM and PM peak hour traffic volumes at the two (2) key study intersections.

6.3 Year 2022 Traffic Volumes

Figures 6-8 and ***6-9*** present the AM and PM peak hour cumulative traffic volumes (existing + ambient growth + cumulative project traffic) at the two (2) key study intersections for the Year 2022, respectively.

Figures 6-10 and ***6-11*** illustrate the Year 2022 forecast AM and PM peak hour traffic volumes, with the inclusion of the trips generated by the proposed Project, respectively.

TABLE 6-1

LOCATION AND DESCRIPTION OF CUMULATIVE PROJECTS[5]

No.	Description	Location/Address	Size
City of Anaheim			
1.	Magnolia Homes	420 North Magnolia Avenue	25 DU Single-Family
2.	Victory Baptist Church of OC	227 North Magnolia Avenue	59 DU Multi-Family
3.	Watt Communities	2651 West Lincoln Avenue	41 DU Single-Family
4.	Lincoln & Magnolia Starbucks	2595 West Lincoln Avenue	2,000 SF Starbucks with Drive-Thru
5.	Lincoln Townhomes AMG	2726 West Lincoln Avenue	34 DU Multi-Family
6.	7–Eleven	2790 West Lincoln Avenue	6 VHP Gas Station 3,010 SF Convenience store
7.	Autozone	2952 West Lincoln Avenue	6,216 SF Autozone
8.	39 Commons	208-224 North Beach Boulevard	65 DU Single-Family
9.	Anaheim Beach	100 South Beach Boulevard	121 DU Multi-Family (5-Story) 4,000 SF Commercial
10.	Commercial 3043 Lincoln	3043 West Lincoln Avenue	2,617 SF Office 500 SF Commercial
11.	Lincoln Cottages	3319-3321 West Lincoln Avenue	22 DU Multi-Family (3-Story)
12.	3360 Lincoln Avenue	3360 West Lincoln Avenue	235 DU Multi-Family • *35 DU Perm. Supportive Housing* • *100 DU Affordable* • *100 DU Market Rate*
13.	Beautiful Community Church	3111 West Orange Avenue	860 SF Church (60 Seats)
14.	Aceport College Inc	3340 West Ball Road	1,511 SF Medical Massage Therapy School
15.	Apartment Building	3175 West Ball Road	11 DU Multi-Family (3-Story)
16.	Community Center	907 South Beach Boulevard	13,600 SF Community Center
17.	Anaheim Christian School	2930 West Ball Road	60 Student Preschool
18.	Iglesia de Dios Israelita	2620 West Orange Avenue	1.248 SF Church
City of Buena Park			
19.	Orchard View Gardens	8300 Valley View Road	66 DU Senior Adult Housing
20.	Aloft Hotel	7851 Beach Boulevard	149 Room Hotel
21.	Hotel Stanford	7860 Beach Boulevard	150 Room Hotel

[5] Source: Cities of Garden Grove and Stanton Planning Departments staff.

TABLE 6-1 (CONTINUED)

LOCATION AND DESCRIPTION OF CUMULATIVE PROJECTS[6]

No.	Description	Location/Address	Size
City of Cypress			
22.	Cypress City Center	North of Katella Avenue, between Siboney and Winner	20,800 SF Retail 251 DU Multi-Family 120 Room Hotel Multiplex Movie Theater (10 Screens)
23.	Isalamic Center Expansion	5900 Ball Road	5,100 SF Church
24.	Club Pilates	10135 Valley View Street	1,500 SF Club Pilates
25.	Amazon Last Mile Delivery Facility	6400 Katella Avenue	145,000 SF Industrial
26.	Melia Homes	South of Vessels Circle, Between Siboney Street and Walker Street	135 DU Multi-Family
City of Stanton			
27.	10572 Lexington Residential	10572 Lexington Street	2 DU Single-Family
28.	Lighthouse Development	10871 Western Avenue	40 DU Condominiums (3-Story)
29.	Tina-Pacific	North of Pacific Avenue, west of Tina Way	161 DU Multi-Family
30.	7922 W. Cerritos Residential	7922 West Cerritos Avenue	6 DU Condominiums
31.	7091 Kermore Residential	7091 Kermore Lane	7 DU Single-Family
32.	8222 Starr Residential	8222 Starr Street	5 DU Single- Family
33.	10499 Beach Gas Station	10499 Beach Boulevard	2,201 SF Convenience Store 6 VFP Gas Station
34.	7455 Katella Residential	7455 Katella Avenue	36 DU Multi-Family
City of Garden Grove			
35.	7-Eleven Gas Station	8471 Chapman Avenue	8 VFP Gas Station 2,400 SF 7-Eleven Store

[6] Source: Cities of Garden Grove and Stanton Planning Departments staff.

TABLE 6-2
CUMULATIVE PROJECTS TRIP GENERATION FORECAST[7]

No.	Cumulative Project Description	Daily Two-Way	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
1.	Magnolia Homes	236	5	14	19	16	9	25
2.	Victory Baptist Church of OC	432	6	21	27	21	12	33
3.	Watt Communities	387	8	22	30	26	15	41
4.	Lincoln & Magnolia Starbucks	1,231	45	44	89	33	32	65
5.	Lincoln Townhomes AMG	249	4	12	16	12	7	19
6.	7–Eleven	1,451	23	23	46	23	24	47
7.	Autozone	101	9	3	12	6	8	14
8.	39 Commons	614	12	36	48	40	24	64
9.	Anaheim Beach	794	13	35	48	37	26	63
10.	Commercial 3043 Lincoln	42	3	0	3	1	3	4
11.	Lincoln Cottages	120	2	6	8	6	4	10
12.	3360 Lincoln Avenue	1,720	25	83	108	83	49	132
13.	Beautiful Community Church	26	1	0	1	1	1	2
14.	Aceport College Inc	31	2	1	3	2	1	3
15.	Apartment Building	60	1	3	4	3	2	5
16.	Community Center	392	16	8	24	15	16	31
17.	Anaheim Christian School	245	25	22	47	22	25	47
18.	Iglesia de Dios Israelita	9	0	0	0	0	1	1
19.	Orchard View Gardens[8]	244	5	8	13	9	8	17
20.	Aloft Hotel	1,246	41	29	70	45	44	89
21.	Hotel Stanford	1,254	42	29	71	46	44	90
22.	Cypress City Center	4,978	68	96	164	176	147	323
23.	Isalamic Center Expansion	35	1	1	2	1	1	2
24.	Club Pilates	57	1	1	2	3	3	6
25.	Amazon Last Mile Delivery Facility	203	9	3	12	4	11	15
26.	Melia Homes	988	14	48	62	48	28	76
27.	10572 Lexington Residential	19	0	1	1	1	1	2
28.	Lighthouse Development	218	4	10	14	11	7	18

[7] Unless otherwise noted, Source: *Trip Generation, 10th Editions*, Institute of Transportation Engineers (ITE) [Washington, D.C. (2017)].

[8] Source: *Orchard View Gardens Senior Apartment Homes Initial Study and Mitigated Negative Declaration*, prepared by UltraSystems Environment Inc., dated September 2020.

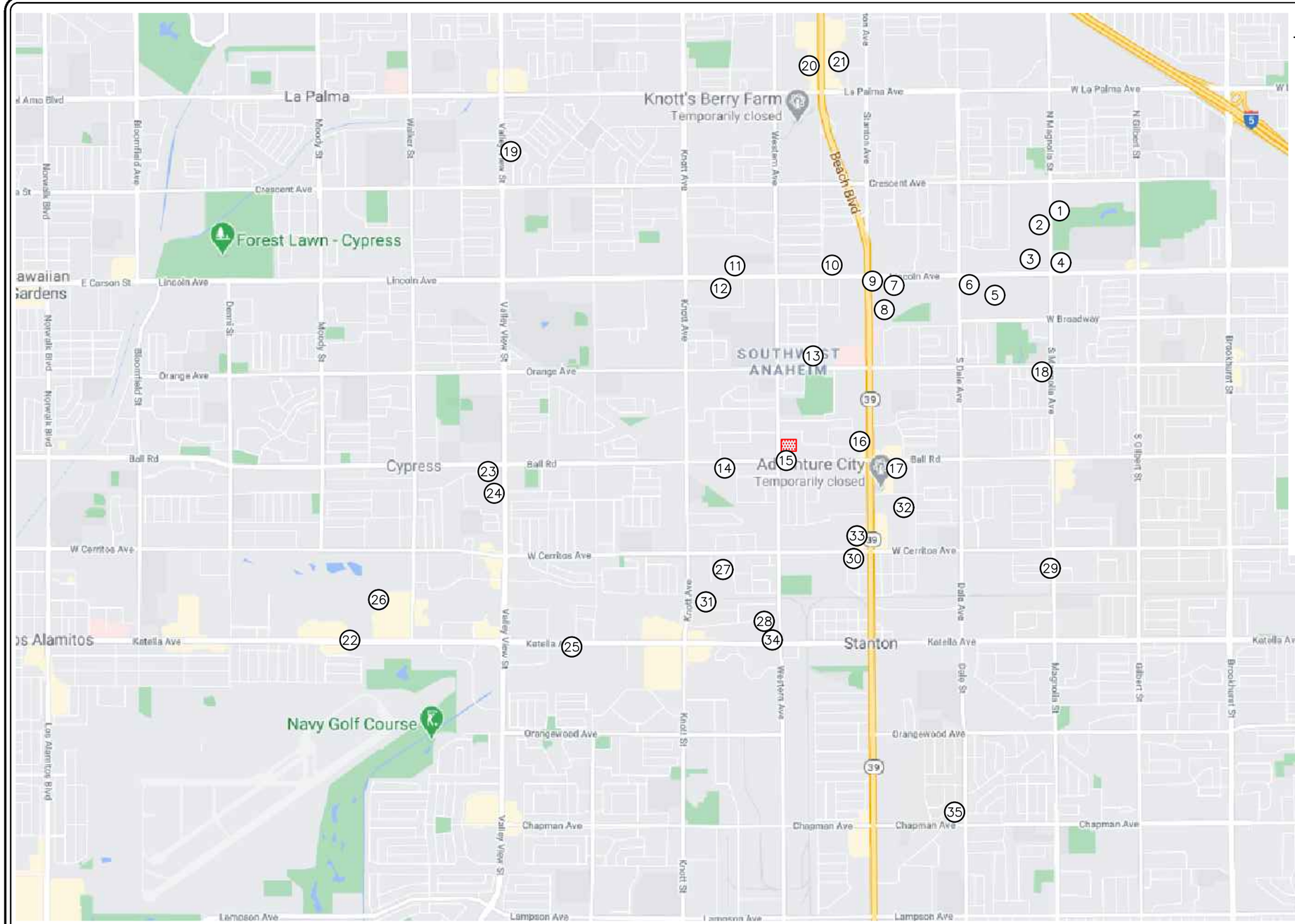
TABLE 6-2 (CONTINUED)

CUMULATIVE PROJECTS TRIP GENERATION FORECAST[9]

No.	Cumulative Project Description	Daily Two-Way	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
29.	Tina-Pacific	1,179	17	57	74	57	33	90
30.	7922 W. Cerritos Residential	44	1	2	3	2	1	3
31.	7091 Kermore Residential	66	1	4	5	4	3	7
32.	8222 Starr Residential	47	1	3	4	3	2	5
33.	10499 Beach Gas Station	1,451	23	23	46	23	24	47
34.	7455 Katella Residential	264	4	13	17	13	7	20
35.	7-Eleven Gas Station[10]	1,935	31	30	61	31	32	63
Cumulative Projects Trip Generation Forecast		**22,368**	**463**	**691**	**1,154**	**824**	**655**	**1,479**

9 Unless otherwise noted, Source: *Trip Generation, 10th Editions*, Institute of Transportation Engineers (ITE) [Washington, D.C. (2017)].

10 Source: *Traffic Impact Analysis Report for 7-Eleven Gas Station*, prepared by LLG Engineers, dated January 16, 2020.



KEY

1. MAGNOLIA HOMES
2. VICTORY BAPTIST CHURCH OF OC
3. WATT COMMUNITIES
4. LINCOLN & MAGNOLIA STARBUCKS
5. LINCOLN TOWNHOMES AMG
6. 7–ELEVEN
7. AUTOZONE
8. 39 COMMONS
9. ANAHEIM BEACH
10. COMMERCIAL 3043 LINCOLN
11. LINCOLN COTTAGES
12. 3360 LINCOLN AVENUE
13. BEAUTIFUL COMMUNITY CHURCH
14. ACEPORT COLLEGE INC
15. APARTMENT BUILDING
16. COMMUNITY CENTER
17. ANAHEIM CHRISTIAN SCHOOL
18. IGLESIA DE DIOS ISRAELITA
19. ORCHARD VIEW GARDENS
20. ALOFT HOTEL
21. HOTEL STANFORD
22. CYPRESS CITY CENTER
23. ISLAMIC CENTER EXPANSION
24. CLUB PILATES
25. AMAZON LAST MILE DELIVERY FACILITY
26. MELIA HOMES
27. 10572 LEXINGTON RESIDENTIAL
28. LIGHTHOUSE DEVELOPMENT
29. TINA–PACIFIC
30. 7922 W. CERRITOS RESIDENTIAL
31. 7091 KERMORE RESIDENTIAL
32. 8222 STARR RESIDENTIAL
33. 10499 BEACH GAS STATION
34. 7455 KATELLA RESIDENTIAL
35. 7–ELEVEN GAS STATION

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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

SOURCE: GOOGLE

KEY

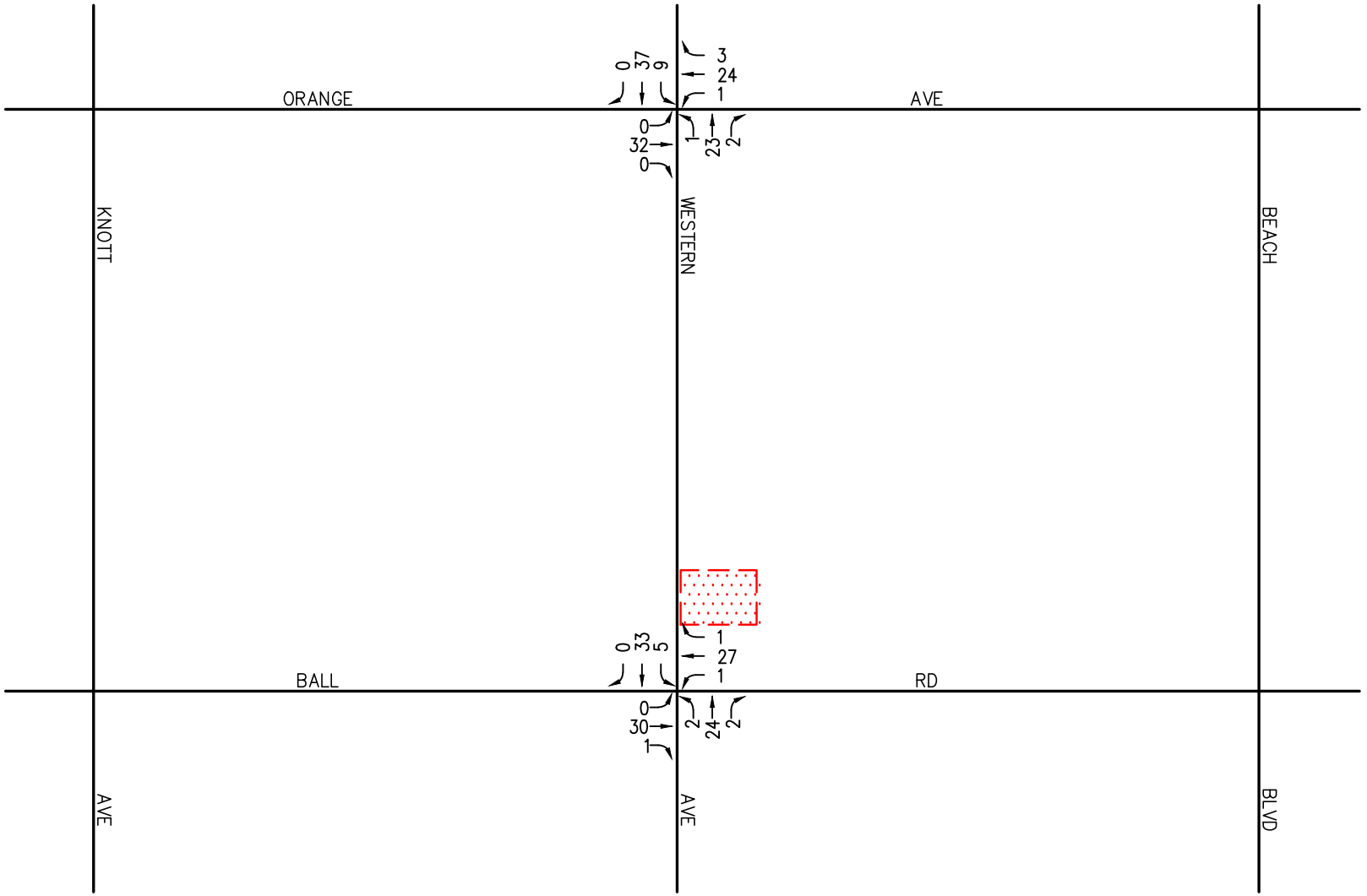
(#) = CUMULATIVE PROJECT LOCATION

= PROJECT SITE

FIGURE 6–1

LOCATION OF CUMULATIVE PROJECTS

PEPPERWOOD PLACE, ANAHEIM



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LINSCOTT LAW & GREENSPAN engineers

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KEY

= PROJECT SITE

FIGURE 6-2

AM PEAK HOUR CUMULATIVE PROJECT TRAFFIC VOLUMES

PEPPERWOOD PLACE, ANAHEIM

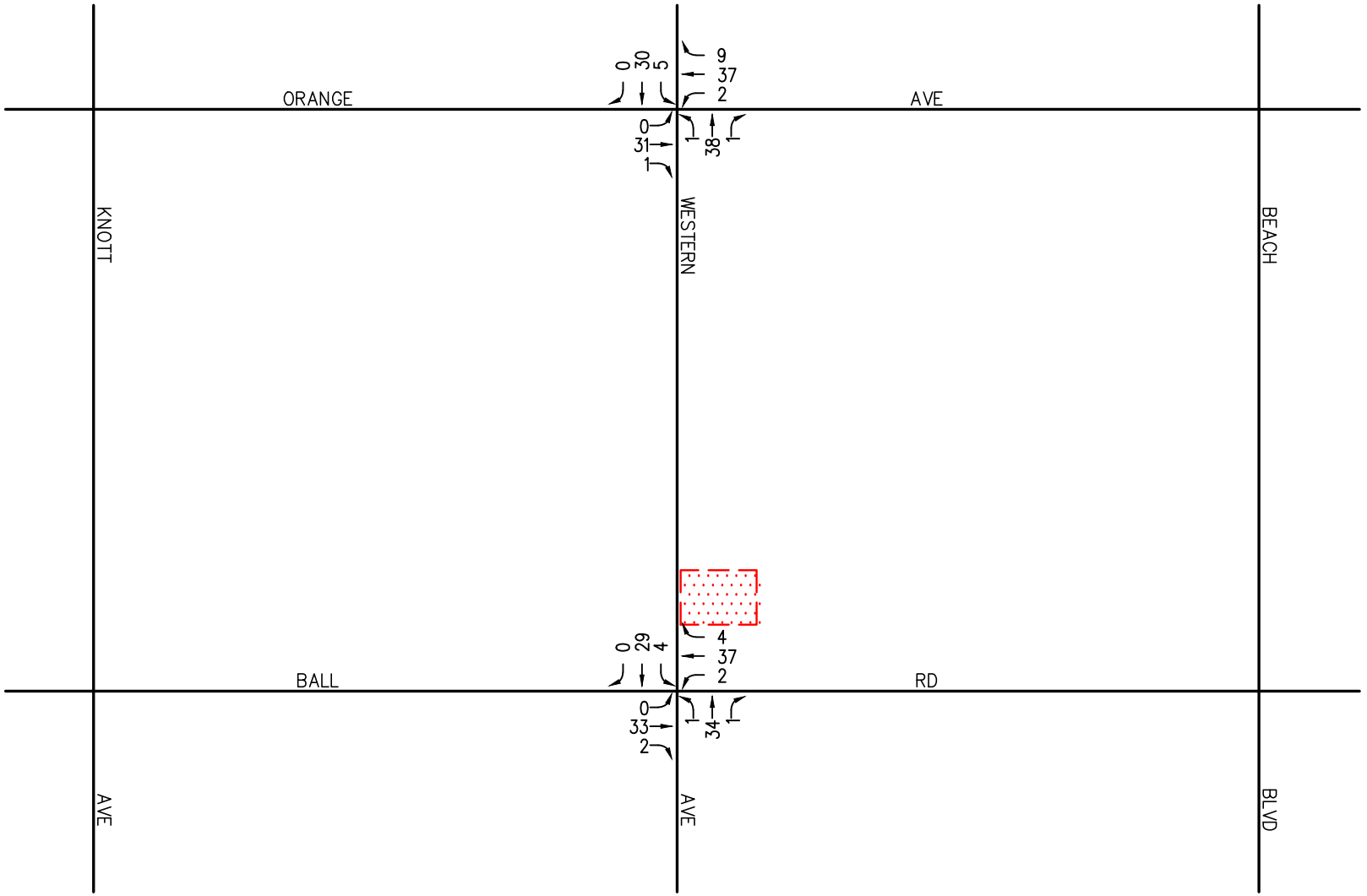

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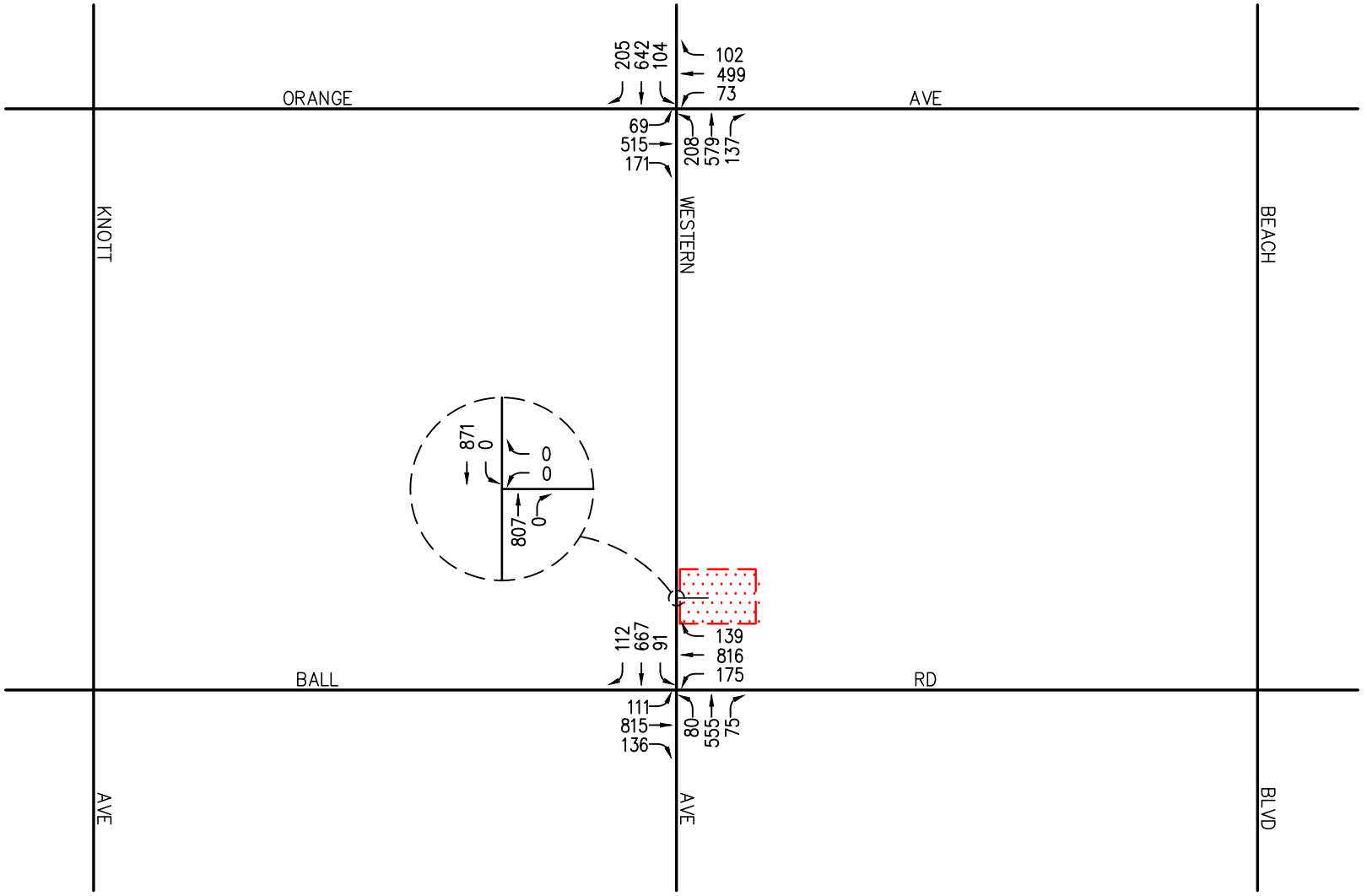
FIGURE 6-3

PM PEAK HOUR CUMULATIVE PROJECT TRAFFIC VOLUMES

PEPPERWOOD PLACE, ANAHEIM



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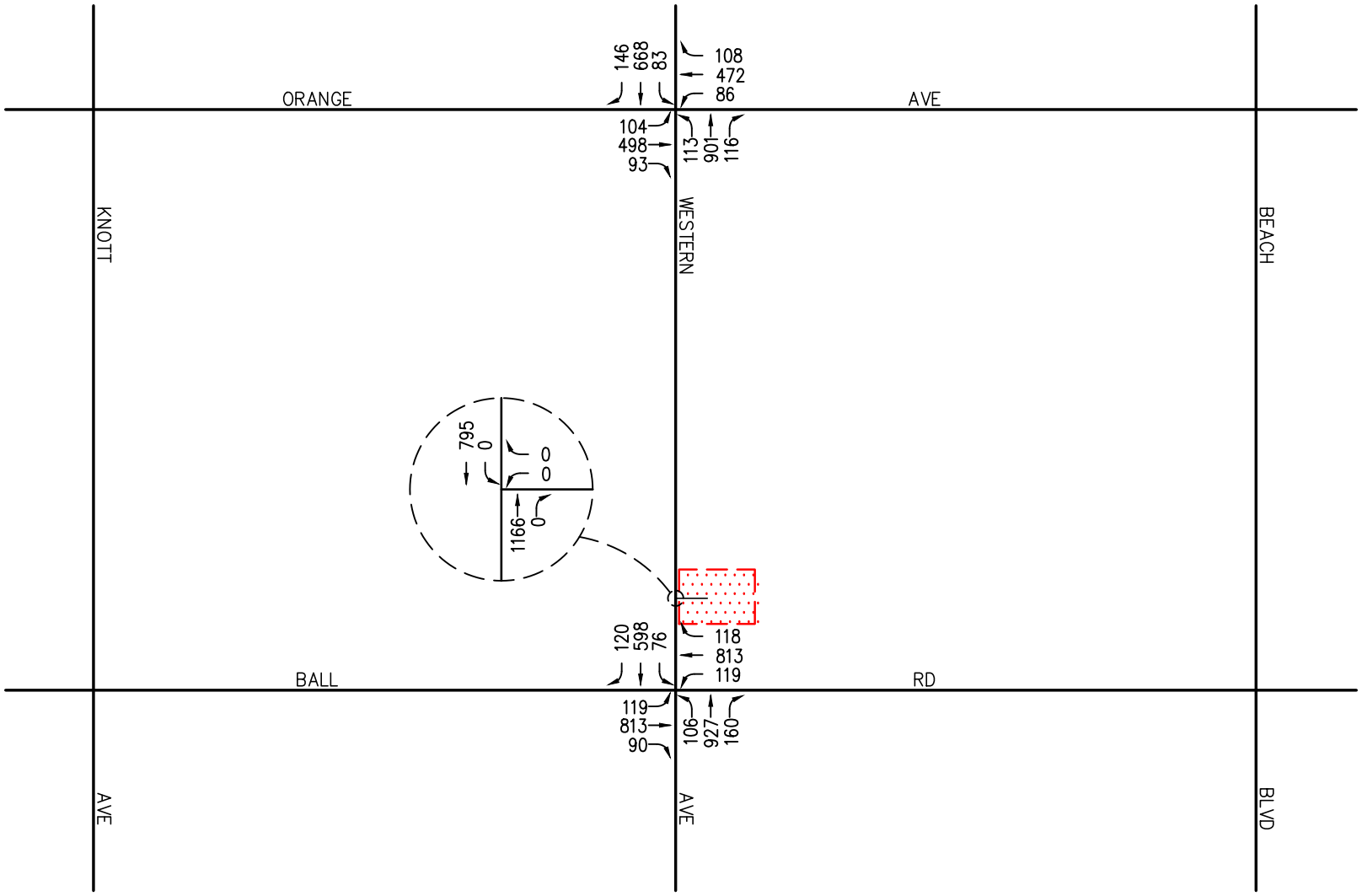
= PROJECT SITE

FIGURE 6-4

EXISTING PLUS CUMULATIVE PROJECTS AM PEAK HOUR TRAFFIC VOLUMES

PEPPERWOOD PLACE, ANAHEIM



LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

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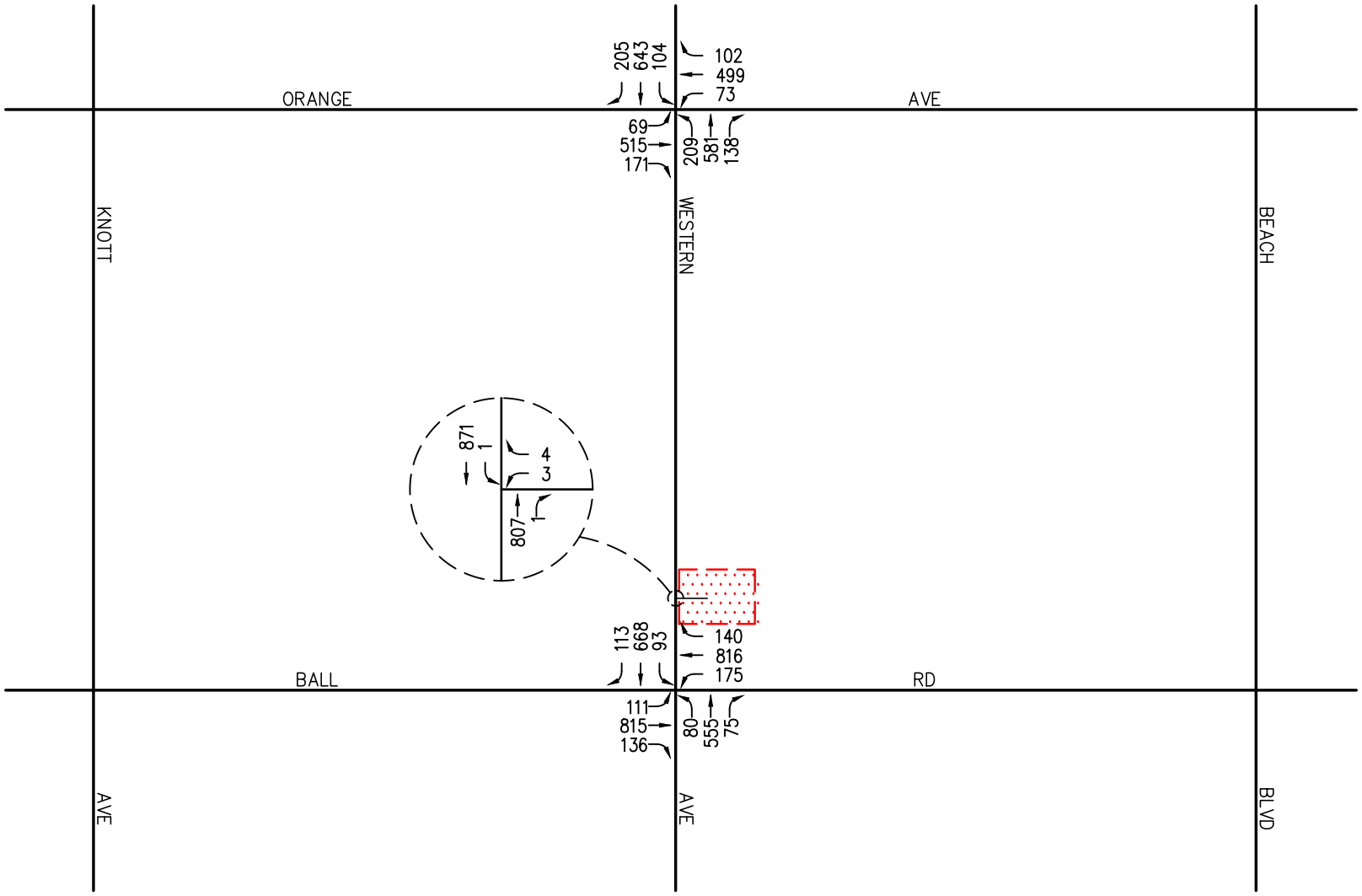
= PROJECT SITE

FIGURE 6-5

EXISTING PLUS CUMULATIVE PROJECTS PM PEAK HOUR TRAFFIC VOLUMES

PEPPERWOOD PLACE, ANAHEIM



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= PROJECT SITE

FIGURE 6-6

EXISTING PLUS CUMULATIVE PROJECTS PLUS PROJECT AM PEAK HOUR TRAFFIC VOLUMES

PEPPERWOOD PLACE, ANAHEIM

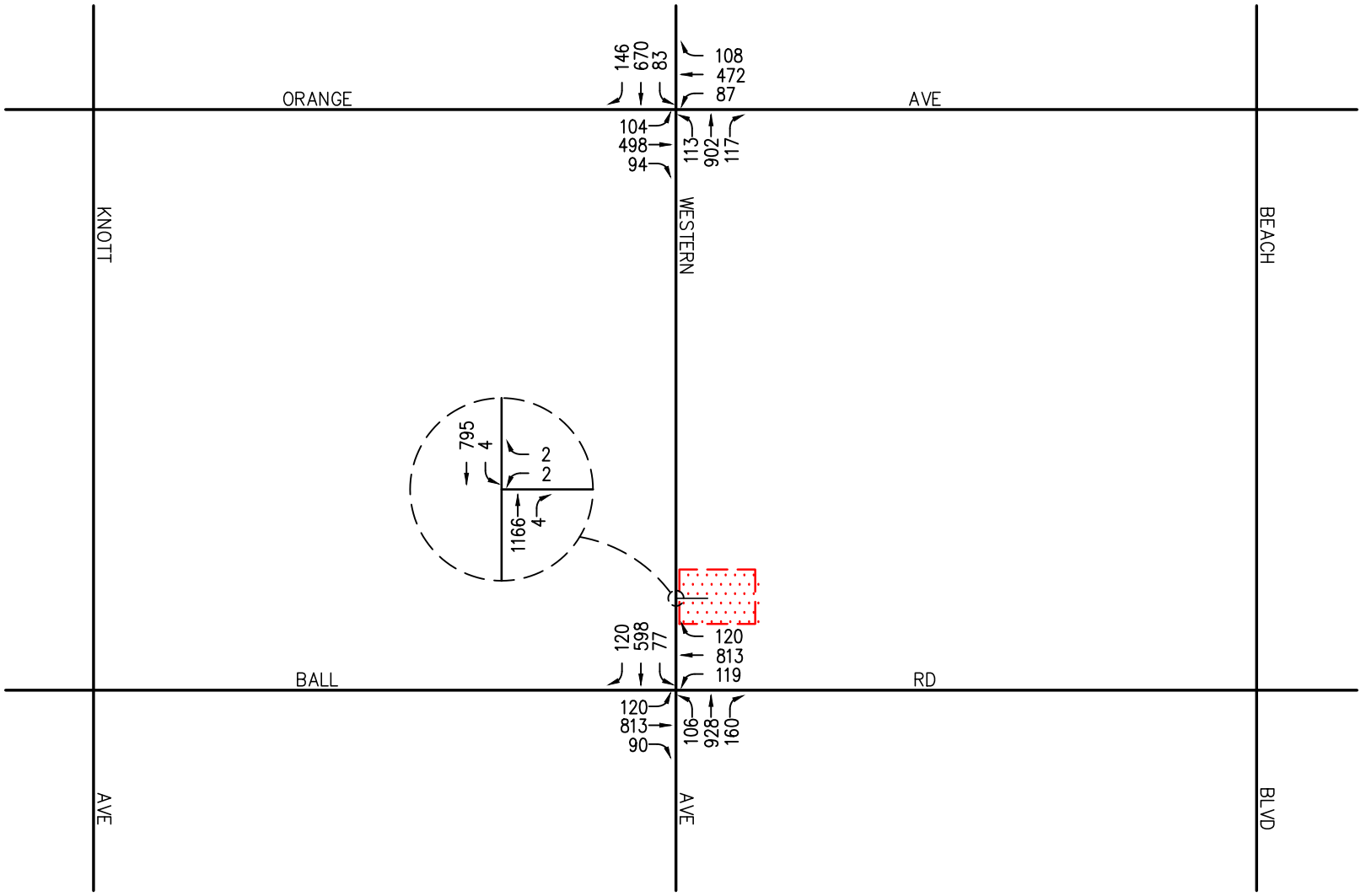

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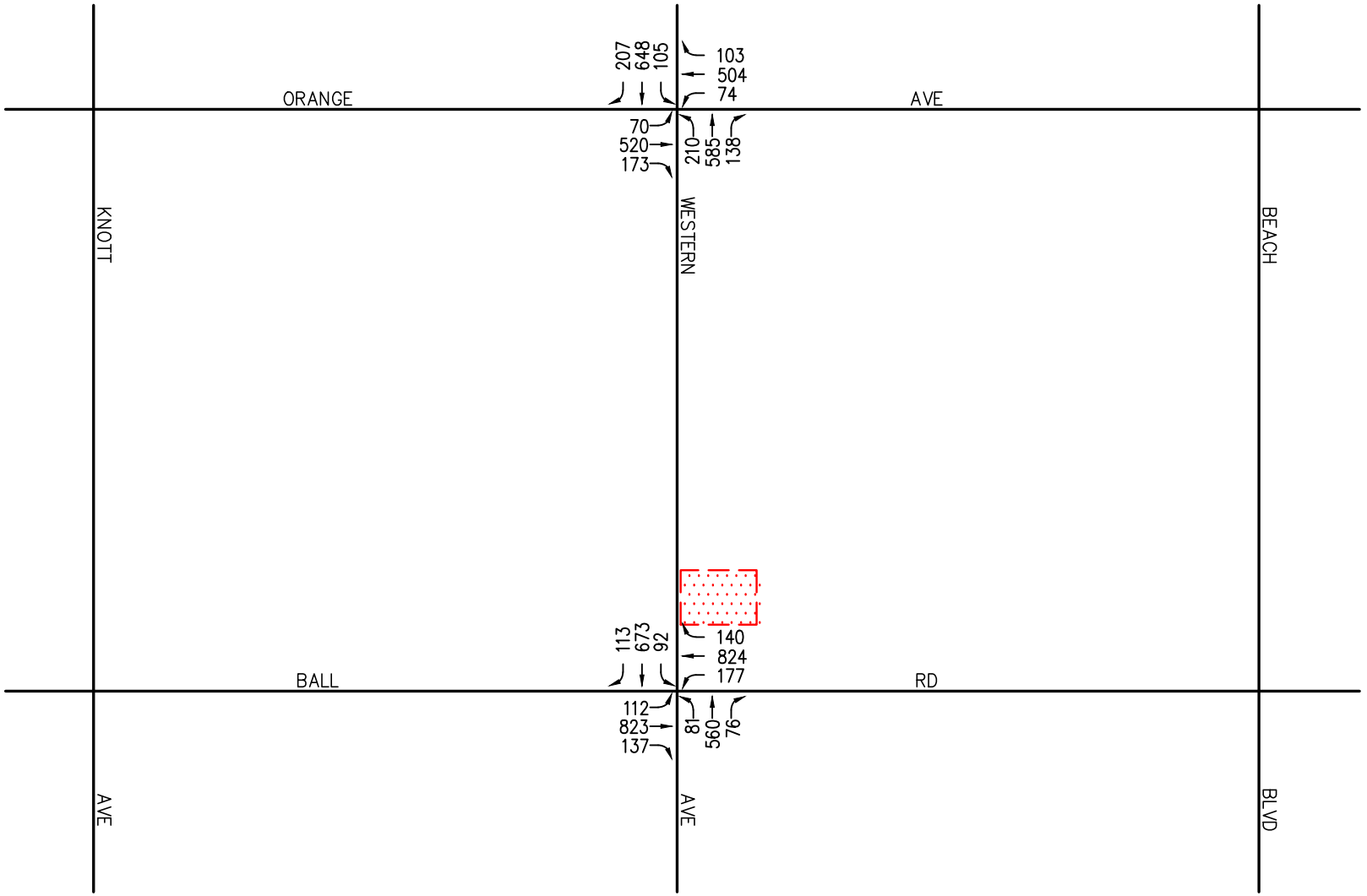
FIGURE 6-7

EXISTING PLUS CUMULATIVE PROJECTS PLUS PROJECT PM PEAK HOUR TRAFFIC VOLUMES

PEPPERWOOD PLACE, ANAHEIM



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= PROJECT SITE

FIGURE 6-8

YEAR 2022 CUMULATIVE AM PEAK HOUR TRAFFIC VOLUMES

PEPPERWOOD PLACE, ANAHEIM

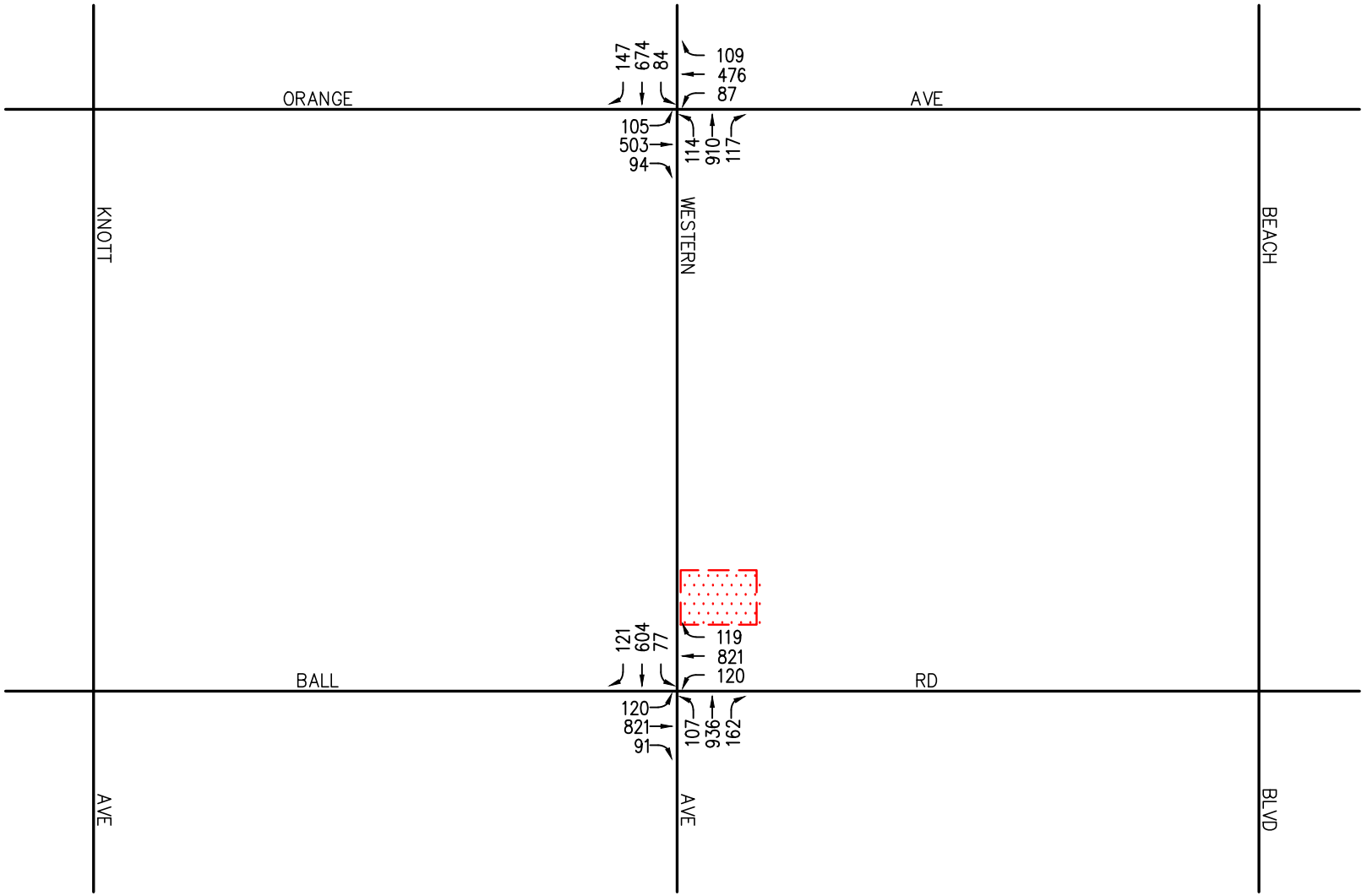

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FIGURE 6-9

YEAR 2022 CUMULATIVE PM PEAK HOUR TRAFFIC VOLUMES

PEPPERWOOD PLACE, ANAHEIM

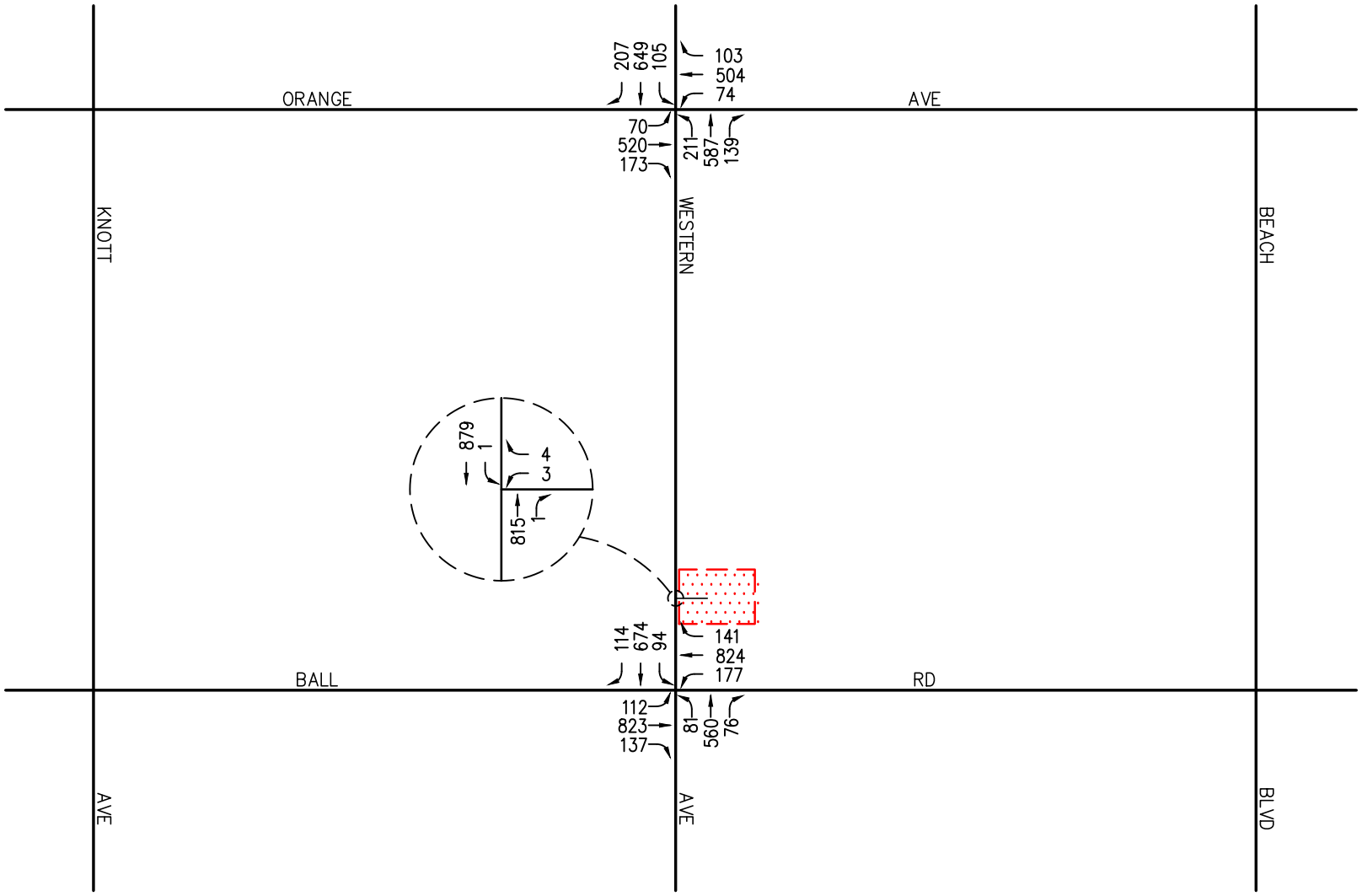

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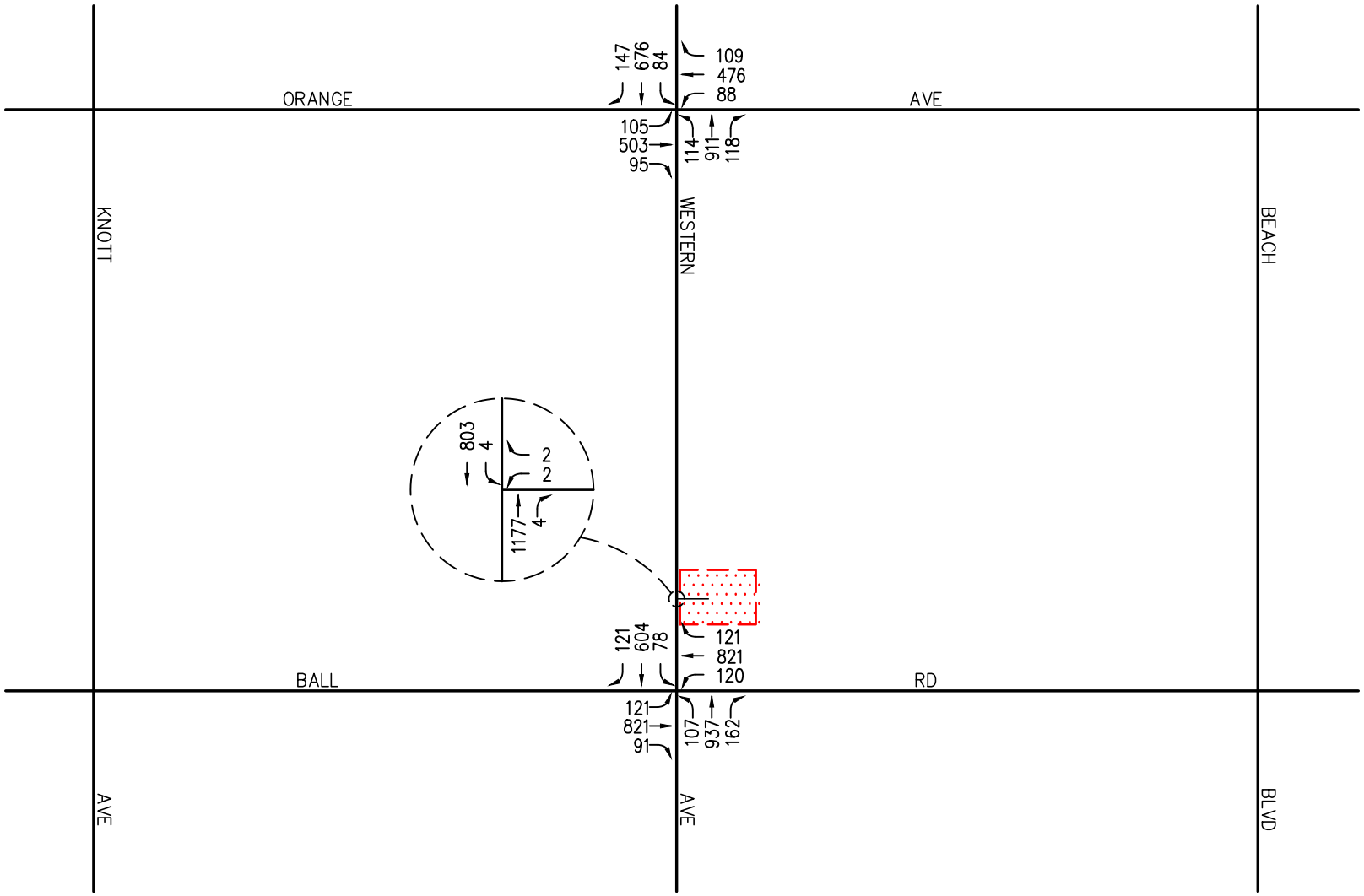
FIGURE 6-10

YEAR 2022 CUMULATIVE PLUS PROJECT AM PEAK HOUR TRAFFIC VOLUMES

PEPPERWOOD PLACE, ANAHEIM



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= PROJECT SITE

FIGURE 6-11

YEAR 2022 CUMULATIVE PLUS PROJECT PM PEAK HOUR TRAFFIC VOLUMES

PEPPERWOOD PLACE, ANAHEIM

7.0 TRAFFIC IMPACT ANALYSIS METHODOLOGY

The relative impact of the proposed Project during the AM peak hour and PM peak hour was evaluated based on analysis of future operating conditions at the two (2) key study intersections, without, then with the proposed Project. The previously discussed capacity analysis procedures were utilized to investigate the future volume-to-capacity relationships and service level characteristics at each study intersection and roadway segment. The significance of the potential impacts of the Project at each key intersection and key roadway segment was then evaluated using the following traffic impact criteria.

7.1 Impact Criteria and Thresholds

Impacts to local and regional transportation systems located in the City of Anaheim are considered to cause an operational deficiency if:

Intersections:

According to the City's Circulation Element and stated in the *City of Anaheim Criteria for Preparation of Traffic Impact Studies*, LOS D is the minimum acceptable condition that should be maintained during the morning and evening peak commute hours on all City intersections. The significance of the potential impacts of the project at each key signalized intersection is determined based on the sliding scale criteria presented in ***Table 7-1***.

As indicated in *Table 7-1*, the project-related increase in ICU value that defines an operational deficiency at signalized intersections varies with LOS. Per the City's guidelines, a change in ICU value, within LOS C, equal to or greater than 0.050 is an impact and within LOS D, a change in ICU equal to or greater than 0.030 is also an impact. With LOS E or F, a change in ICU equal to or greater than 0.010 is considered an impact.

For unsignalized intersections, based on discussions with City of Anaheim Traffic Engineering Department staff, this report defines an operational deficiency if the project causes an intersection operating at LOS D or better to degrade to LOS E or LOS F, and the traffic signal warrant analysis determines that a traffic signal is justified.

TABLE 7-1

CITY OF ANAHEIM TRAFFIC IMPACT CRITERIA[11]

Final Intersection ICU value	Level of Service (LOS)	Project Related Increase in ICU value Considered Operationally Deficient
> 0.700 and ≤ 0.800	C	equal to or greater than 0.050
> 0.800 and ≤ 0.900	D	equal to or greater than 0.030
> 0.900	E/F	equal to or greater than 0.010

7.2 Traffic Impact Analysis Scenarios

The following scenarios are those for which volume/capacity calculations have been performed at the two (2) key study intersections:

(a) Existing Traffic Conditions;
(b) Existing Plus Cumulative Traffic Conditions;
(c) Existing Plus Cumulative Plus Project Traffic Conditions;
(d) Year 2022 Cumulative Traffic Conditions;
(e) Year 2022 Cumulative Plus Project Traffic Conditions.

[11] Source: *City of Anaheim Criteria for Preparation of Traffic Impact Studies.*

8.0 EXISTING PLUS CUMULATIVE PLUS PROJECT ANALYSIS

The following summarizes the "Existing Plus Cumulative Plus Project" level of service results for the two (2) key study intersections.

8.1 Intersections

Table 8-1 summarizes the peak hour level of service results at the two (2) key study intersections for existing plus cumulative plus project traffic conditions. The first column (1) of ICU/LOS values in *Table 8-1* presents a summary of existing AM and PM peak hour traffic conditions (which were also presented in *Table 3-3*). The second column (2) lists projected existing plus cumulative traffic conditions based on existing intersection geometry, but without any traffic generated from the proposed Project. The third column (3) presents existing plus cumulative plus project traffic conditions. The fourth column (4) shows the increase in ICU value due to the added peak hour project trips and indicates whether the traffic associated with the Project will have an operational traffic impact based on the LOS standards and traffic impact criteria defined in this report. The fifth column (5) indicates the anticipated level of service with planned and/or recommended improvements.

8.1.1 *Existing Plus Cumulative Traffic Conditions*

An analysis of future existing plus cumulative traffic conditions indicates that the two (2) key study intersections are forecast to continue to operate at acceptable LOS C or better during the AM and PM peak hours with the addition of cumulative project traffic to existing traffic.

8.1.2 *Existing Plus Cumulative Plus Project Traffic Conditions*

Review of Columns 3 and 4 of *Table 8-1* indicates that traffic associated with the proposed Project ***will not*** cause an operational deficiency at either of the two (2) key study intersections when compared to the LOS standards and traffic impact criteria specified in this report. The two (2) key study intersections are forecast to continue to operate at an acceptable LOS C or better during the AM and PM peak hours with the addition of project generated traffic to existing traffic and cumulative traffic.

Appendix C also presents the existing plus cumulative plus project ICU/LOS calculations for the two (2) key study intersections for the AM peak hour and PM peak hour.

TABLE 8-1

EXISTING PLUS CUMULATIVE PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY

Key Intersection	Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Cum. Projects Traffic Conditions		(3) Existing Plus Cum. Projects Plus Project Traffic Conditions		(4) Impact		(5) Existing Plus Cumulative Projects Plus Project Plus Improvements	
		ICU	LOS	ICU	LOS	ICU	LOS	ICU Increase	Yes/No	ICU	LOS
1. Western Avenue at Orange Avenue	AM	0.645	B	0.666	B	0.667	B	0.001	No	--	--
	PM	0.602	B	0.630	B	0.630	B	0.000	No	--	--
2. Western Avenue at Ball Road	AM	0.649	B	0.669	B	0.669	B	0.000	No	--	--
	PM	0.700	B	0.724	C	0.725	C	0.001	No	--	--

Notes:

- **Bold LOS values** indicate adverse service levels based on City LOS standards
- ICU = Intersection Capacity Utilization

9.0 YEAR 2022 PLUS PROJECT ANALYSIS

The following summarizes the "Year 2022 Cumulative Plus Project" level of service results for the two (2) key study intersections.

9.1 Intersections

Table 9-1 summarizes the peak hour level of service results at the two (2) key study intersections for Year 2022 traffic conditions. The first column (1) of ICU/LOS values in *Table 9-1* presents a summary of existing AM and PM peak hour traffic conditions (which were also presented in *Tables 3-3* and *8-1*). The second column (2) lists projected cumulative traffic conditions (existing plus ambient traffic plus cumulative project traffic) based on existing intersection geometry, but without any traffic generated from the proposed Project. The third column (3) presents forecast Year 2022 traffic conditions with the addition of Project traffic. The fourth column (4) shows the increase in ICU value due to the added peak hour project trips and indicates whether the traffic associated with the Project will have an operational deficiency based on the LOS standards and traffic impact criteria defined in this report. The fifth column (5) indicates the anticipated level of service with planned and/or recommended improvements.

9.1.1 *Year 2022 Cumulative Traffic Conditions*

An analysis of future (Year 2022) cumulative traffic conditions indicates that the two (2) key study intersections are forecast to continue to operate at acceptable LOS C or better during the AM and PM peak hours with the addition of ambient traffic growth and cumulative project traffic to existing traffic.

9.1.2 *Year 2022 Cumulative Plus Project Traffic Conditions*

Review of Columns 3 and 4 of *Table 9-1* indicates that traffic associated with the proposed Project ***will not*** cause an operational deficiency at either of the two (2) key study intersections when compared to the LOS standards and traffic impact criteria specified in this report. The two (2) key study intersections are forecast to continue to operate at an acceptable LOS C or better during the AM and PM peak hours with the addition of project generated traffic in the Year 2022.

Appendix C also presents the Year 2022 cumulative plus project ICU/LOS calculations for the two (2) key study intersections for the AM peak hour and PM peak hour.

TABLE 9-1

YEAR 2022 CUMULATIVE PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY

Key Intersection	Time Period	(1) Existing Traffic Conditions		(2) Year 2022 Cumulative Traffic Conditions		(3) Year 2022 Cumulative Plus Project Traffic Conditions		(4) Impact		(5) Year 2022 Cumulative Plus Project Plus Improvements	
		ICU	LOS	ICU	LOS	ICU	LOS	ICU Increase	Yes/No	ICU	LOS
1. Western Avenue at Orange Avenue	AM	0.645	B	0.672	B	0.673	B	0.001	No	--	--
	PM	0.602	B	0.635	B	0.636	B	0.001	No	--	--
2. Western Avenue at Ball Road	AM	0.649	B	0.675	B	0.676	B	0.001	No	--	--
	PM	0.700	B	0.730	C	0.732	C	0.002	No	--	--

Notes:

- **Bold LOS values** indicate adverse service levels based on City LOS standards
- ICU = Intersection Capacity Utilization

10.0 SITE ACCESS EVALUATION

10.1 Level of Service Analysis For Project Access Locations

As shown previously in *Figure 2-2*, access to the proposed Project site will be provided via one (1) full-access private street driveway along Western Avenue (i.e. Project Access No. 1).

Table 10-1 summarizes the intersection operations at the proposed Project access for Year 2022 plus Project traffic. The operations analysis for the project access is based on the *Highway Capacity Manual 6th Edition* (HCM 6) unsignalized methodology. Review of *Table 10-1* shows that the proposed Project access is forecast to operate at LOS C or better during the AM and PM peak hours under Year 2022 Cumulative Plus Project traffic conditions. As such, Project access will be adequate. Motorists entering and exiting the Project site will be able to do so without undue congestion.

10.2 Sight Distance Evaluation

At intersections and/or project driveways/private streets, a substantially clear line of sight should be maintained between the driver of a vehicle waiting at the crossroad and the driver of an approaching vehicle. Adequate time must be provided for the waiting vehicle to either cross all lanes of through traffic, cross the near lanes and turn left, or turn right, without requiring through traffic to radically alter their speed. A sight distance evaluation has been performed for the unsignalized Project Access No. 1 located along Western Avenue.

The Sight Distance Evaluation prepared for Project Access No. 1 is based on the criteria and procedures set forth by the California Department of Transportation (Caltrans) in the State's *Highway Design Manual (HDM)*. Stopping sight distance was utilized for the evaluation. Stopping sight distance is defined in the Caltrans HDM to be the distance required by the driver of a vehicle, traveling at a given speed, to maneuver their vehicle and avoid an object without radically altering their speed. Line of sight for stopping sight distance is to be determined from a 3½ foot height at the location of the driver of a vehicle on a minor road to a 4¼ foot object height in the center of the approaching lane of the major road.

Based on the criteria set forth in Table 201.1 - Sight Distance Standards of the Caltrans HDM and a posted speed limit of 40 mph along Western Avenue, a stopping sight distance of 440 feet is required for Project Access No. 1.

Figure 10-1 presents a schematic of the sight distance evaluation performed at Project Access No. 1 which illustrates the actual sight distance and corresponding limited use area along Western Avenue. A review of *Figure 10-1* indicates that the sight lines at this intersection are expected to be adequate provided obstructions within the sight triangles are minimized. In addition, any future landscaping and/or hardscapes (i.e. monument signs) should be designed such that a driver's clear line of sight is not obstructed.

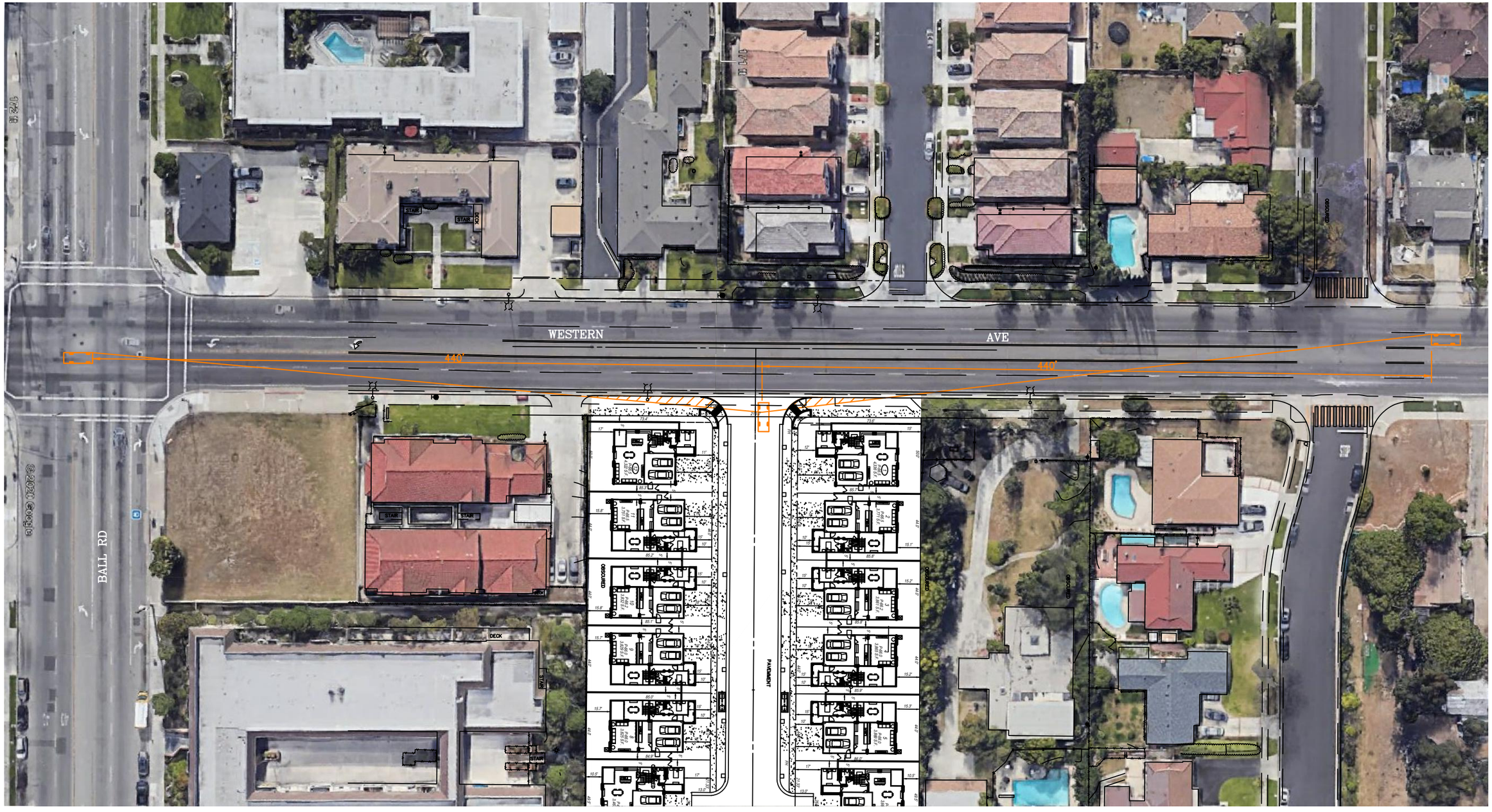
10.3 Internal Circulation

The on-site circulation layout of the proposed Project as illustrated in *Figure 2-2* on an overall basis is adequate. Curb return radii are generally adequate for small service/delivery (FedEx, UPS) trucks and trash trucks.

TABLE 10-1
PROJECT ACCESS PEAK HOUR LEVELS OF SERVICE SUMMARY

Project Access	**Time Period**	**Intersection Control**	**(1) Year 2022 Cumulative Plus Project Traffic Conditions**	
			HCM	**LOS**
-- Western Avenue at Project Access No. 1	AM	One – Way Stop	13.5 s/v	B
	PM		17.7 s/v	C

Notes:
s/v = seconds per vehicle



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N NO SCALE

SIGHT DISTANCE

DESIGN SPEED LIMIT:	40 MPH
REQUIRED CORNER SIGHT DISTANCE:	440 FEET

LEGEND

PUBLIC RIGHT-OF-WAY LIMITED USE AREA: TO ENSURE ADEQUATE SIGHT DISTANCE, HARDSCAPE AND/OR LANDSCAPE SHALL NOT BE HIGHER THAN 6 INCHES ABOVE THE CURB/SIDEWALK. NO FENCES OR WALLS IN LIMITED USE AREA.

FIGURE 10-1

SIGHT DISTANCE ANALYSIS

PEPPERWOOD PLACE, ANAHEIM

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11.0 AREA-WIDE TRAFFIC IMPROVEMENTS

For those intersections where projected traffic volumes are expected to result in cumulative impacts, this report recommends traffic improvements that change the intersection geometry to increase capacity. These capacity improvements involve roadway widening and/or re-striping to reconfigure (add lanes) roadways to specific approaches of a key intersection. The identified improvements are expected to:

- Address the impact of existing traffic, Project traffic and future non-project (ambient traffic growth and cumulative) traffic, and
- Improve Levels of Service to an acceptable range and/or to pre-project conditions.

11.1 Existing Plus Cumulative Plus Project Recommended Improvements

The results of the intersection capacity analysis presented previously in *Table 8-1* shows that the proposed Project will not cause an operational deficiency at either of the two (2) key study intersections under the "Existing Plus Cumulative Plus Project" traffic scenario. Given that there are no Project impacts, no improvements are required under this traffic scenario.

11.2 Year 2022 Plus Project Recommended Improvements

The results of the intersection capacity analysis presented previously in *Table 9-1* shows that the proposed Project will not cause an operational deficiency at either of the two (2) key study intersections under the "Year 2022 Plus Project" traffic scenario. Given that there are no Project impacts, no improvements are required under this traffic scenario.

12.0 CONGESTION MANAGEMENT PROGRAM (CMP)

This analysis is consistent with the requirements and procedures outlined in the current *Orange County Congestion Management Program (CMP).* The CMP requires that a traffic impact analysis be conducted for any project generating 2,400 or more daily trips, or 1,600 or more daily trips for projects that directly access the CMP Highway System (HS). As noted in Section 5.0 of this traffic study, the proposed Project is forecast to generate approximately 113 daily trip-ends and thus does not meet the criteria requiring a CMP TIA.

13.0 SUMMARY OF FINDINGS AND CONCLUSIONS

- ***Project Description*** – The proposed Project site is located at 910 S. Western Avenue (i.e. generally on the east side of Western Avenue and north of Ball Road), in the City of Anaheim, California. The Project site is currently occupied with a vacant single-family home that will be demolished. The proposed Project will consist of 12 single-family residential dwelling units on a private street with a "hammerhead" turnaround area. The proposed Project is expected to be completed in the Year 2022. Access to the proposed Project site will be provided via one (1) full-access private street driveway along Western Avenue (i.e. Project Access No. 1).

- ***Study Scope*** – The two (2) key study intersections selected for evaluation were determined based on coordination with City of Anaheim Traffic Engineering Department staff. The two (2) intersections listed below provide regional and local access to the study area and define the extent of the boundaries for this traffic impact investigation. All key study intersections are located within the City of Anaheim.

Key Study Intersections
1. Western Avenue at Orange Avenue
2. Western Avenue at Ball Road

- ***Existing Traffic Conditions*** – The two (2) key study intersections currently operate at acceptable LOS B during the AM and PM peak hours.

- ***Project Trip Generation*** – The proposed Project is forecast to generate approximately 113 daily trips, with 9 trips (2 inbound, 7 outbound) produced in the AM peak hour and 12 trips (8 inbound, 4 outbound) produced in the PM peak hour on a "typical" weekday.

- ***Cumulative Projects Traffic Characteristics*** – There are eighteen (18) cumulative projects in the City of Anaheim, three (3) cumulative projects in the City of Buena Park, five (5) cumulative projects in the City of Cypress, eight (8) cumulative projects in the City of Stanton, and one (1) cumulative project in the City of Garden Grove within the vicinity of the subject site. The thirty-five (35) cumulative projects are forecast to generate a total of 22,368 daily trips, with 1,154 trips (463 inbound and 691 outbound) forecast during the AM peak hour and 1,479 trips (824 inbound and 655 outbound) forecast during the PM peak hour.

- ***Existing Plus Cumulative Plus Project Traffic Conditions*** – The proposed Project ***will not*** cause an operational deficiency at either of the two (2) key study intersections when compared to the LOS standards and traffic impact criteria specified in this report. The two (2) key study intersections are forecast to continue to operate at an acceptable LOS C or better during the AM and PM peak hours with the addition of project generated traffic to existing traffic and cumulative traffic.

- ***Year 2022 Cumulative Plus Project Traffic Conditions*** – The proposed Project ***will not*** cause an operational deficiency at either of the two (2) key study intersections when compared to the LOS standards and traffic impact criteria specified in this report. The two (2) key study intersections are forecast to continue to operate at an acceptable LOS C or better during the AM and PM peak hours with the addition of project generated traffic in the Year 2022.

- ***Site Access Evaluation –*** The proposed Project access is forecast to operate at LOS C or better during the AM and PM peak hours under Year 2022 Cumulative Plus Project traffic conditions. As such, Project access will be adequate. Motorists entering and exiting the Project site will be able to do so without undue congestion. The on-site circulation layout of the proposed Project as illustrated in *Figure 2-2* on an overall basis is adequate. Curb return radii are generally adequate for small service/delivery (FedEx, UPS) trucks and trash trucks.

- ***Sight Distance Evaluation –*** The sight lines at Project Access No. 1 are expected to be adequate provided obstructions within the sight triangles are minimized. In addition, any future landscaping and/or hardscapes (i.e. monument signs) should be designed such that a driver's clear line of sight is not obstructed.

- ***Recommended Improvements –*** The results of the intersection capacity analysis presented previously in Sections 8.0 and 9.0, shows that the proposed Project will not cause an operational deficiency at the two (2) key study intersections under the "Existing Plus Cumulative Plus Project" and "Year 2022 Plus Project" traffic scenarios. Given that there are no Project impacts, no improvements are required of the proposed project.

- ***Congestion Management Program (CMP) –*** The CMP requires that a traffic impact analysis be conducted for any project generating 2,400 or more daily trips, or 1,600 or more daily trips for projects that directly access the CMP Highway System (HS). As noted in Section 5.0 of this traffic study, the proposed Project is forecast to generate approximately 113 daily trip-ends and thus does not meet the criteria requiring a CMP TIA.

APPENDIX A

TRAFFIC STUDY SCOPE OF WORK

MEMORANDUM

To:	Mr. David Kennedy, P.E. City of Anaheim	Date:	January 20, 2021
From:	Keil D. Maberry, P.E. Linscott, Law & Greenspan, Engineers	LLG Ref:	2.19.4355.1
Subject:	Focused Traffic Report Scope of Work for the Proposed Pepperwood Place Project Anaheim, California		

Linscott, Law & Greenspan, Engineers (LLG) is pleased to submit the following Traffic Study Scope of Work for the proposed Pepperwood Place Project for your review and approval.

Traffic Study Scope of Work

The Traffic Impact Analysis for the proposed Pepperwood Place Project will satisfy the traffic impact requirements of the *City of Anaheim Criteria for Preparation of Traffic Impact Studies* and the *City of Anaheim Traffic Impact Analysis Guidelines for California Environmental Quality Act Analysis* (June 2020), and will be consistent with the requirements and procedures outlined in the most current *Congestion Management Program (CMP) for Orange County*.

A. Project Location: The proposed Project site is located at 910 S. Western Avenue (i.e. generally on the east side of Western Avenue and north of Ball Road), in the City of Anaheim, California. The Project site is currently occupied with a vacant single-family home that will be demolished. See the attached Vicinity Map – ***Figure 1*** and Existing Aerial Site Plan – ***Figure 2***.

B. Project Description: The proposed Project will consist of 12 single-family residential dwelling units on a private street with a "hammerhead" turnaround area. Access will be provided via one (1) full access private street driveway along Western Avenue (i.e. Project Driveway No. 1). For the traffic analysis, a Year 2022 project horizon year will be utilized. See the attached Proposed Site Plan – ***Figure 3.***

C. Project Study Area: The following three (3) key study intersections have been selected for evaluation based on discussions with City of Anaheim Public Works Department staff.

Key Study Intersections

1) Western Avenue at Orange Avenue
2) Western Avenue at Ball Road
3) Western Avenue at Project Driveway

LINSCOTT LAW & GREENSPAN engineers

Engineers & Planners
Traffic
Transportation
Parking

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www.llgengineers.com

Pasadena
Irvine
San Diego
Woodland Hills

D. Traffic Counts: Due to the State of California "Stay at Home" order as a result of the COVID-19 Coronavirus Pandemic, historical weekday AM peak hour and PM peak hour traffic counts has been researched for the two (2) key study intersections. Specifically, the historical traffic counts for the two (2) key study intersections were conducted by Counts Unlimited on December 10, 2019 and will be factored up by the City-approved growth factor of 1.0% per year to reflect current Year 2021 existing baseline traffic conditions (i.e. 2% total growth).

E. Project Traffic Generation: The trip generation potential of the proposed Project will be estimated using ITE Land Use 210: Single-Family Detached Housing trip rates contained in the 10th Edition of *Trip Generation,* published by the Institute of Transportation Engineers (ITE), [Washington, D.C., 2017]. ***Table 1*** summarizes the trip generation rates used in forecasting the vehicular trips generated by the proposed Project and presents the forecast daily and peak hour project traffic volumes for a "typical" weekday. Review of the lower portion of *Table 1* indicates that the proposed Project is forecast to generate approximately 113 daily trips, with 9 trips (2 inbound, 7 outbound) produced in the AM peak hour and 12 trips (8 inbound, 4 outbound) produced in the PM peak hour.

F. Project Trip Distribution Pattern: See the attached Project Trip Distribution Pattern – ***Figure 4***.

G. Year 2022 Cumulative Traffic:

- Ambient Growth Rate: 1.0% per year.
- Cumulative Projects – Obtain information regarding cumulative projects in the vicinity of the proposed project (i.e. 2-mile radius) from the City of Anaheim, the City of Cypress, the City of Buena Park, the City of Stanton, and the City of Garden Grove.

H. Analysis Scenarios: The following traffic analysis scenarios will be prepared for the proposed Project.

(a) Existing Traffic Conditions;
(b) Existing Plus Cumulative Traffic Conditions;
(c) Existing Plus Cumulative Plus Project Traffic Conditions;
(d) Year 2022 Cumulative Traffic Conditions;
(e) Year 2022 Cumulative Plus Project Traffic Conditions;

The LOS calculations for the key study intersections will be based on the ICU methodology for signalized intersections and the Highway Capacity Manual (HCM) methodology for unsignalized intersections. The Project's potential

impact will be based on the significant impact criteria outlined in the *City of Anaheim Criteria for Preparation of Traffic Impact Studies.*

I. Other Issues:

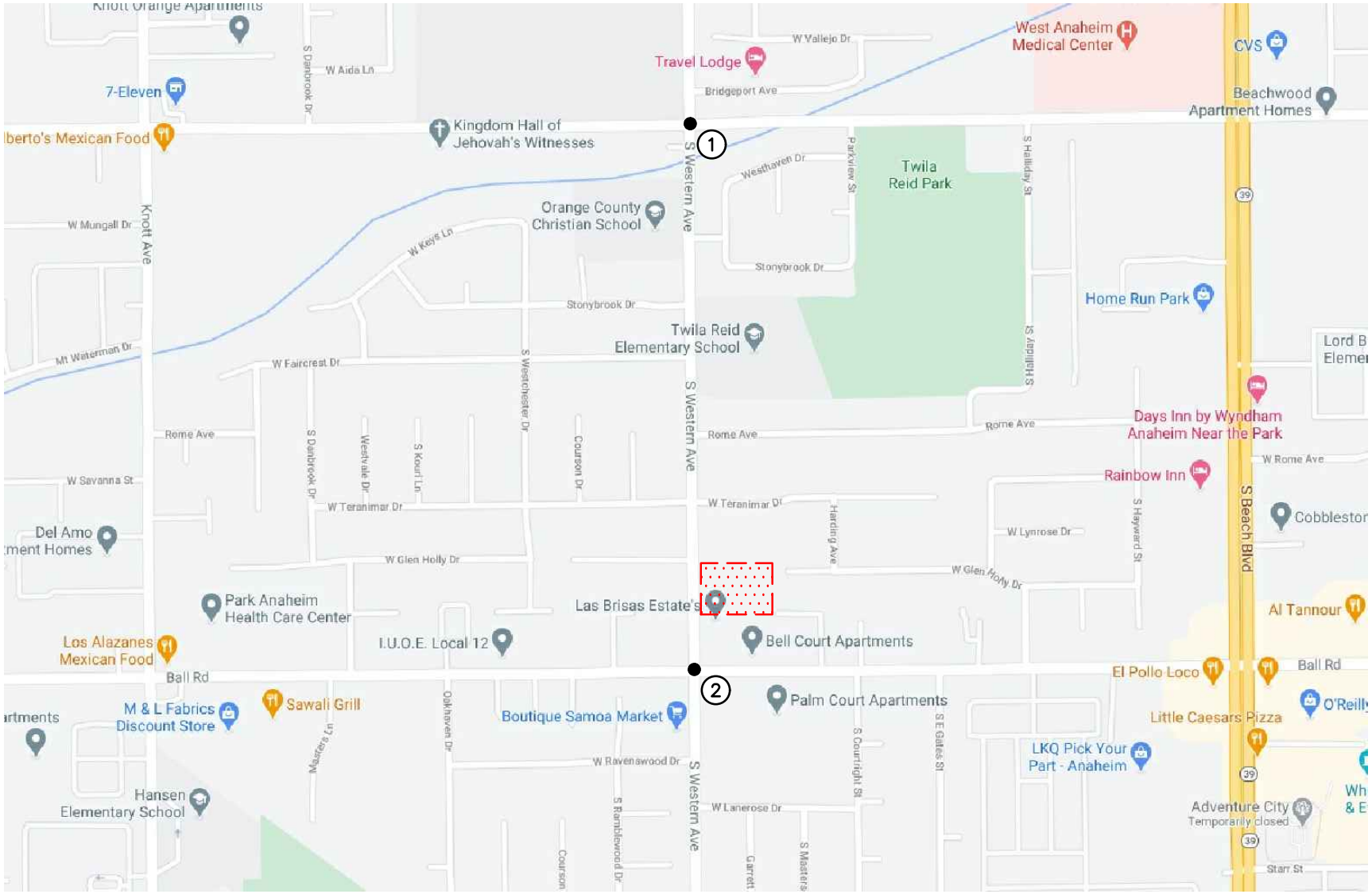
- Evaluate site access and internal circulation.
- Congestion Management Program (CMP) Analysis.
- VMT Assessment.

We appreciate the opportunity to provide this scope of work. Should you have any questions, please call us at (949) 825-6175. Thank you.

Approved by:

_____ _____

City of Anaheim Date



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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

SOURCE: GOOGLE

KEY

(#) = STUDY INTERSECTION

= PROJECT SITE

FIGURE 1

VICINITY MAP

PEPPERWOOD PLACE, ANAHEIM

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SOURCE: GOOGLE

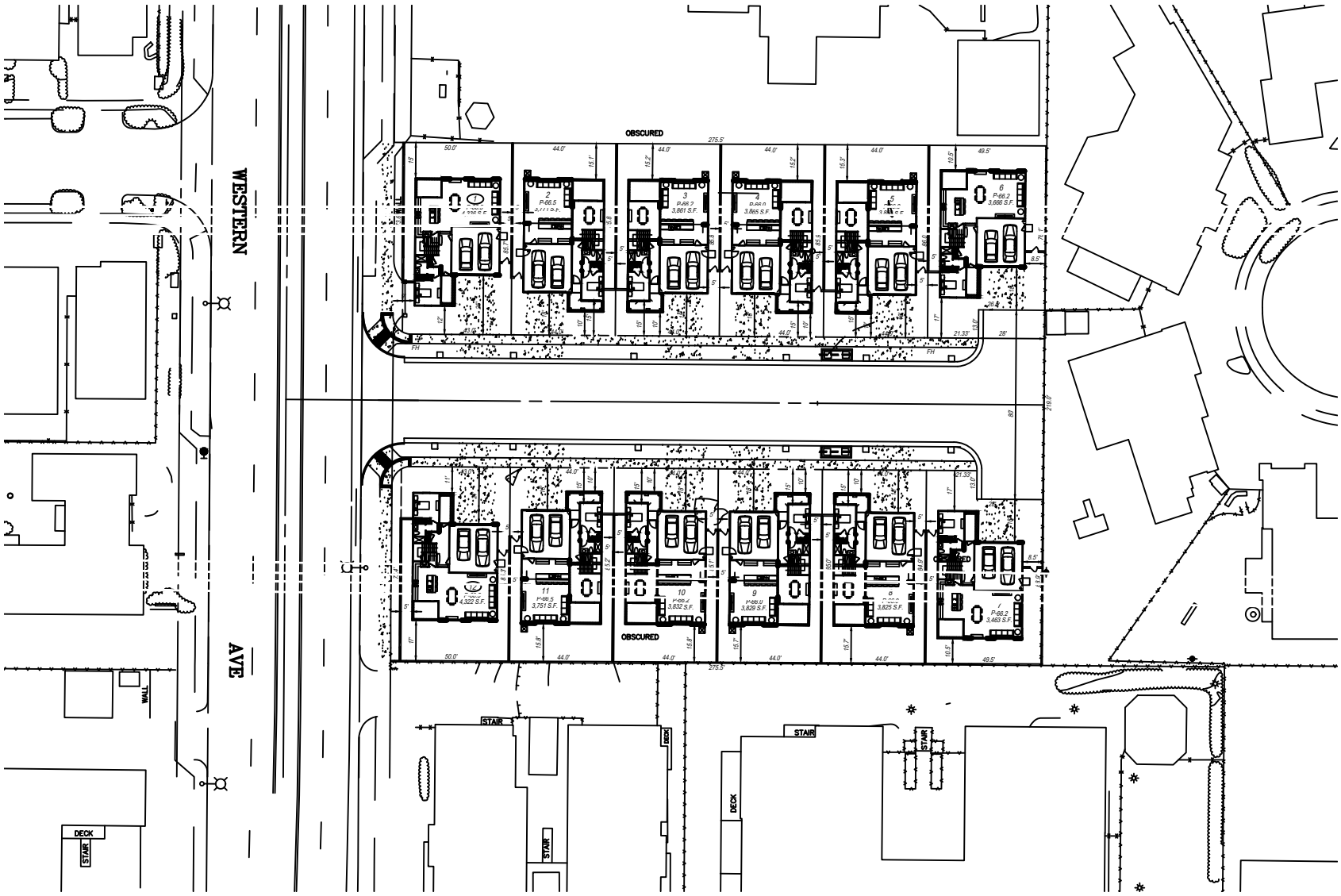
KEY

= PROJECT SITE

FIGURE 2

EXISTING SITE AERIAL

PEPPERWOOD PLACE, ANAHEIM



LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

SOURCE: MAYERS AND ASSOCIATES CIVIL ENGINEERING, INC.

FIGURE 3

PROPOSED SITE PLAN

PEPPERWOOD PLACE, ANAHEIM

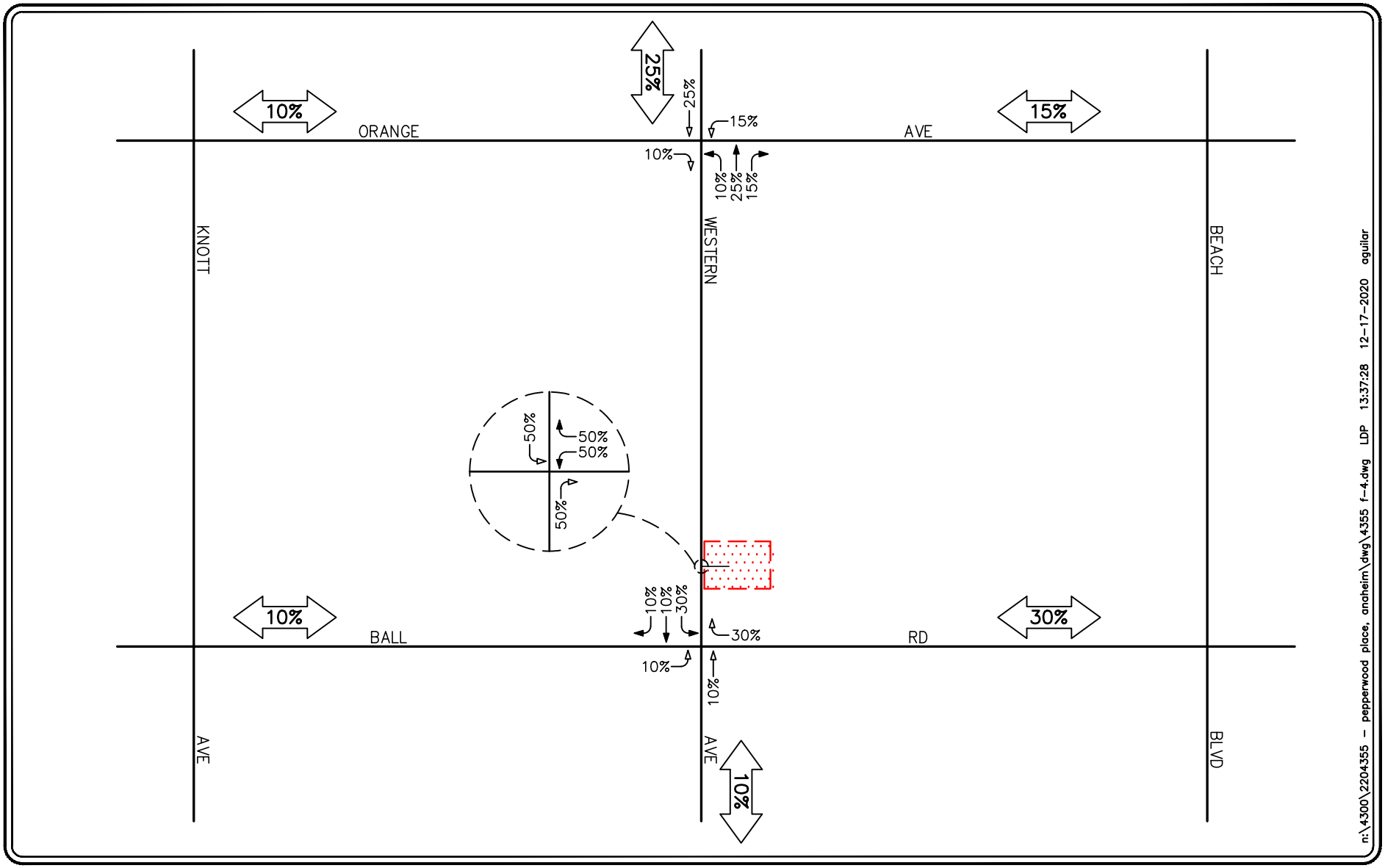


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FIGURE 4

PROJECT TRIP DISTRIBUTION PATTERN

PEPPERWOOD PLACE, ANAHEIM

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TABLE 1
PROJECT TRAFFIC GENERATION FORECAST[1]
PEPPERWOOD PLACE, ANAHEIM

ITE Land Use Code / Project Description	Daily 2-Way	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Generation Factors:							
▪ 210: Single-Family Detached Housing (TE/DU)	9.44	25%	75%	0.74	63%	37%	0.99
Proposed Project Generation Forecast:							
▪ Pepperwood Place (12 DU)	113	2	7	9	8	4	12

Notes:
- TE/DU = trip end per dwelling unit

[1] Source: *Trip Generation*, 10th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2017).

APPENDIX B

EXISTING TRAFFIC COUNT DATA

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

City of Anaheim
N/S: Western Avenue
E/W: Orange Avenue
Weather: Clear

File Name : 03_ANA_Western_Orange AM
Site Code : 20619840
Start Date : 12/10/2019
Page No : 1

Groups Printed- Total Volume

	Western Avenue Southbound				Orange Avenue Westbound				Western Avenue Northbound				Orange Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	15	124	24	163	7	76	11	94	8	80	14	102	13	83	10	106	465
07:15 AM	18	137	21	176	10	123	11	144	22	109	17	148	6	89	23	118	586
07:30 AM	21	144	30	195	15	108	20	143	22	88	10	120	15	110	25	150	608
07:45 AM	19	140	48	207	17	68	10	95	32	127	39	198	10	112	37	159	659
Total	73	545	123	741	49	375	52	476	84	404	80	568	44	394	95	533	2318
08:00 AM	21	131	41	193	21	120	22	163	68	127	34	229	19	108	45	172	757
08:15 AM	22	161	47	230	16	147	28	191	54	157	35	246	18	110	51	179	846
08:30 AM	31	161	65	257	17	131	37	185	49	134	24	207	21	144	35	200	849
08:45 AM	20	118	22	160	17	95	11	123	21	82	11	114	31	112	23	166	563
Total	94	571	175	840	71	493	98	662	192	500	104	796	89	474	154	717	3015
Grand Total	167	1116	298	1581	120	868	150	1138	276	904	184	1364	133	868	249	1250	5333
Apprch %	10.6	70.6	18.8		10.5	76.3	13.2		20.2	66.3	13.5		10.6	69.4	19.9		
Total %	3.1	20.9	5.6	29.6	2.3	16.3	2.8	21.3	5.2	17	3.5	25.6	2.5	16.3	4.7	23.4	

	Western Avenue Southbound				Orange Avenue Westbound				Western Avenue Northbound				Orange Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	19	140	48	207	17	68	10	95	32	127	**39**	198	10	112	37	159	659
08:00 AM	21	131	41	193	**21**	120	22	163	**68**	127	34	229	19	108	45	172	757
08:15 AM	22	**161**	47	230	16	**147**	28	**191**	54	**157**	35	**246**	18	110	**51**	179	846
08:30 AM	**31**	161	**65**	**257**	17	131	**37**	185	49	134	24	207	**21**	**144**	35	**200**	**849**
Total Volume	93	593	201	887	71	466	97	634	203	545	132	880	68	474	168	710	3111
% App. Total	10.5	66.9	22.7		11.2	73.5	15.3		23.1	61.9	15		9.6	66.8	23.7		
PHF	.750	.921	.773	.863	.845	.793	.655	.830	.746	.868	.846	.894	.810	.823	.824	.888	.916

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City of Anaheim
N/S: Western Avenue
E/W: Orange Avenue
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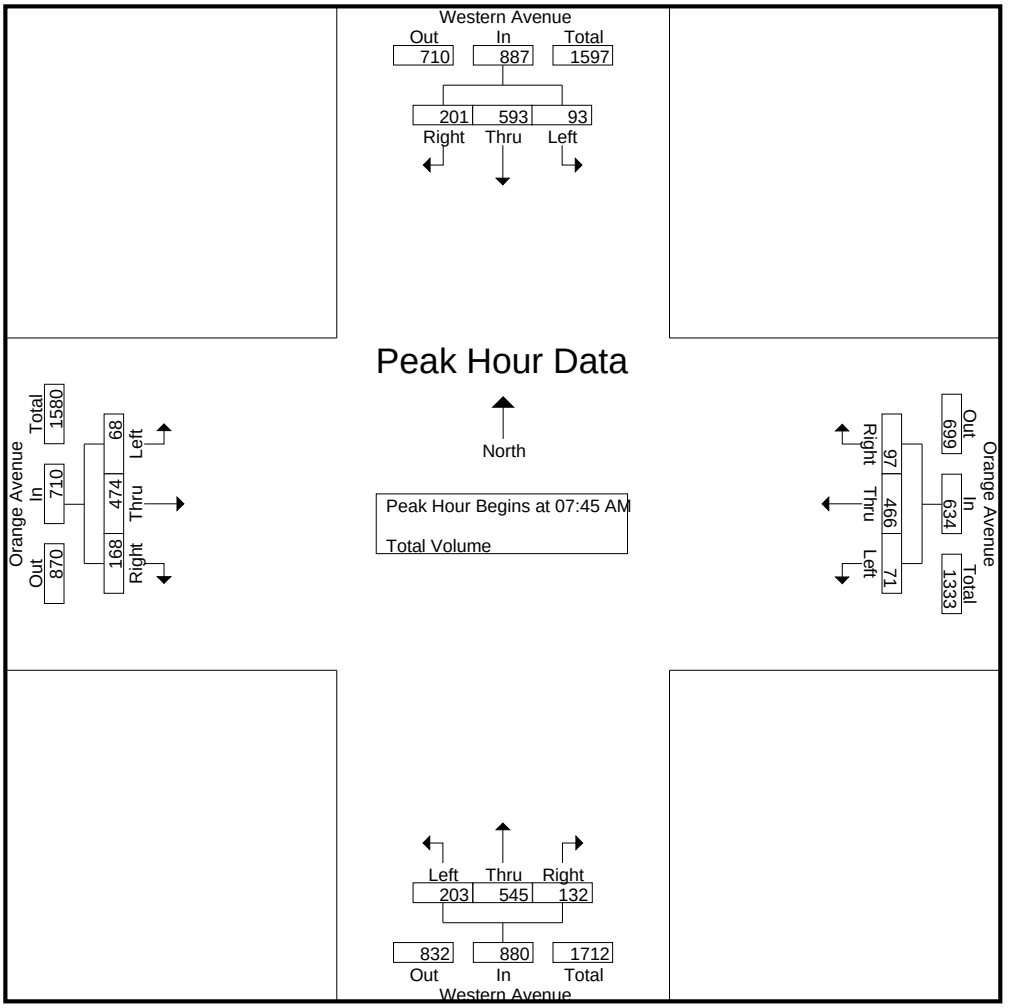
File Name : 03_ANA_Western_Orange AM
Site Code : 20619840
Start Date : 12/10/2019
Page No : 2



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

	07:45 AM				08:00 AM				07:45 AM				08:00 AM			
+0 mins.	19	140	48	207	**21**	120	22	163	32	127	**39**	198	19	108	45	172
+15 mins.	21	131	41	193	16	**147**	28	**191**	**68**	127	34	229	18	110	**51**	179
+30 mins.	22	**161**	47	230	17	131	**37**	185	54	**157**	35	**246**	21	**144**	35	**200**
+45 mins.	**31**	161	**65**	**257**	17	95	11	123	49	134	24	207	**31**	112	23	166
Total Volume	93	593	201	887	71	493	98	662	203	545	132	880	89	474	154	717
% App. Total	10.5	66.9	22.7		10.7	74.5	14.8		23.1	61.9	15		12.4	66.1	21.5	
PHF	.750	.921	.773	.863	.845	.838	.662	.866	.746	.868	.846	.894	.718	.823	.755	.896

Counts Unlimited
PO Box 1178
Corona, CA 92878
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City of Anaheim
N/S: Western Avenue
E/W: Orange Avenue
Weather: Clear

File Name : 03_ANA_Western_Orange PM
Site Code : 20619840
Start Date : 12/10/2019
Page No : 1

Groups Printed- Total Volume

	Western Avenue Southbound				Orange Avenue Westbound				Western Avenue Northbound				Orange Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	22	141	26	189	23	100	24	147	25	196	38	259	28	129	20	177	772
04:15 PM	23	122	30	175	18	90	22	130	17	204	17	238	23	124	23	170	713
04:30 PM	24	148	21	193	17	119	23	159	24	204	25	253	25	137	18	180	785
04:45 PM	22	136	25	183	21	105	26	152	24	209	36	269	18	103	22	143	747
Total	91	547	102	740	79	414	95	588	90	813	116	1019	94	493	83	670	3017
05:00 PM	19	154	31	204	18	107	30	155	19	227	24	270	28	99	31	158	787
05:15 PM	23	178	31	232	18	110	22	150	26	233	21	280	20	127	19	166	828
05:30 PM	18	161	33	212	31	100	25	156	35	199	35	269	23	123	19	165	802
05:45 PM	16	132	48	196	15	109	20	144	30	187	33	250	31	109	21	161	751
Total	76	625	143	844	82	426	97	605	110	846	113	1069	102	458	90	650	3168
Grand Total	167	1172	245	1584	161	840	192	1193	200	1659	229	2088	196	951	173	1320	6185
Apprch %	10.5	74	15.5		13.5	70.4	16.1		9.6	79.5	11		14.8	72	13.1		
Total %	2.7	18.9	4	25.6	2.6	13.6	3.1	19.3	3.2	26.8	3.7	33.8	3.2	15.4	2.8	21.3	

	Western Avenue Southbound				Orange Avenue Westbound				Western Avenue Northbound				Orange Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	19	154	31	204	18	107	**30**	155	19	227	24	270	28	99	**31**	158	787
05:15 PM	**23**	**178**	31	**232**	18	**110**	22	150	26	**233**	21	**280**	20	**127**	19	**166**	**828**
05:30 PM	18	161	33	212	**31**	100	25	**156**	**35**	199	**35**	269	23	123	19	165	802
05:45 PM	16	132	**48**	196	15	109	20	144	30	187	33	250	**31**	109	21	161	751
Total Volume	76	625	143	844	82	426	97	605	110	846	113	1069	102	458	90	650	3168
% App. Total	9	74.1	16.9		13.6	70.4	16		10.3	79.1	10.6		15.7	70.5	13.8		
PHF	.826	.878	.745	.909	.661	.968	.808	.970	.786	.908	.807	.954	.823	.902	.726	.979	.957

Counts Unlimited
PO Box 1178
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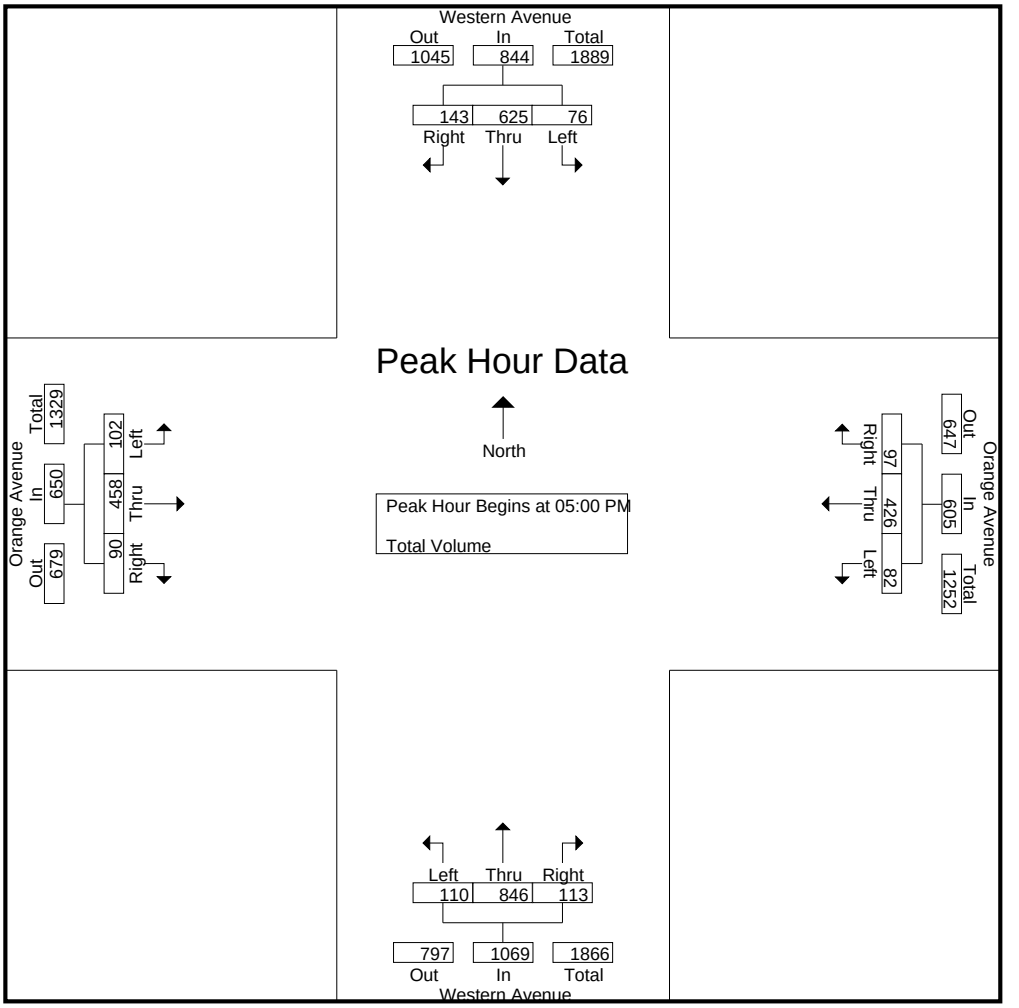

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				04:30 PM				04:45 PM				04:00 PM			
+0 mins.	19	154	31	204	17	**119**	23	**159**	24	209	**36**	269	**28**	129	20	177
+15 mins.	**23**	**178**	31	**232**	**21**	105	26	152	19	227	24	270	23	124	**23**	170
+30 mins.	18	161	33	212	18	107	**30**	155	26	**233**	21	**280**	25	**137**	18	**180**
+45 mins.	16	132	**48**	196	18	110	22	150	**35**	199	35	269	18	103	22	143
Total Volume	76	625	143	844	74	441	101	616	104	868	116	1088	94	493	83	670
% App. Total	9	74.1	16.9		12	71.6	16.4		9.6	79.8	10.7		14	73.6	12.4	
PHF	.826	.878	.745	.909	.881	.926	.842	.969	.743	.931	.806	.971	.839	.900	.902	.931

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

City of Anaheim
N/S: Western Avenue
E/W: Ball Road
Weather: Clear

File Name : 05_ANA_Western_Ball AM
Site Code : 20619840
Start Date : 12/10/2019
Page No : 1

Groups Printed- Total Volume

	Western Avenue Southbound				Ball Road Westbound				Western Avenue Northbound				Ball Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	17	120	22	159	14	110	15	139	7	71	12	90	12	148	24	184	572
07:15 AM	19	137	19	175	41	212	18	271	10	86	11	107	18	187	33	238	791
07:30 AM	15	157	26	198	41	187	23	251	16	90	11	117	14	202	46	262	828
07:45 AM	15	136	22	173	51	196	29	276	10	96	12	118	33	236	61	330	897
Total	66	550	89	705	147	705	85	937	43	343	46	432	77	773	164	1014	3088
08:00 AM	18	155	22	195	49	166	39	254	18	165	24	207	32	169	22	223	879
08:15 AM	27	163	36	226	46	251	36	333	25	138	17	180	23	184	23	230	969
08:30 AM	24	168	30	222	25	161	31	217	23	122	19	164	21	181	26	228	831
08:45 AM	16	132	9	157	20	148	11	179	4	70	10	84	14	168	24	206	626
Total	85	618	97	800	140	726	117	983	70	495	70	635	90	702	95	887	3305
Grand Total	151	1168	186	1505	287	1431	202	1920	113	838	116	1067	167	1475	259	1901	6393
Apprch %	10	77.6	12.4		14.9	74.5	10.5		10.6	78.5	10.9		8.8	77.6	13.6		
Total %	2.4	18.3	2.9	23.5	4.5	22.4	3.2	30	1.8	13.1	1.8	16.7	2.6	23.1	4.1	29.7	

	Western Avenue Southbound				Ball Road Westbound				Western Avenue Northbound				Ball Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	15	136	22	173	**51**	196	29	276	10	96	12	118	**33**	**236**	**61**	**330**	897
08:00 AM	18	155	22	195	49	166	**39**	254	18	**165**	**24**	**207**	32	169	22	223	879
08:15 AM	**27**	163	**36**	**226**	46	**251**	36	**333**	**25**	138	17	180	23	184	23	230	**969**
08:30 AM	24	**168**	30	222	25	161	31	217	23	122	19	164	21	181	26	228	831
Total Volume	84	622	110	816	171	774	135	1080	76	521	72	669	109	770	132	1011	3576
% App. Total	10.3	76.2	13.5		15.8	71.7	12.5		11.4	77.9	10.8		10.8	76.2	13.1		
PHF	.778	.926	.764	.903	.838	.771	.865	.811	.760	.789	.750	.808	.826	.816	.541	.766	.923

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City of Anaheim
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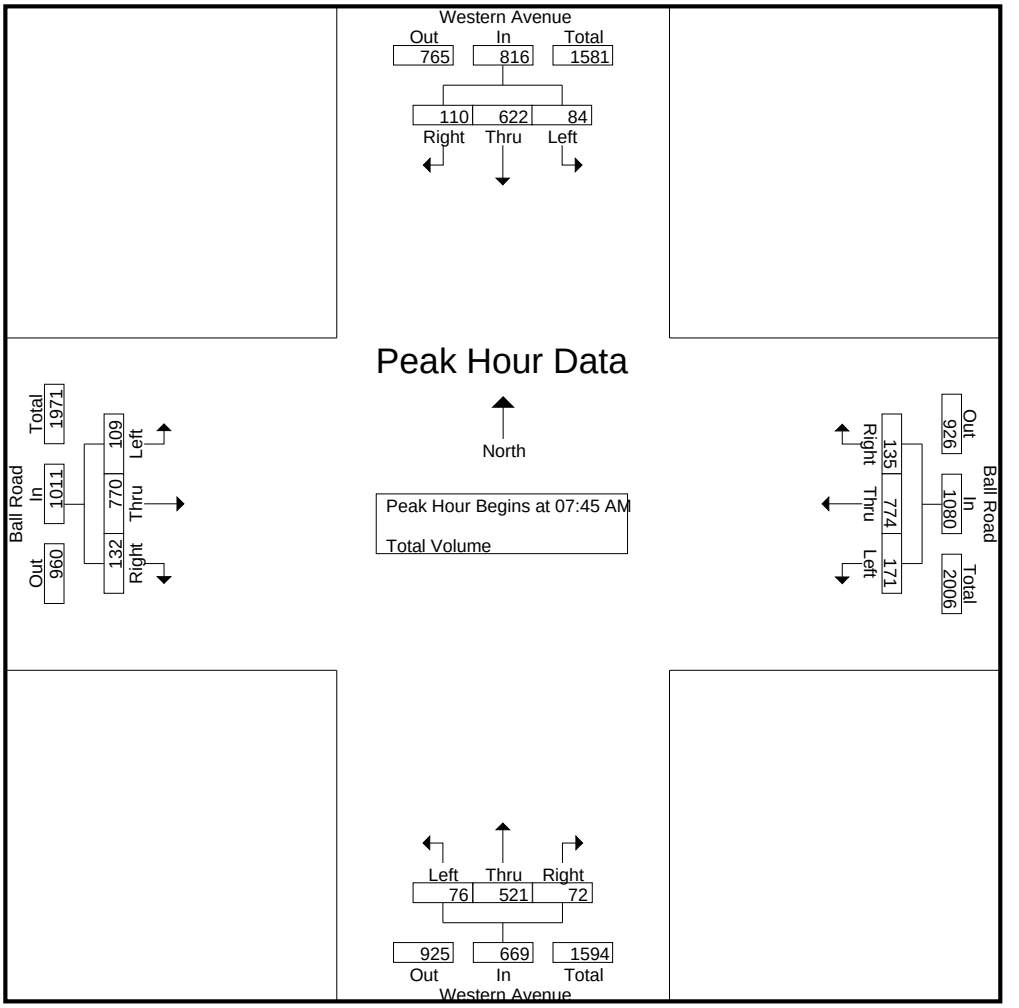
Page No : 2



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

	07:45 AM				07:30 AM				07:45 AM				07:15 AM			
+0 mins.	15	136	22	173	41	187	23	251	10	96	12	118	18	187	33	238
+15 mins.	18	155	22	195	**51**	196	29	276	18	**165**	**24**	**207**	14	202	46	262
+30 mins.	**27**	163	**36**	**226**	49	166	**39**	254	**25**	138	17	180	**33**	**236**	**61**	**330**
+45 mins.	24	**168**	30	222	46	**251**	36	**333**	23	122	19	164	32	169	22	223
Total Volume	84	622	110	816	187	800	127	1114	76	521	72	669	97	794	162	1053
% App. Total	10.3	76.2	13.5		16.8	71.8	11.4		11.4	77.9	10.8		9.2	75.4	15.4	
PHF	.778	.926	.764	.903	.917	.797	.814	.836	.760	.789	.750	.808	.735	.841	.664	.798

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File Name : 05_ANA_Western_Ball PM
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Groups Printed- Total Volume

	Western Avenue Southbound				Ball Road Westbound				Western Avenue Northbound				Ball Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	19	148	30	197	22	174	26	222	26	207	31	264	37	183	27	247	930
04:15 PM	7	103	12	122	32	162	24	218	17	168	32	217	33	193	25	251	808
04:30 PM	16	161	22	199	31	167	25	223	11	223	34	268	24	175	21	220	910
04:45 PM	19	108	29	156	27	179	27	233	25	190	35	250	29	216	21	266	905
Total	61	520	93	674	112	682	102	896	79	788	132	999	123	767	94	984	3553
05:00 PM	17	149	27	193	27	182	26	235	24	232	38	294	24	181	25	230	952
05:15 PM	19	139	28	186	34	217	23	274	35	206	41	282	33	206	17	256	998
05:30 PM	16	162	34	212	27	183	36	246	19	247	42	308	31	162	23	216	982
05:45 PM	25	115	24	164	26	191	24	241	17	182	27	226	24	185	21	230	861
Total	77	565	113	755	114	773	109	996	95	867	148	1110	112	734	86	932	3793
Grand Total	138	1085	206	1429	226	1455	211	1892	174	1655	280	2109	235	1501	180	1916	7346
Apprch %	9.7	75.9	14.4		11.9	76.9	11.2		8.3	78.5	13.3		12.3	78.3	9.4		
Total %	1.9	14.8	2.8	19.5	3.1	19.8	2.9	25.8	2.4	22.5	3.8	28.7	3.2	20.4	2.5	26.1	

	Western Avenue Southbound				Ball Road Westbound				Western Avenue Northbound				Ball Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	**19**	108	29	156	27	179	27	233	25	190	35	250	29	**216**	21	**266**	905
05:00 PM	17	149	27	193	27	182	26	235	24	232	38	294	24	181	**25**	230	952
05:15 PM	19	139	28	186	**34**	**217**	23	**274**	**35**	206	41	282	**33**	206	17	256	**998**
05:30 PM	16	**162**	**34**	**212**	27	183	**36**	246	19	**247**	**42**	**308**	31	162	23	216	982
Total Volume	71	558	118	747	115	761	112	988	103	875	156	1134	117	765	86	968	3837
% App. Total	9.5	74.7	15.8		11.6	77	11.3		9.1	77.2	13.8		12.1	79	8.9		
PHF	.934	.861	.868	.881	.846	.877	.778	.901	.736	.886	.929	.920	.886	.885	.860	.910	.961

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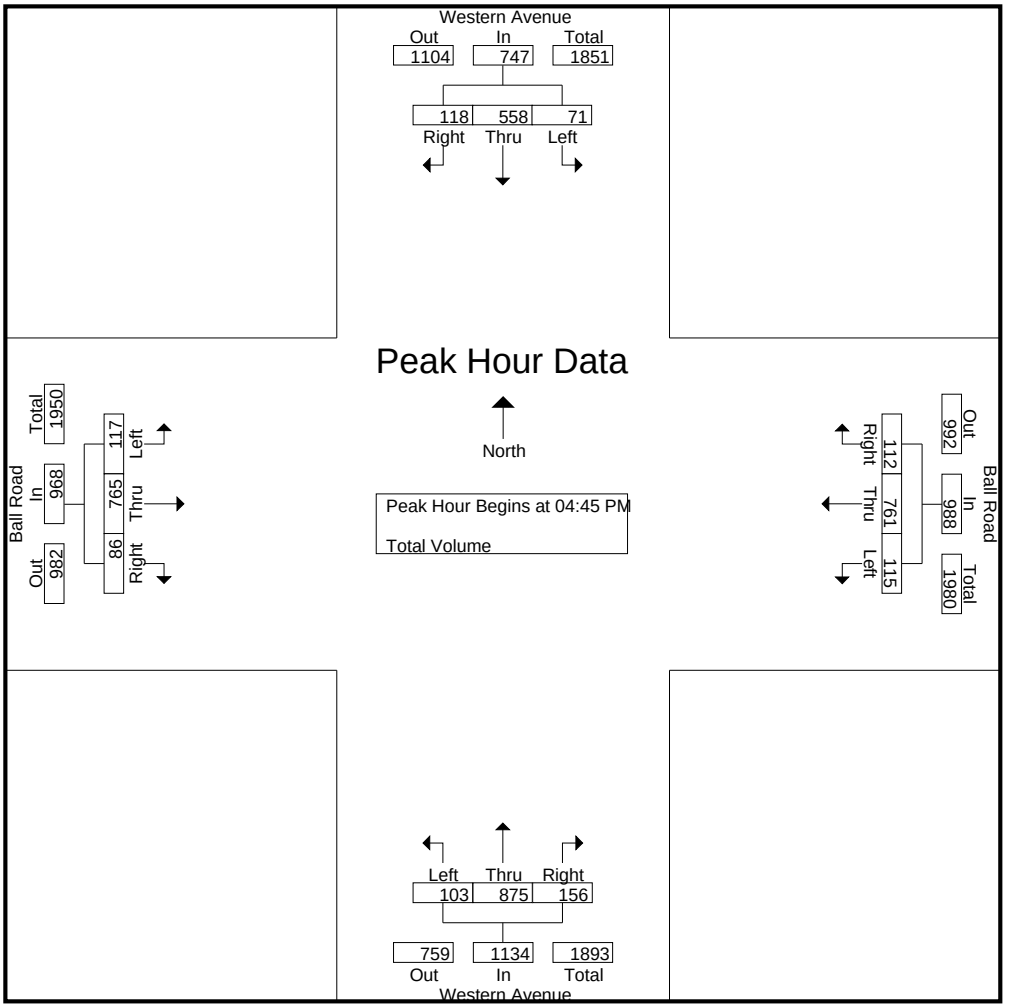

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				04:45 PM				04:00 PM			
+0 mins.	17	149	27	193	27	182	26	235	25	190	35	250	**37**	183	**27**	247
+15 mins.	19	139	28	186	**34**	**217**	23	**274**	24	232	38	294	33	193	25	251
+30 mins.	16	**162**	**34**	**212**	27	183	**36**	246	**35**	206	41	282	24	175	21	220
+45 mins.	**25**	115	24	164	26	191	24	241	19	**247**	**42**	**308**	29	**216**	21	**266**
Total Volume	77	565	113	755	114	773	109	996	103	875	156	1134	123	767	94	984
% App. Total	10.2	74.8	15		11.4	77.6	10.9		9.1	77.2	13.8		12.5	77.9	9.6	
PHF	.770	.872	.831	.890	.838	.891	.757	.909	.736	.886	.929	.920	.831	.888	.870	.925

APPENDIX C

INTERSECTION LEVEL OF SERVICE CALCULATION WORKSHEETS

APPENDIX C-I

EXISTING TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: Western Avenue at Orange Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.645

Intersection Setup

Name	Western Ave			Western Ave			Orange Ave			Orange Ave		
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 Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Western Ave			Western Ave			Orange Ave			Orange Ave		
Base Volume Input [veh/h]	207	556	135	95	605	205	69	483	171	72	475	99
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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]	207	556	135	95	605	205	69	483	171	72	475	99
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	52	139	34	24	151	51	17	121	43	18	119	25
Total Analysis Volume [veh/h]	207	556	135	95	605	205	69	483	171	72	475	99
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtP	Permi	Permi	ProtP	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.20	0.20	0.06	0.24	0.24	0.04	0.19	0.19	0.04	0.17	0.17
Intersection LOS	B											
Intersection V/C	0.645											

Intersection Level Of Service Report
Intersection 2: Western Avenue at Ball Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.649

Intersection Setup

Name	Western Ave			Western Ave			Ball Rd			Ball Rd		
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 Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Western Ave			Western Ave			Ball Rd			Ball Rd		
Base Volume Input [veh/h]	78	531	73	86	634	112	111	785	135	174	789	138
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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]	78	531	73	86	634	112	111	785	135	174	789	138
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	20	133	18	22	159	28	28	196	34	44	197	35
Total Analysis Volume [veh/h]	78	531	73	86	634	112	111	785	135	174	789	138
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	ProtP	Permi	Permi	ProtP	Permi	Permi
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.18	0.18	0.05	0.22	0.22	0.07	0.23	0.08	0.10	0.23	0.08
Intersection LOS	B											
Intersection V/C	0.649											

Intersection Level Of Service Report
Intersection 1: Western Avenue at Orange Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.602

Intersection Setup

Name	Western Ave			Western Ave			Orange Ave			Orange Ave		
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 Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Western Ave			Western Ave			Orange Ave			Orange Ave		
Base Volume Input [veh/h]	112	863	115	78	638	146	104	467	92	84	435	99
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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]	112	863	115	78	638	146	104	467	92	84	435	99
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	28	216	29	20	160	37	26	117	23	21	109	25
Total Analysis Volume [veh/h]	112	863	115	78	638	146	104	467	92	84	435	99
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtP	Permi	Permi	ProtP	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.29	0.29	0.05	0.23	0.23	0.06	0.16	0.16	0.05	0.16	0.16
Intersection LOS	B											
Intersection V/C	0.602											

Intersection Level Of Service Report
Intersection 2: Western Avenue at Ball Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.700

Intersection Setup

Name	Western Ave			Western Ave			Ball Rd			Ball Rd		
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 Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Western Ave			Western Ave			Ball Rd			Ball Rd		
Base Volume Input [veh/h]	105	893	159	72	569	120	119	780	88	117	776	114
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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]	105	893	159	72	569	120	119	780	88	117	776	114
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	26	223	40	18	142	30	30	195	22	29	194	29
Total Analysis Volume [veh/h]	105	893	159	72	569	120	119	780	88	117	776	114
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	ProtP	Permi	Permi	ProtP	Permi	Permi
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.31	0.31	0.04	0.20	0.20	0.07	0.23	0.05	0.07	0.23	0.07
Intersection LOS	B											
Intersection V/C	0.700											

APPENDIX C-II

EXISTING PLUS CUMULATIVE PROJECTS TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: Western Avenue at Orange Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.666

Intersection Setup

Name	Western Ave			Western Ave			Orange Ave			Orange Ave		
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 Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Western Ave			Western Ave			Orange Ave			Orange Ave		
Base Volume Input [veh/h]	208	579	137	104	642	205	69	515	171	73	499	102
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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]	208	579	137	104	642	205	69	515	171	73	499	102
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	52	145	34	26	161	51	17	129	43	18	125	26
Total Analysis Volume [veh/h]	208	579	137	104	642	205	69	515	171	73	499	102
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtP	Permi	Permi	ProtP	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.21	0.21	0.06	0.25	0.25	0.04	0.20	0.20	0.04	0.18	0.18
Intersection LOS	B											
Intersection V/C	0.666											

Intersection Level Of Service Report
Intersection 2: Western Avenue at Ball Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.669

Intersection Setup

Name	Western Ave			Western Ave			Ball Rd			Ball Rd		
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 Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Western Ave			Western Ave			Ball Rd			Ball Rd		
Base Volume Input [veh/h]	80	555	75	91	667	112	111	815	136	175	816	139
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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]	80	555	75	91	667	112	111	815	136	175	816	139
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	20	139	19	23	167	28	28	204	34	44	204	35
Total Analysis Volume [veh/h]	80	555	75	91	667	112	111	815	136	175	816	139
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	ProtP	Permi	Permi	ProtP	Permi	Permi
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.19	0.19	0.05	0.23	0.23	0.07	0.24	0.08	0.10	0.24	0.08
Intersection LOS	B											
Intersection V/C	0.669											

Intersection Level Of Service Report
Intersection 1: Western Avenue at Orange Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.630

Intersection Setup

Name	Western Ave			Western Ave			Orange Ave			Orange Ave		
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 Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Western Ave			Western Ave			Orange Ave			Orange Ave		
Base Volume Input [veh/h]	113	901	116	83	668	146	104	498	93	86	472	108
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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]	113	901	116	83	668	146	104	498	93	86	472	108
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	28	225	29	21	167	37	26	125	23	22	118	27
Total Analysis Volume [veh/h]	113	901	116	83	668	146	104	498	93	86	472	108
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtP	Permi	Permi	ProtP	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.30	0.30	0.05	0.24	0.24	0.06	0.17	0.17	0.05	0.17	0.17
Intersection LOS	B											
Intersection V/C	0.630											

Intersection Level Of Service Report
Intersection 2: Western Avenue at Ball Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.724

Intersection Setup

Name	Western Ave			Western Ave			Ball Rd			Ball Rd		
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 Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Western Ave			Western Ave			Ball Rd			Ball Rd		
Base Volume Input [veh/h]	106	927	160	76	598	120	119	813	90	119	813	118
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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]	106	927	160	76	598	120	119	813	90	119	813	118
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	27	232	40	19	150	30	30	203	23	30	203	30
Total Analysis Volume [veh/h]	106	927	160	76	598	120	119	813	90	119	813	118
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	ProtP	Permi	Permi	ProtP	Permi	Permi
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.32	0.32	0.04	0.21	0.21	0.07	0.24	0.05	0.07	0.24	0.07
Intersection LOS	C											
Intersection V/C	0.724											

APPENDIX C-III

EXISTING PLUS CUMULATIVE PROJECTS PLUS PROJECT TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: Western Avenue at Orange Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.667

Intersection Setup

Name	Western Ave			Western Ave			Orange Ave			Orange Ave		
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 Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Western Ave			Western Ave			Orange Ave			Orange Ave		
Base Volume Input [veh/h]	209	581	138	104	643	205	69	515	171	73	499	102
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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]	209	581	138	104	643	205	69	515	171	73	499	102
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	52	145	35	26	161	51	17	129	43	18	125	26
Total Analysis Volume [veh/h]	209	581	138	104	643	205	69	515	171	73	499	102
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtP	Permi	Permi	ProtP	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.21	0.21	0.06	0.25	0.25	0.04	0.20	0.20	0.04	0.18	0.18
Intersection LOS	B											
Intersection V/C	0.667											

Intersection Level Of Service Report
Intersection 2: Western Avenue at Ball Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.669

Intersection Setup

Name	Western Ave			Western Ave			Ball Rd			Ball Rd		
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 Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Western Ave			Western Ave			Ball Rd			Ball Rd		
Base Volume Input [veh/h]	80	555	75	93	668	113	111	815	136	175	816	140
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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]	80	555	75	93	668	113	111	815	136	175	816	140
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	20	139	19	23	167	28	28	204	34	44	204	35
Total Analysis Volume [veh/h]	80	555	75	93	668	113	111	815	136	175	816	140
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	ProtP	Permi	Permi	ProtP	Permi	Permi
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.19	0.19	0.05	0.23	0.23	0.07	0.24	0.08	0.10	0.24	0.08
Intersection LOS	B											
Intersection V/C	0.669											

Intersection Level Of Service Report
Intersection 1: Western Avenue at Orange Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.630

Intersection Setup

Name	Western Ave			Western Ave			Orange Ave			Orange Ave		
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 Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Western Ave			Western Ave			Orange Ave			Orange Ave		
Base Volume Input [veh/h]	113	902	117	83	670	146	104	498	94	87	472	108
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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]	113	902	117	83	670	146	104	498	94	87	472	108
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	28	226	29	21	168	37	26	125	24	22	118	27
Total Analysis Volume [veh/h]	113	902	117	83	670	146	104	498	94	87	472	108
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtP	Permi	Permi	ProtP	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.30	0.30	0.05	0.24	0.24	0.06	0.17	0.17	0.05	0.17	0.17
Intersection LOS	B											
Intersection V/C	0.630											

Intersection Level Of Service Report
Intersection 2: Western Avenue at Ball Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.725

Intersection Setup

Name	Western Ave			Western Ave			Ball Rd			Ball Rd		
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 Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Western Ave			Western Ave			Ball Rd			Ball Rd		
Base Volume Input [veh/h]	106	928	160	77	598	120	120	813	90	119	813	120
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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]	106	928	160	77	598	120	120	813	90	119	813	120
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	27	232	40	19	150	30	30	203	23	30	203	30
Total Analysis Volume [veh/h]	106	928	160	77	598	120	120	813	90	119	813	120
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	ProtP	Permi	Permi	ProtP	Permi	Permi
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.32	0.32	0.05	0.21	0.21	0.07	0.24	0.05	0.07	0.24	0.07
Intersection LOS	C											
Intersection V/C	0.725											

APPENDIX C-IV

YEAR 2022 CUMULATIVE TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: Western Avenue at Orange Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.672

Intersection Setup

Name	Western Ave			Western Ave			Orange Ave			Orange Ave		
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 Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Western Ave			Western Ave			Orange Ave			Orange Ave		
Base Volume Input [veh/h]	210	585	138	105	648	207	70	520	173	74	504	103
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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]	210	585	138	105	648	207	70	520	173	74	504	103
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	53	146	35	26	162	52	18	130	43	19	126	26
Total Analysis Volume [veh/h]	210	585	138	105	648	207	70	520	173	74	504	103
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtP	Permi	Permi	ProtP	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.21	0.21	0.06	0.25	0.25	0.04	0.20	0.20	0.04	0.18	0.18
Intersection LOS	B											
Intersection V/C	0.672											

Intersection Level Of Service Report
Intersection 2: Western Avenue at Ball Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.675

Intersection Setup

Name	Western Ave			Western Ave			Ball Rd			Ball Rd		
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 Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Western Ave			Western Ave			Ball Rd			Ball Rd		
Base Volume Input [veh/h]	81	560	76	92	673	113	112	823	137	177	824	140
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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]	81	560	76	92	673	113	112	823	137	177	824	140
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	20	140	19	23	168	28	28	206	34	44	206	35
Total Analysis Volume [veh/h]	81	560	76	92	673	113	112	823	137	177	824	140
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	ProtP	Permi	Permi	ProtP	Permi	Permi
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.19	0.19	0.05	0.23	0.23	0.07	0.24	0.08	0.10	0.24	0.08
Intersection LOS	B											
Intersection V/C	0.675											

Intersection Level Of Service Report
Intersection 1: Western Avenue at Orange Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.635

Intersection Setup

Name	Western Ave			Western Ave			Orange Ave			Orange Ave		
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 Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Western Ave			Western Ave			Orange Ave			Orange Ave		
Base Volume Input [veh/h]	114	910	117	84	674	147	105	503	94	87	476	109
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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]	114	910	117	84	674	147	105	503	94	87	476	109
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	29	228	29	21	169	37	26	126	24	22	119	27
Total Analysis Volume [veh/h]	114	910	117	84	674	147	105	503	94	87	476	109
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtP	Permi	Permi	ProtP	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.30	0.30	0.05	0.24	0.24	0.06	0.18	0.18	0.05	0.17	0.17
Intersection LOS	B											
Intersection V/C	0.635											

Intersection Level Of Service Report
Intersection 2: Western Avenue at Ball Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.730

Intersection Setup

Name	Western Ave			Western Ave			Ball Rd			Ball Rd		
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 Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Western Ave			Western Ave			Ball Rd			Ball Rd		
Base Volume Input [veh/h]	107	936	162	77	604	121	120	821	91	120	821	119
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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]	107	936	162	77	604	121	120	821	91	120	821	119
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	27	234	41	19	151	30	30	205	23	30	205	30
Total Analysis Volume [veh/h]	107	936	162	77	604	121	120	821	91	120	821	119
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	ProtP	Permi	Permi	ProtP	Permi	Permi
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.32	0.32	0.05	0.21	0.21	0.07	0.24	0.05	0.07	0.24	0.07
Intersection LOS	C											
Intersection V/C	0.730											

APPENDIX C-V

YEAR 2022 CUMULATIVE PLUS PROJECT TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: Western Avenue at Orange Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.673

Intersection Setup

Name	Western Ave			Western Ave			Orange Ave			Orange Ave		
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 Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Western Ave			Western Ave			Orange Ave			Orange Ave		
Base Volume Input [veh/h]	211	587	139	105	649	207	70	520	173	74	504	103
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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]	211	587	139	105	649	207	70	520	173	74	504	103
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	53	147	35	26	162	52	18	130	43	19	126	26
Total Analysis Volume [veh/h]	211	587	139	105	649	207	70	520	173	74	504	103
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtP	Permi	Permi	ProtP	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.21	0.21	0.06	0.25	0.25	0.04	0.20	0.20	0.04	0.18	0.18
Intersection LOS	B											
Intersection V/C	0.673											

Intersection Level Of Service Report
Intersection 2: Western Avenue at Ball Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.676

Intersection Setup

Name	Western Ave			Western Ave			Ball Rd			Ball Rd		
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 Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Western Ave			Western Ave			Ball Rd			Ball Rd		
Base Volume Input [veh/h]	81	560	76	94	674	114	112	823	137	177	824	141
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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]	81	560	76	94	674	114	112	823	137	177	824	141
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	20	140	19	24	169	29	28	206	34	44	206	35
Total Analysis Volume [veh/h]	81	560	76	94	674	114	112	823	137	177	824	141
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	ProtP	Permi	Permi	ProtP	Permi	Permi
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.19	0.19	0.06	0.23	0.23	0.07	0.24	0.08	0.10	0.24	0.08
Intersection LOS	B											
Intersection V/C	0.676											

Intersection Level Of Service Report
Intersection 1: Western Avenue at Orange Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.636

Intersection Setup

Name	Western Ave			Western Ave			Orange Ave			Orange Ave		
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 Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Western Ave			Western Ave			Orange Ave			Orange Ave		
Base Volume Input [veh/h]	114	911	118	84	676	147	105	503	95	88	476	109
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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]	114	911	118	84	676	147	105	503	95	88	476	109
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	29	228	30	21	169	37	26	126	24	22	119	27
Total Analysis Volume [veh/h]	114	911	118	84	676	147	105	503	95	88	476	109
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtP	Permi	Permi	ProtP	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.30	0.30	0.05	0.24	0.24	0.06	0.18	0.18	0.05	0.17	0.17
Intersection LOS	B											
Intersection V/C	0.636											

Intersection Level Of Service Report
Intersection 2: Western Avenue at Ball Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.732

Intersection Setup

Name	Western Ave			Western Ave			Ball Rd			Ball Rd		
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 Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Western Ave			Western Ave			Ball Rd			Ball Rd		
Base Volume Input [veh/h]	107	937	162	78	604	121	121	821	91	120	821	121
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
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]	107	937	162	78	604	121	121	821	91	120	821	121
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	27	234	41	20	151	30	30	205	23	30	205	30
Total Analysis Volume [veh/h]	107	937	162	78	604	121	121	821	91	120	821	121
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Permi	Permi	Permi	ProtP	Permi	Permi	ProtP	Permi	Permi
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.32	0.32	0.05	0.21	0.21	0.07	0.24	0.05	0.07	0.24	0.07
Intersection LOS	C											
Intersection V/C	0.732											

APPENDIX D

PROJECT DRIVEWAY LEVEL OF SERVICE CALCULATION WORKSHEETS

Intersection Level Of Service Report
Intersection 3: Western Avenue at Project Driveway

Control Type:	Two-way stop	Delay (sec / veh):	16.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.009

Intersection Setup

Name	Western Ave		Western Ave		Project Dwy	
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 Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Western Ave		Western Ave		Project Dwy	
Base Volume Input [veh/h]	815	1	1	879	3	4
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 Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	815	1	1	879	3	4
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]	214	0	0	231	1	1
Total Analysis Volume [veh/h]	858	1	1	925	3	4
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			Yes
Number of Storage Spaces in Median	0	0	2

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.01	0.01	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	9.63	0.00	16.22	11.41
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.05	0.05
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.10	0.00	1.23	1.23
d_A, Approach Delay [s/veh]	0.00		0.01		13.47	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.06					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 3: Western Avenue at Project Driveway

Control Type:	Two-way stop	Delay (sec / veh):	21.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.009

Intersection Setup

Name	Western Ave		Western Ave		Project Dwy	
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 Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Western Ave		Western Ave		Project Dwy	
Base Volume Input [veh/h]	1177	4	4	803	2	2
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 Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1177	4	4	803	2	2
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]	310	1	1	211	1	1
Total Analysis Volume [veh/h]	1239	4	4	845	2	2
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			Yes
Number of Storage Spaces in Median	0	0	2

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	11.52	0.00	21.88	13.55
Movement LOS	A	A	B	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.02	0.00	0.04	0.04
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.54	0.00	1.06	1.06
d_A, Approach Delay [s/veh]	0.00		0.05		17.71	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.06					
Intersection LOS	C					