APPENDIX F

Traffic Study

LINSCOTT
LAW &
GREENSPAN
engineers

TRAFFIC IMPACT STUDY

OAK VALLEY PROJECT

City of San Dimas, California
June 21, 2016

Prepared for:

MJW Investments, LLC
1278 Glenneyre Street, Suite 439
Laguna Beach, California 92651

LLG Ref. 1-15-4133-1

REGISTERED PROFESSIONAL ENGINEER
CLARE M. LOOK-JAEGER
TR1878
EXP. 06/30/17
TRAFFIC
STATE OF CALIFORNIA

Prepared by:

Chin S. Taing, PTP
Transportation Planner III

Under the Supervision of:

Clare M. Look-Jaeger, P.E.
Principal

Linscott, Law & Greenspan, Engineers

600 S. Lake Avenue,
Suite 500
Pasadena, CA 91106

626.796.2322 T
626.792.0941 F
www.llgengineers.com

TABLE OF CONTENTS

SECTION	PAGE
1.0 Introduction	**1**
1.1 Study Area	3
2.0 Project Description	**4**
2.1 Site Location	4
2.2 Existing Project Site	4
2.3 Proposed Project Description	4
3.0 Site Access and Circulation	**7**
3.1 Existing Project Site Access	7
3.2 Proposed Project Site Access	7
3.3 Sight Distance Review – San Dimas Avenue/Project Driveway	8
3.3.1 Sight Distance Analysis – Horizontal Perspective	9
3.3.2 Sight Distance Analysis – Vertical Perspective	11
4.0 Existing Street System	**13**
4.1 Regional Highway System	13
4.2 Local Street System	13
4.3 Roadway Classifications	13
4.4 Roadway Descriptions	15
4.5 Public Bus Transit Services	15
5.0 Traffic Counts	**19**
6.0 Cumulative Development Projects	**23**
6.1 Related Projects	23
6.2 Ambient Traffic Growth Factor	28
7.0 Traffic Forecasting Methodology	**29**
7.1 Project Traffic Generation	29
7.2 Project Traffic Distribution and Assignment	30
8.0 Traffic Impact Analysis Methodology	**36**
8.1 Impact Criteria and Thresholds	37
8.2 Traffic Impact Analysis Scenarios	38
9.0 Traffic Analysis	**39**
9.1 Existing Conditions	39
9.1.1 Existing Conditions	39
9.2 Future Year 2018 Conditions	39
9.2.1 Future Year 2018 With Ambient Growth Conditions	39
9.2.2 Future Year 2018 With Project Conditions	42
9.2.3 Future Year 2018 Cumulative With Project Conditions	42

TABLE OF CONTENTS *(continued)*

SECTION	PAGE
9.3 Future Year 2035 Conditions	42
9.3.1 Future Year 2035 With Ambient Growth Conditions	42
9.3.2 Future Year 2035 With Project Conditions	49
9.3.3 Future Year 2035 Cumulative With Project Conditions	49
10.0 Transportation Mitigation Measures	**56**
11.0 Congestion Management Program Traffic Impact Assessment	**57**
11.1 Freeways	57
11.2 Intersections	57
11.3 Transit	58
12.0 Summary and Conclusions	**59**

LIST OF TABLES

SECTION—TABLE #		PAGE
4–1	Existing Roadway Descriptions	16
4–2	Existing Transit Routes	17
5–1	Existing Traffic Volumes	20
6–1	Related Projects List and Trip Generation	24
7–1	Project Trip Generation	31
8–1	City of San Dimas LOS Criteria for Signalized Intersections	36
8–2	City of San Dimas LOS Criteria for Unsignalized Intersections	37
8–3	City of San Dimas Intersection Impact Threshold Criteria	38
9–1	Summary of Volume to Capacity Ratios and Levels of Service – Existing and Future Year 2018 Conditions	40
9–2	Summary of Volume to Capacity Ratios and Levels of Service – Existing and Future Year 2035 Conditions	41

APPENDICES

APPENDIX	
A.	Radar Speed Surveys Supplemental Traffic Addendum Memorandum
B.	Manual Intersection Traffic Count Data – Weekday AM and PM Peak Periods
C.	ICU and Levels of Service Explanation ICU Data Worksheets – AM and PM Peak Hours
	HCM and Levels of Service Explanation HCM Data Worksheets – AM and PM Peak Hours

TABLE OF CONTENTS *(continued)*

LIST OF FIGURES

SECTION—FIGURE #		PAGE
1–1	Vicinity Map	2
2–1	Site Plan	6
3–1	San Dimas Avenue – Project Driveway Sight Distance Analysis	10
3–2	San Dimas Avenue – Existing Driveways Sight Distance Analysis	12
4–1	Existing Lane Configurations	14
4–2	Existing Transit Routes	18
5–1	Existing Traffic Volumes – Weekday AM Peak Hour	21
5–2	Existing Traffic Volumes – Weekday PM Peak Hour	22
6–1	Location of Related Projects	25
6–2	Related Projects Traffic Volumes – Weekday AM Peak Hour	26
6–3	Related Projects Traffic Volumes – Weekday PM Peak Hour	27
7–1	Project Trip Distribution – Oak Valley (TTM 73711) Component	32
7–2	Project Trip Distribution – Adjacent Parcel Development	33
7–3	Total Project Traffic Volumes – Weekday AM Peak Hour	34
7–4	Total Project Traffic Volumes – Weekday PM Peak Hour	35
9–1	Future Year 2018 With Ambient Growth Traffic Volumes – Weekday AM Peak Hour	43
9–2	Future Year 2018 With Ambient Growth Traffic Volumes – Weekday PM Peak Hour	44
9–3	Future Year 2018 With Project Traffic Volumes – Weekday AM Peak Hour	45
9–4	Future Year 2018 With Project Traffic Volumes – Weekday PM Peak Hour	46
9–5	Future Year 2018 Cumulative With Project Traffic Volumes – Weekday AM Peak Hour	47
9–6	Future Year 2018 Cumulative With Project Traffic Volumes – Weekday PM Peak Hour	48
9–7	Future Year 2035 With Ambient Growth Traffic Volumes – Weekday AM Peak Hour	50
9–8	Future Year 2035 With Ambient Growth Traffic Volumes – Weekday PM Peak Hour	51
9–9	Future Year 2035 With Project Traffic Volumes – Weekday AM Peak Hour	52
9–10	Future Year 2035 With Project Traffic Volumes – Weekday PM Peak Hour	53
9–11	Future Year 2035 Cumulative With Project Traffic Volumes – Weekday AM Peak Hour	54
9–12	Future Year 2035 Cumulative With Project Traffic Volumes – Weekday PM Peak Hour	55

TRAFFIC IMPACT STUDY

OAK VALLEY PROJECT

City of San Dimas, California
June 21, 2016

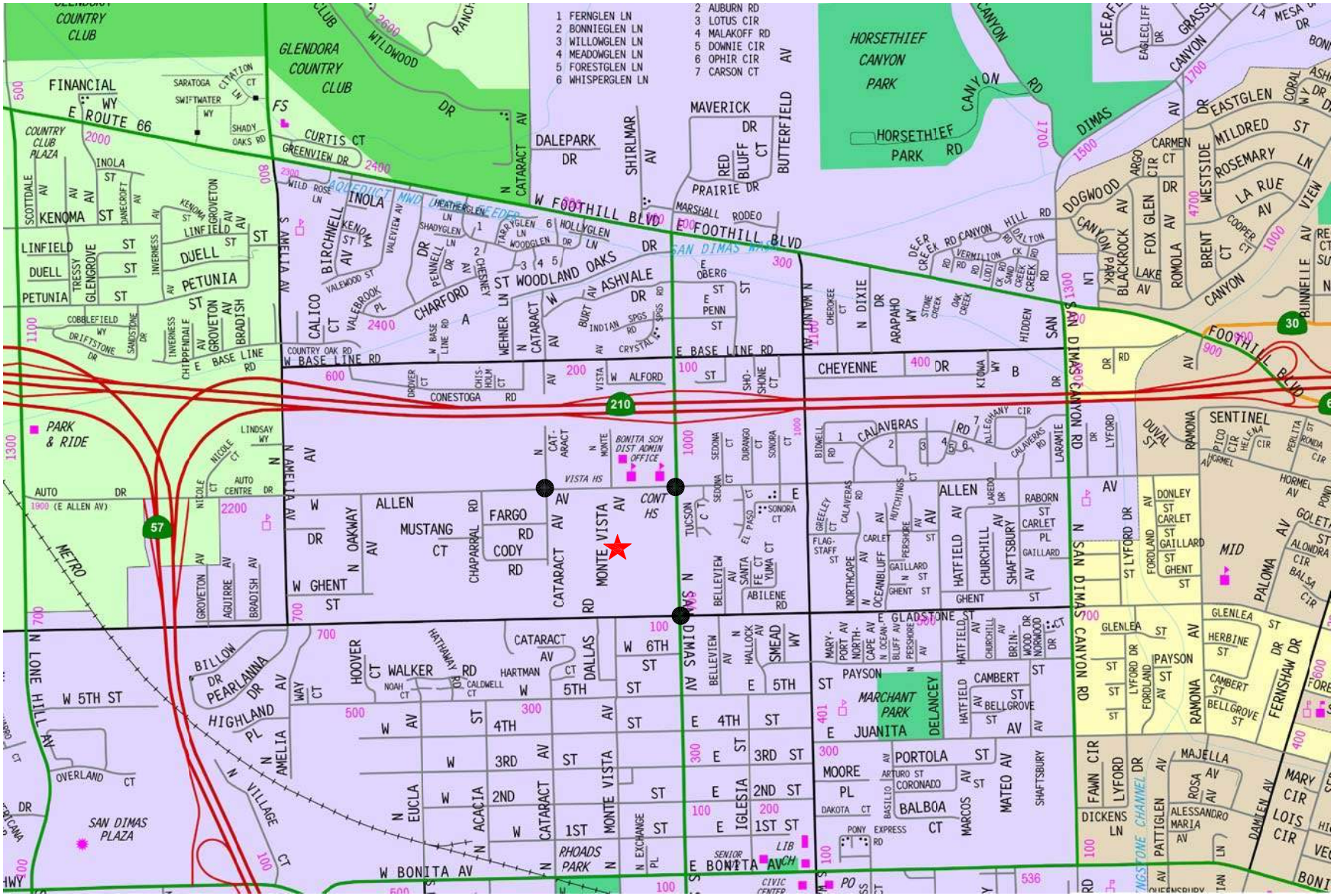
1.0 INTRODUCTION

This traffic analysis has been conducted to identify and evaluate the potential traffic impacts of the proposed Oak Valley development (Tentative Tract Map No. 73711) and the full build-out of the adjacent western portion of the project site. Both developments combined comprise the entire 27.12-acre project site. The proposed project site is generally located within a block bounded by West Allen Avenue to the north, Gladstone Street to the south, San Dimas Avenue to the east, and Cataract Avenue to the west in the City of San Dimas, California. The project site location and general vicinity are shown in ***Figure 1–1***.

Based on coordination with the City of San Dimas staff, the traffic analysis follows Los Angeles County Department of Public Works (LACDPW) traffic study guidelines[1] and is consistent with traffic impact assessment guidelines set forth in the Los Angeles County Congestion Management Program[2]. This traffic analysis evaluates potential project-related impacts at three (3) study intersections in the vicinity of the project site. The study intersections were determined in consultation with the City of San Dimas staff. The Intersection Capacity Utilization method was used to determine volume-to-capacity ratios and corresponding Levels of Service at the signalized study intersections, and the Highway Capacity Manual methodology was utilized to evaluate the stop-sign controlled study intersection. A review was conducted of Los Angeles County Metropolitan Transportation Authority freeway and intersection monitoring stations to determine if a Congestion Management Program transportation impact assessment analysis is required for the proposed project. In addition, a sight distance analysis was conducted to evaluate the adequacy of sight distance at the San Dimas Avenue project site access point.

This study (i) presents existing traffic volumes, (ii) forecasts future traffic volumes without the project (i.e., for years 2018 and 2035), (iii) forecasts future traffic volumes with the proposed project (i.e., for build-out of the project in both years 2018 and 2035), (iv) determines project-related impacts for each future analysis condition, (v) forecasts future cumulative traffic volumes (i.e., for years 2018 and 2035), (vi) determines cumulative impacts, and (vii) recommends mitigation measures, as necessary.

[1] *Traffic Impact Analysis Report Guidelines*, County of Los Angeles Department of Public Works, January 1, 1997.



NOT TO SCALE

MAP SOURCE: RAND MCNALLY & COMPANY

★ PROJECT SITE

● STUDY INTERSECTION

FIGURE 1-1
VICINITY MAP

LINSCOTT, LAW & GREENSPAN, engineers

OAK VALLEY PROJECT

o:\job_file\4133\dwg\f1-1.dwg LDP 14:32:50 03/17/2016 rodriquez

1.1 Study Area

Through coordination with the City of San Dimas staff, three (3) study intersections have been identified for evaluation during the weekday morning and afternoon peak hours. The study intersections provide local access to the study area and define the extent of the boundaries for this traffic impact analysis. Further discussion of the existing street system and study area is provided in Section 4.0 herein.

The general location of the project in relation to the study intersections and surrounding street system is presented in *Figure 1–1*. The traffic analysis study area is generally comprised of those location(s) which have the greatest potential to experience significant traffic impacts due to the proposed project as defined by the Lead Agency. In the traffic engineering practice, the study area generally includes those intersection(s) that are:

a. Immediately adjacent or in close proximity to the project site;

b. In the vicinity of the project site that are documented to have current or projected future adverse operational issues; and

c. In the vicinity of the project site that are forecast to experience a relatively greater percentage of project-related vehicular turning movements.

The locations selected for analysis were based on the above criteria, the forecast project peak hour vehicle trip generation, the anticipated distribution of project vehicular trips, and the existing nearby intersections and corridor operations. The intersections below provide local access to the study area and define the extent of the boundaries for this traffic impact analysis.

1. Cataract Avenue/Allen Avenue
2. San Dimas Avenue/Allen Avenue
3. San Dimas Avenue/Gladstone Street

[2] *2010 Congestion Management Program*, Los Angeles County Metropolitan Transportation Authority, October 2010.

2.0 PROJECT DESCRIPTION

2.1 Site Location

The proposed project area is generally located within a block bounded by West Allen Avenue to the north, Gladstone Street to the south, San Dimas Avenue to the east and Cataract Avenue to the west in the City of San Dimas, California. The adjacent surrounding uses of the project area include the Southern California Edison Company and the Bonita Unified School District building to the north, a tree grove and single family residences to the south, San Dimas Avenue and single family residences to the east, and Cataract Avenue to the west. The proposed project site and general vicinity are shown in *Figure 1–1*.

2.2 Existing Project Site

The entire project area totals 27.12 acres while the existing site for the Oak Valley development (TTM 73711) consists of several irregularly shaped parcels in the eastern portion of the project area totaling approximately 10.03 acres. One parcel contains a single family residence fronting Allen Avenue which will be removed. Another parcel is developed with a wholesale plant nursery and south of the nursery is an equestrian center. Both the nursery and equestrian uses will be removed as part of the Oak Valley development (TTM 73711). Vehicular access to the eastern portion of the project area is currently provided via three driveways on San Dimas Avenue, two for the plant nursery and one for the equestrian center.

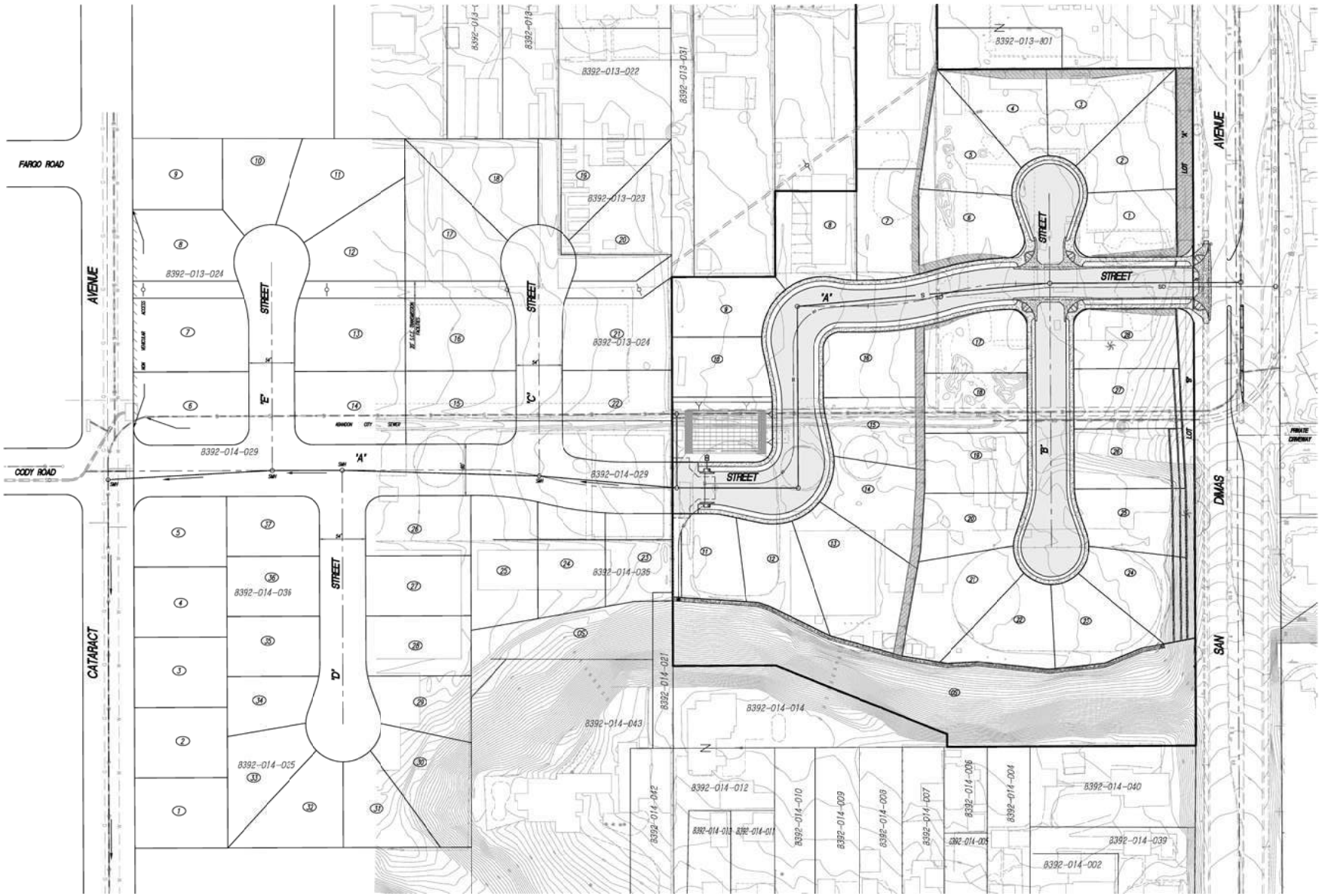
The western portion of the project area is also occupied by multiple single family residences that front Cataract Avenue and a plant nursery. Vehicular access to the western portion of the project area is currently provided by six driveways on Cataract Avenue (i.e., for the single family residences as well as the plant nursery).

2.3 Proposed Project Description

The proposed Oak Valley project (TTM 73711) consists of the development of 28 detached single-family residential dwelling units. The parcels will be subdivided to provide lots ranging between 7,727 square feet to 15,495 square feet. While the Oak Valley development (TTM 73711) is proposed on approximately 10.03 acres of the entire 27.12-acre project area, there are no specific development proposals for the remainder of the project area at this time. For purposes of analyzing potential traffic impacts for full build-out of the project area, it was assumed that the remainder of the project area would consist of the development of up to 50 detached single-family residential dwelling units in the western portion of the project area.

Primary vehicular access to the project site is planned to be provided via a new street ("A" Street) extending between Cataract Avenue to San Dimas Avenue. Other internal access roadways are planned within the project area ("B", "C", "D", and "E" Streets) connecting to "A" Street. Further discussion of the project's access and circulation scheme is provided in Section 3.0.

Completion of the Oak Valley development (TTM 73711) is anticipated by year 2018. For purposes of analyzing the full build-out of the project area, it is assumed that the remainder of the project area would also be built and occupied by year 2018. The proposed project site plan is illustrated in ***Figure 2–1***.



N

NOT TO SCALE

SOURCE: ANDREASEN ENGINEERING, INC.

FIGURE 2-1
SITE PLAN

LINSCOTT, LAW & GREENSPAN, engineers

OAK VALLEY PROJECT

o:\job_file\4133\dwg\f2-1.dwg LDP 08:42:27 03/21/2016 rodriquez

3.0 SITE ACCESS AND CIRCULATION

The site access scheme for the proposed project is displayed in *Figure 2–1*. Descriptions of the existing and proposed project site access and circulation schemes are provided in the following subsections.

3.1 Existing Project Site Access

Vehicular access to the eastern portion of the project area is currently provided via three existing site driveways on San Dimas Avenue which are utilized by the existing wholesale nursery and equestrian center. The northerly and middle driveways are limited to right-turn ingress and right-turn egress turning movements) due to the raised median island. Both of these driveways provide access to the wholesale nursery use. The southerly driveway currently provides full access (i.e., right-turn and left-turn ingress and egress turning movements) and serves as direct access to the equestrian center site.

Vehicular access to the western portion of the project area is currently provided via six existing site driveways on Cataract Avenue which are utilized by the existing single family residences that front Cataract Avenue as well as the existing wholesale nursery. The existing driveways on Cataract Avenue all provide full access (i.e., right-turn and left-turn ingress and egress turning movements).

3.2 Proposed Project Site Access

Direct project site access will be provided via a public street extending between Cataract Avenue and San Dimas Avenue. A description of the project site access points is provided in the following paragraphs.

- *San Dimas Avenue*:

  The existing San Dimas Avenue site driveway will be replaced with a new street ("A" Street) extending between Cataract Avenue and San Dimas Avenue. "A" Street will directly serve multiple internal roadways ("B", "C", "D", and "E" Streets) which terminate at five cul-de-sacs within the project area. The "A" Street project driveway will accommodate full access at the intersection with San Dimas Avenue (i.e., both right-turn and left-turn ingress and egress turning movements) and will be constructed to City of San Dimas design standards.

- *Cataract Avenue*:

  While no specific project development is currently planned for the western portion of the project area, it is anticipated that "A" Street will provide a continuous connection between Cataract Avenue and San Dimas Avenue. The "A" Street project driveway will accommodate full access at the intersection with Cataract Avenue opposite of Cody Road

(i.e., both right-turn and left-turn ingress and egress turning movements) and will be constructed to City of San Dimas design standards.

3.3 Sight Distance Review - San Dimas Avenue/Project Driveway

A review has been conducted so as to evaluate the adequacy of sight distance at the intersection of San Dimas Avenue and "A" Street, the new street which is being planned to serve as primary access to and from the project site. The critical sight distance was determined to be between exiting motorists and northbound/southbound San Dimas Avenue motorists. Specifically, a sight distance analysis has been prepared at the subject location in order to determine the adequacy of motorists' lines of sight and focuses on both the approaching northbound and southbound vehicles on San Dimas Avenue (i.e., stopping sight distance) as well as the exiting left-turn and right-turn vehicles at the new street (i.e., intersection sight distance). The sight distance analysis is based on the criteria set forth in the American Association of State Highway and Transportation Officials' (AASHTO) *A Policy on Geometric Design of Highways and Streets*.[3] Stopping sight distance is the distance that a driver of a vehicle, traveling at a certain speed, is able to bring the vehicle to a stop after an object on the road becomes visible. Sight distance is also provided for intersections (including private streets and driveways) to allow the drivers of stopped vehicles a sufficient view of the intersecting roadway to decide when to enter the intersecting roadway or to cross it. If available sight distance for an entering or crossing vehicle is at least equal to the appropriate stopping sight distance for the major roadway, then drivers have sufficient sight distance to anticipate and avoid collisions.

Radar speed surveys were also conducted along San Dimas Avenue between Allen Avenue and Gladstone Street (during unconstrained time periods) in order to determine the prevailing speeds in the proximity of the proposed driveway given the existing roadway conditions/design. The radar speed surveys were conducted by calibrated radar equipment operated by a certified radar operator as required in the California Vehicle Code. The speed surveys were also conducted during unconstrained time periods in order to capture the free flow speed with a minimum of 100 samples in each direction. The morning and afternoon peak periods are times when radar speed surveys should *not* be conducted, since the speeds observed while the traffic volumes are at or near capacity are unlikely to be an accurate reflection of free-flow speeds[4]. The following summarizes the results of the speed surveys along San Dimas Avenue:

- San Dimas Avenue (between Allen Avenue and Gladstone Street):

  <u>Thursday 8/13/15: Sunny Conditions between 10:00 AM – 11:00 AM</u>
  Northbound: 10 mile pace = 32 – 41 mph, 85th percentile = 41 mph
  Southbound: 10 mile pace = 30 – 39 mph, 85th percentile = 40 mph

[3] *A Policy on Geometric Design of Highways and Streets*, Chapter 9, American Association of State Highway and Transportation Officials (AASHTO), Sixth Edition, 2011.
[4] *California Manual for Setting Speed Limits*, Chapter 3, California Department of Transportation, 2014.

Thursday 8/13/15: Sunny Conditions between 1:30 PM – 2:30 PM
Northbound: 10 mile pace = 30 – 39 mph, 85th percentile = 40 mph
Southbound: 10 mile pace = 27 – 36 mph, 85th percentile = 38 mph

As summarized above, the 85th percentile speeds range between 38 to 41 miles per hour on San Dimas Avenue, depending on the direction of travel. The radar speed survey data are contained in ***Appendix A***.

3.3.1 *Sight Distance Analysis – Horizontal Perspective*

According to *Table 9-6 (Design Intersection Sight Distance-Case B1-Left Turn from Stop)* of the *AASHTO* document, a design speed of 45 miles per hour would require a minimum stopping sight distance of 360 feet and an intersection sight distance of 500 feet for passenger cars. It is noted that the sight distance values summarized in Table 9-6 of the AASHTO document are for a stopped vehicle to turn left onto a two-lane highway without a raised median. Adjustments were made to account for the additional lanes and the raised median along this portion of San Dimas Avenue. San Dimas Avenue provides two travel lanes in each direction and is posted for a speed limit of 40 miles per hour in the project vicinity. As such, the minimum intersection sight distance of 560 feet for passenger cars was utilized for the sight distance analysis.

Figure 3–1 provides a conceptual plan of the San Dimas Avenue/project driveway intersection and displays the minimum required horizontal intersection sight distance (i.e., 560 feet) utilizing a design speed of 45 miles per hour on San Dimas Avenue. According to AASHTO guidelines, *Figure 3–1* shows that when an exiting motorist's vehicle (i.e., front bumper) is set back such that it is 8.0 feet from the edge of the travel way to the motorists' eye, a line of sight to meet the stated minimums likely does not exist for the critical case, which is Case B1 – Left Turn from Stop, due to existing landscaping and trees in the raised median based on observations and field measurements. Some of the existing trees (and their lower level tree branches) and bushes located within the median island on San Dimas Avenue south of the driveway currently obstruct the line of sight assuming that the eight (8.0) feet (i.e., the distance between the edge of the travel way and the exiting driveway motorists' eye) is maintained. As also shown in *Figure 3–1*, from a horizontal perspective, the sight triangle area should be clear of any tall landscaping, signage, or objects (i.e., be less than 36 inches in height) and all lower level tree branches must be cleared so as to maintain a clear line of sight between exiting motorists and oncoming motorists. It is recommended that the landscaping in the raised median of San Dimas Avenue south of the project driveway be trimmed such that the required line of sight of approaching northbound traffic flow would not be obstructed. Additionally, any proposed new landscaping would also need to be limited to less than 36 inches in height. An existing tree located along the west side of San Dimas Avenue would also need to be trimmed to provide the required line of sight of approaching southbound motorists. However, in order to maintain full access (i.e., left-turn and right-turn ingress and egress turning movements) for the existing east side residential driveway and provide adequate sight distances for both driveways (i.e., project driveway and the east side residential driveway) as well as motorists on San Dimas Avenue, a portion of the raised median

NOT TO SCALE

SOURCE: WALBERN DEVELOPMENTS

FIGURE 3-1

SAN DIMAS AVENUE PROPOSED PROJECT DRIVEWAY SIGHT DISTANCE ANALYSIS

LINSCOTT, LAW & GREENSPAN, engineers

OAK VALLEY PROJECT

o:\job_file\4133\dwg\f3-1.dwg LDP 17:16:15 10/14/2015 rodriquez

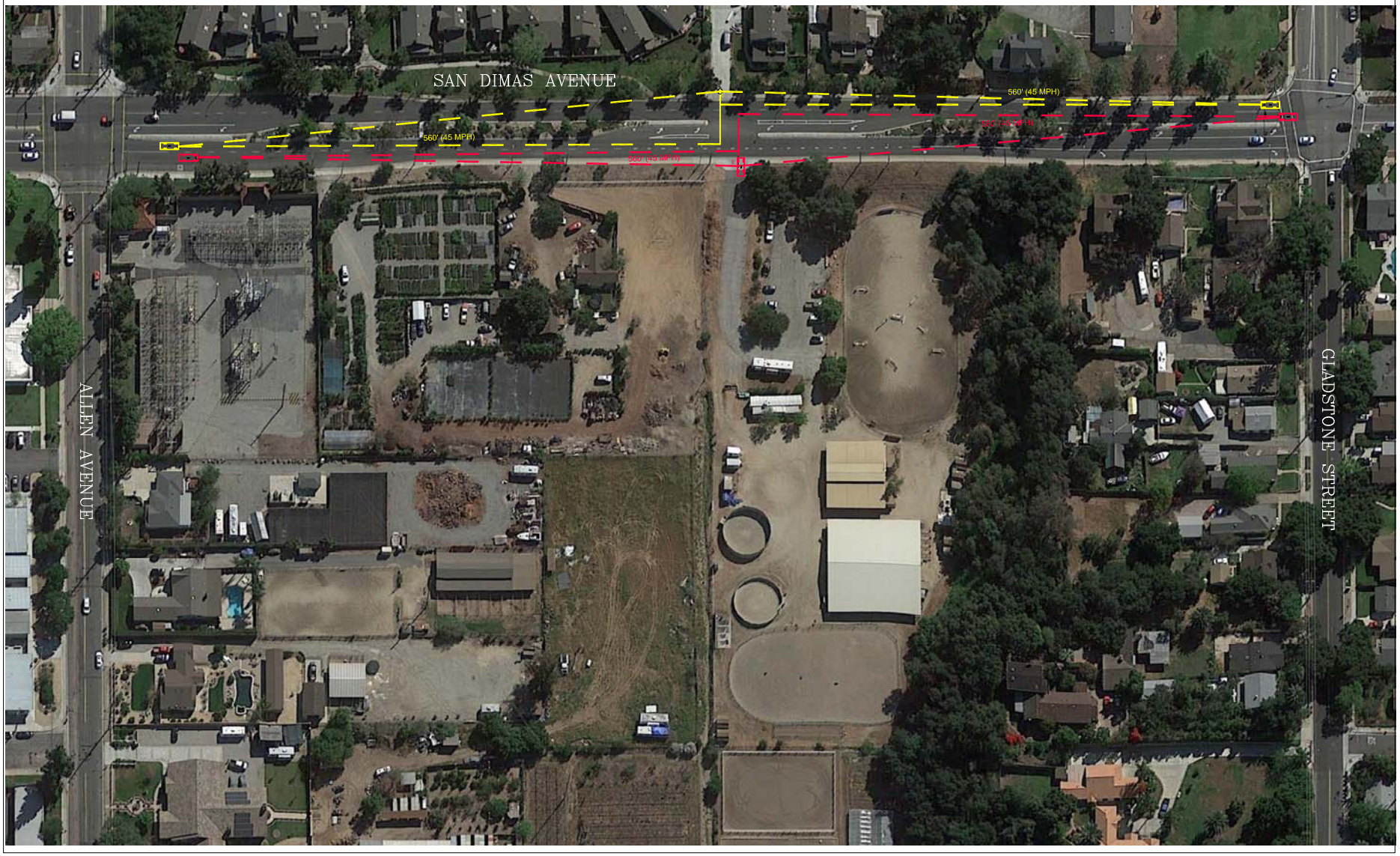
could be removed to allow the installation of a two-way left-turn lane along San Dimas Avenue for left-turn access into both the proposed project driveway and the east side residential driveway. Other median improvement options considered are included in the technical memorandum[5] also contained in *Appendix A.*

A field review was also conducted at the location of the existing equestrian center driveway (i.e., approximate location of the prior proposed project driveway) on the west side of San Dimas Avenue as well as the existing residential driveway on the east side of San Dimas Avenue (opposite the existing equestrian center driveway). ***Figure 3–2*** illustrates the existing line of sight conditions at the equestrian center driveway as well as the east side residential driveway along San Dimas Avenue. Based on the sight distance analyses contained herein, and strict application of the AASHTO guidelines, it can be concluded that the existing intersection sight distance is currently obstructed for exiting equestrian center driveway motorists on San Dimas Avenue. It is therefore recommended that the landscaping in the raised median island along San Dimas Avenue south of the driveway be trimmed as it currently obstructs the required line of sight of approaching northbound vehicles on San Dimas Avenue. Additionally, an existing tree along the west side of San Dimas Avenue north of the driveway would need to be trimmed to provide the required line of sight of approaching southbound motorists.

3.3.2 *Sight Distance Analysis – Vertical Perspective*

Given the existing grades and elevation of San Dimas Avenue, the stopping sight distance and intersection sight distances were also reviewed from a vertical perspective. Based on the plan and profile plan along this portion of San Dimas Avenue (i.e., provided by the Applicant's Civil Engineer), the sight distance analyses utilize the following parameters: the driver's eye height of 3.5 feet, an object height of approximately 2.0 feet, and a design speed of 45 miles per hour. The minimum required intersection sight distance of 560 feet is provided and the clear line of sight is sufficient given the existing grade/elevation of San Dimas Avenue. The minimum required stopping sight distance is 360 feet and is provided for northbound and southbound motorists on San Dimas Avenue approaching the driveway. This ensures that drivers (i.e., given a driver's eye height of 3.5 feet) traveling at a certain speed, is able to bring the vehicle to a stop after an object on the road (i.e., object height of 2 feet) becomes visible. The number of vehicles forecast with development of the project site is discussed later in Section 7.0.

[5] *Supplemental Traffic Study Addendum for the Oak Valley Project*, prepared by LLG Engineers to Mr. Luis Torrico with the City of San Dimas Development Services Department, dated December 2, 2015.



NOT TO SCALE

MAP SOURCE: GOOGLE EARTH

FIGURE 3-2
SAN DIMAS AVENUE EXISTING DRIVEWAYS SIGHT DISTANCE ANALYSIS

OAK VALLEY PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

o:\job_file\4133\dwg\f3-2.dwg LDP 17:15:50 10/14/2015 rodriquez

4.0 EXISTING STREET SYSTEM

4.1 Regional Highway System

Regional access to the project site is generally provided by the Foothill Freeway (I-210), which is a major east-west oriented freeway that connects the City of San Dimas with other parts of Los Angeles and San Bernardino Counties. In the project vicinity, the Foothill Freeway provides three westbound travel lanes and three eastbound travel lanes, with a high-occupancy vehicle travel lane in each direction. Full ramp access is accommodated via San Dimas Avenue and Foothill Boulevard in the study area.

4.2 Local Street System

Immediate access to the project site is provided via San Dimas Avenue and Cataract Avenue. The following study intersections were selected for analysis in consultation with City staff in order to determine potential impacts related to the proposed project:

1. Cataract Avenue/Allen Avenue [1]
2. San Dimas Avenue/Allen Avenue
3. San Dimas Avenue/Gladstone Street

[1] Two-way stop-sign controlled intersection.

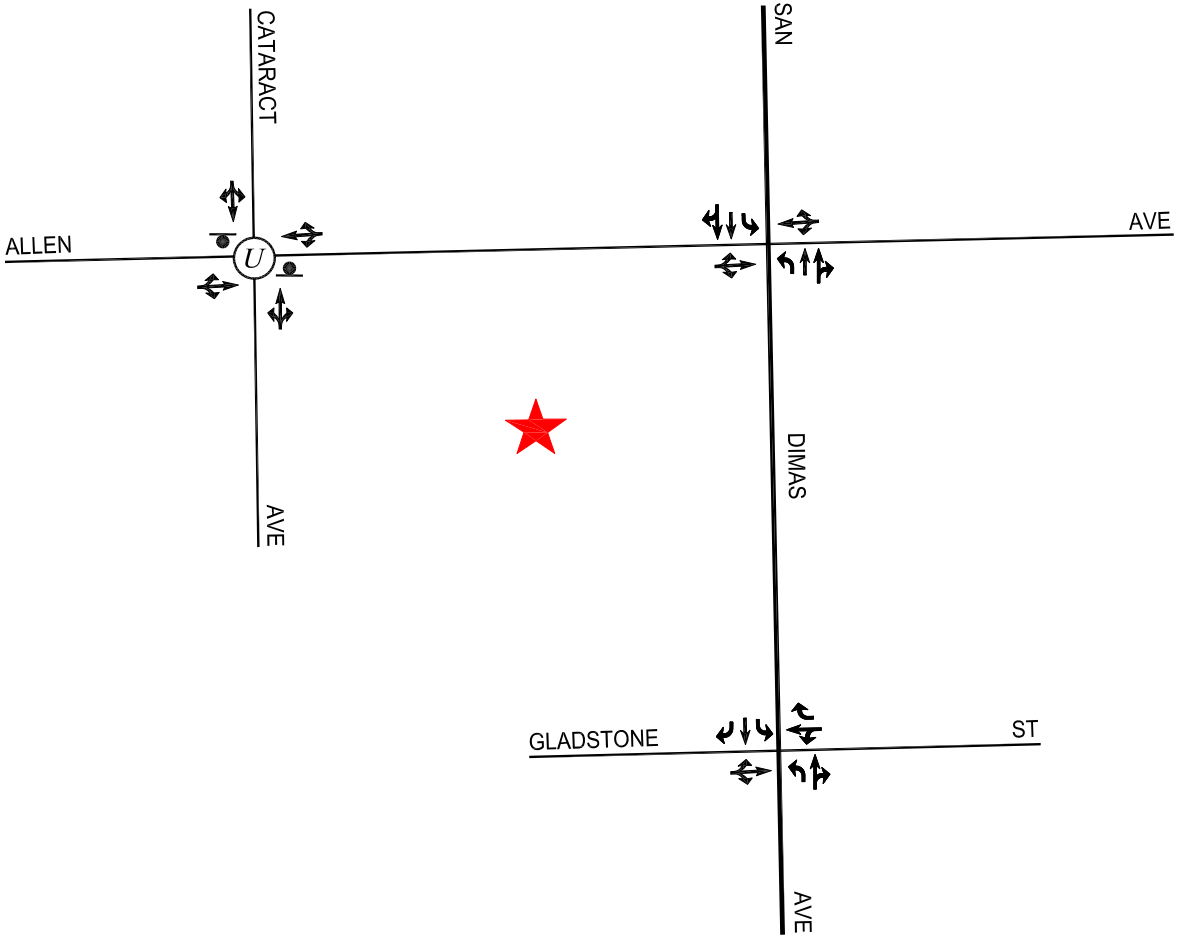
As noted above, one of the three study intersections is currently stop-sign controlled, with stop signs facing the minor street approach (i.e., Cataract Avenue). The existing lane configurations at the study intersections are displayed in ***Figure 4–1***.

4.3 Roadway Classifications

The City of San Dimas utilizes the roadway categories recognized by regional, state and federal transportation agencies. There are four categories in the roadway hierarchy, ranging from freeways with the highest capacity to two-lane undivided roadways with the lowest capacity. The roadway categories are summarized as follows:

- *Freeways* are limited-access and high speed travel ways included in the state and federal highway systems. Their purpose is to carry regional through-traffic. Access is provided by interchanges with typical spacing of one mile or greater. No local access is provided to adjacent land uses.

- *Arterial* roadways are major streets that primarily serve through-traffic and provide access to abutting properties as a secondary function. Arterials are generally designed with two to six travel lanes and their major intersections are signalized. This roadway type is divided into two categories: principal and minor arterials. Principal arterials are typically four-or-more lane roadways and serve both local and regional through-traffic. Minor arterials are typically two-to-four lane streets that service local and commuter traffic.



NOT TO SCALE

PROJECT SITE

UNSIGNALIZED INTERSECTION

STOP SIGN

FIGURE 4-1
EXISTING LANE CONFIGURATIONS

LINSCOTT, LAW & GREENSPAN, engineers

OAK VALLEY PROJECT

o:\job_file\4133\dwg\f4-1.dwg LDP 14:46:38 03/17/2016 rodriquez

- *Collector* roadways are streets that provide access and traffic circulation within residential and non-residential (e.g., commercial and industrial) areas. Collector roadways connect local streets to arterials and are typically designed with two through travel lanes (i.e., one through travel lane in each direction) that may accommodate on-street parking. They may also provide access to abutting properties.

- *Local* roadways distribute traffic within a neighborhood, or similar adjacent neighborhoods, and are not intended for use as a through-street or a link between higher capacity facilities such as collector or arterial roadways. Local streets are fronted by residential uses and do not typically serve commercial uses.

4.4 Roadway Descriptions

A review of the important roadways in the project site vicinity and study area is summarized in ***Table 4–1.*** As indicated in *Table 4–1*, the important roadways within the project study area were reviewed in terms of the number of lanes provided, posted speed limits, etc. Additionally, the roadway classifications also are presented in *Table 4–1*.

4.5 Public Bus Transit Services

Local public transit service in the vicinity of the project is currently provided by the Foothill Transit Authority. A summary of the existing transit service, including the transit route, destinations, and the peak hour headways is presented in ***Table 4–2***. The existing public transit routes in the project site vicinity are illustrated in ***Figure 4–2***.

Table 4-1
EXISTING ROADWAY DESCRIPTIONS

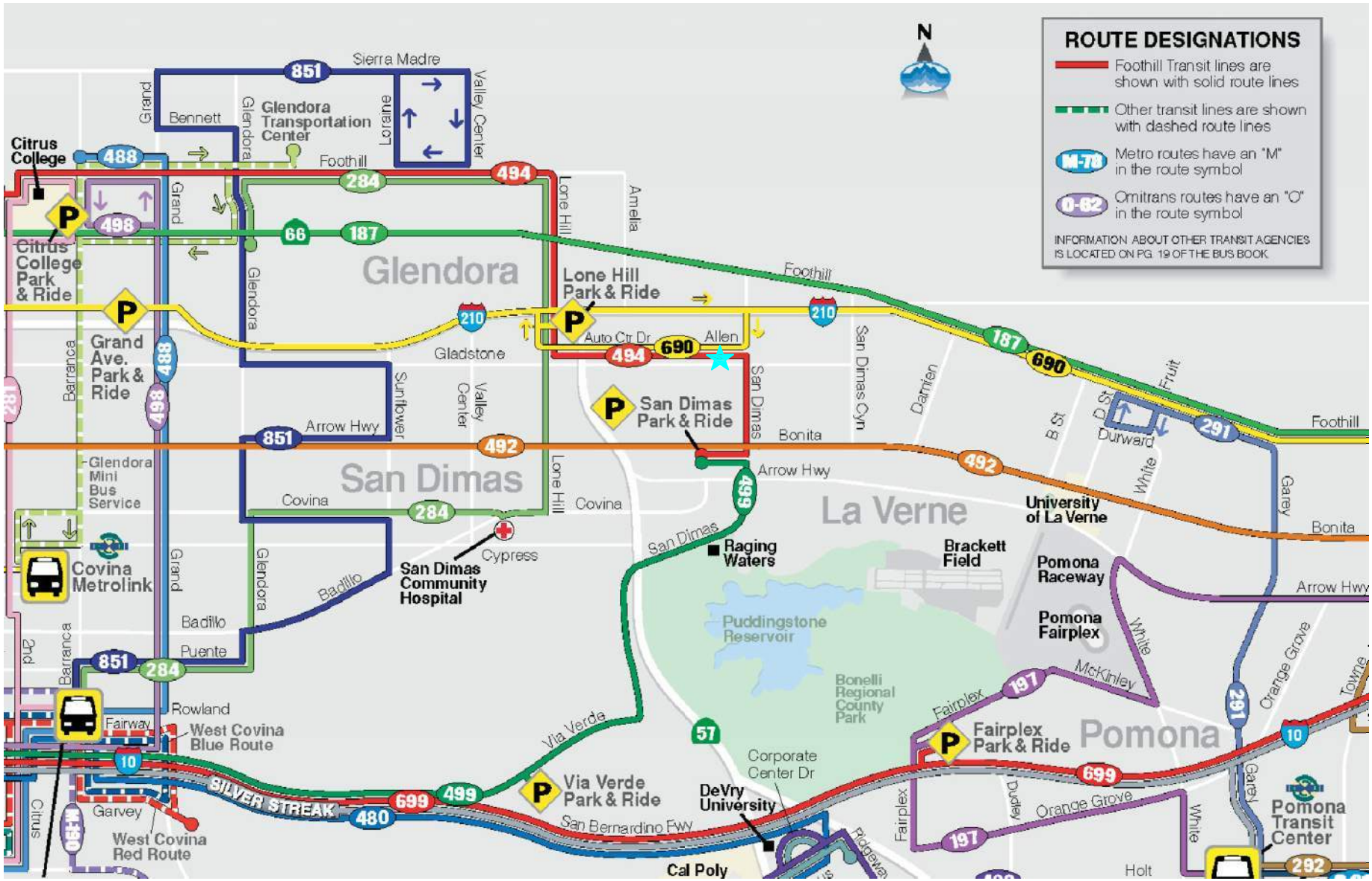
Roadway	Classification [1]	Travel Lanes		Median	Speed
		Direction [2]	No. Lanes [3]	Types [4]	Limit (mph)
San Dimas Avenue (5th Street to Gladstone Street)	Major Arterial	NB/SB	2	2WLT	35
San Dimas Avenue (Gladstone Street to Allen Avenue)	Major Arterial	NB/SB	4	RMI	40
San Dimas Avenue (Allen Avenue to Foothill Boulevard)	Major Arterial	NB/SB	4	RMI/2WLT	40
Cataract Avenue	Local Street	NB/SB	2	N/A	25
Allen Avenue	Collector	EB/WB	2	N/A	35
Gladstone Street (Walnut Avenue to San Dimas Avenue)	Secondary Arterial	EB/WB	4	N/A	35
Gladstone Street (San Dimas Avenue to Monte Vista Avenue)	Secondary Arterial	EB/WB	2	N/A	35

Notes:
[1] Roadway classifications obtained from the *San Dimas General Plan of 1974* .
[2] Direction of roadways in the project area: NB-SB - northbound and southbound; and EB-WB - eastbound and westbound.
[3] Number of lanes in both directions of the roadway.
[4] Median type of the road: RMI - Raised Median Island; 2WLT - 2-Way Left-Turn Lane; and N/A-Not Applicable.

Table 4-2
EXISTING TRANSIT ROUTES [1]

ROUTE	DESTINATIONS	ROADWAY(S) NEAR SITE	NO. OF BUSES/TRAINS DURING PEAK HOUR		
			DIR	AM	PM
F.T. 187	Montclair to Pasadena via Claremont, La Verne, San Dimas, Glendora, Azusa, Duarte, Arcadia and Sierra Madre.	San Dimas Avenue and Foothill Blvd	EB	4	4
			WB	4	4
F.T. 492	Montclair to El Monte via Claremont, La Verne, San Dimas, Glendora, Covina, Azusa, Irwindale, Baldwin Park and Arcadia.	San Dimas Avenue and Bonita Avenue	EB	2	2
			WB	3	2

[1] Source: Foothill Transit website, 2015.



NOT TO SCALE

MAP SOURCE: FOOTHILL TRANSIT

PROJECT SITE

FIGURE 4-2
EXISTING TRANSIT ROUTES

LINSCOTT, LAW & GREENSPAN, engineers

OAK VALLEY PROJECT

o:\job_file\4133\dwg\f4-2.dwg LDP 14:47:03 03/17/2016 rodriquez

5.0 TRAFFIC COUNTS

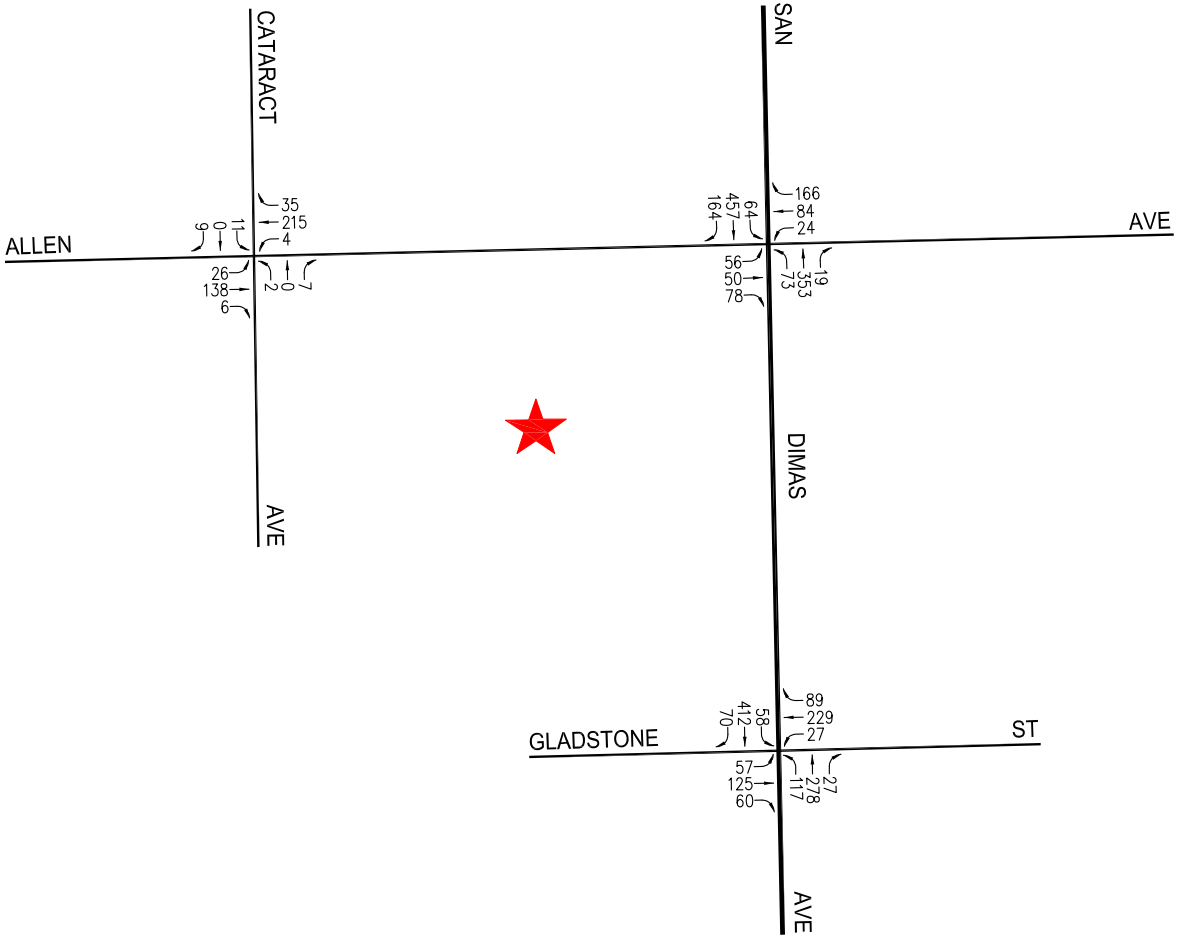
Manual counts of vehicular turning movements were conducted in Fall of 2015 at the study intersections during the weekday morning (AM) and afternoon (PM) commuter periods to determine the peak hour traffic volumes. The manual traffic counts were conducted by an independent traffic count subconsultant (i.e., The Traffic Solution) at the study intersections. The traffic counts were conducted from 7:00 AM to 9:00 AM to determine the weekday AM peak commuter hour and from 4:00 PM to 6:00 PM to determine the weekday PM peak commuter hour. Traffic volumes at the study intersections show the typical peak periods from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM generally associated with the peak morning and afternoon commuter time periods. Additionally, the traffic counts were conducted when local schools in the area were in regular session. An annual ambient growth factor of 1.60 percent (1.60%) was applied to the Fall 2015 traffic counts to reflect the year 2016 existing traffic volumes for the study intersections.

The existing weekday AM and PM peak hour manual counts of vehicular turning movements at the study intersections are summarized in ***Table 5–1***. The existing traffic volumes at the study intersections during the weekday AM and PM peak hours are shown in ***Figures 5–1*** and ***5–2***, respectively. Summary data worksheets of the manual traffic counts at the study intersections are contained in ***Appendix B***. The AM and PM peak period pedestrian and bicycle turning movement counts at the intersections are also contained in *Appendix B* for informational purposes.

Table 5-1
EXISTING TRAFFIC VOLUMES [1]

NO.	INTERSECTION	DATE	DIR	AM PEAK HOUR BEGAN	AM PEAK HOUR VOLUME	PM PEAK HOUR BEGAN	PM PEAK HOUR VOLUME
1	Cataract Avenue/ Allen Avenue	09/01/2015	NB	7:30 AM	9	5:00 PM	9
			SB		20		55
			EB		170		348
			WB		254		149
2	San Dimas Avenue/ Allen Avenue	09/01/2015	NB	7:30 AM	445	4:45 PM	617
			SB		685		637
			EB		184		388
			WB		274		139
3	San Dimas Avenue/ Gladstone Street	09/01/2015	NB	7:30 AM	422	4:15 PM	614
			SB		540		561
			EB		242		756
			WB		345		294

[1] Counts conducted by The Traffic Solution. An ambient growth rate of 1.60% was applied to the year 2015 traffic counts to reflect existing (year 2016) conditions.



PROJECT SITE

NOT TO SCALE

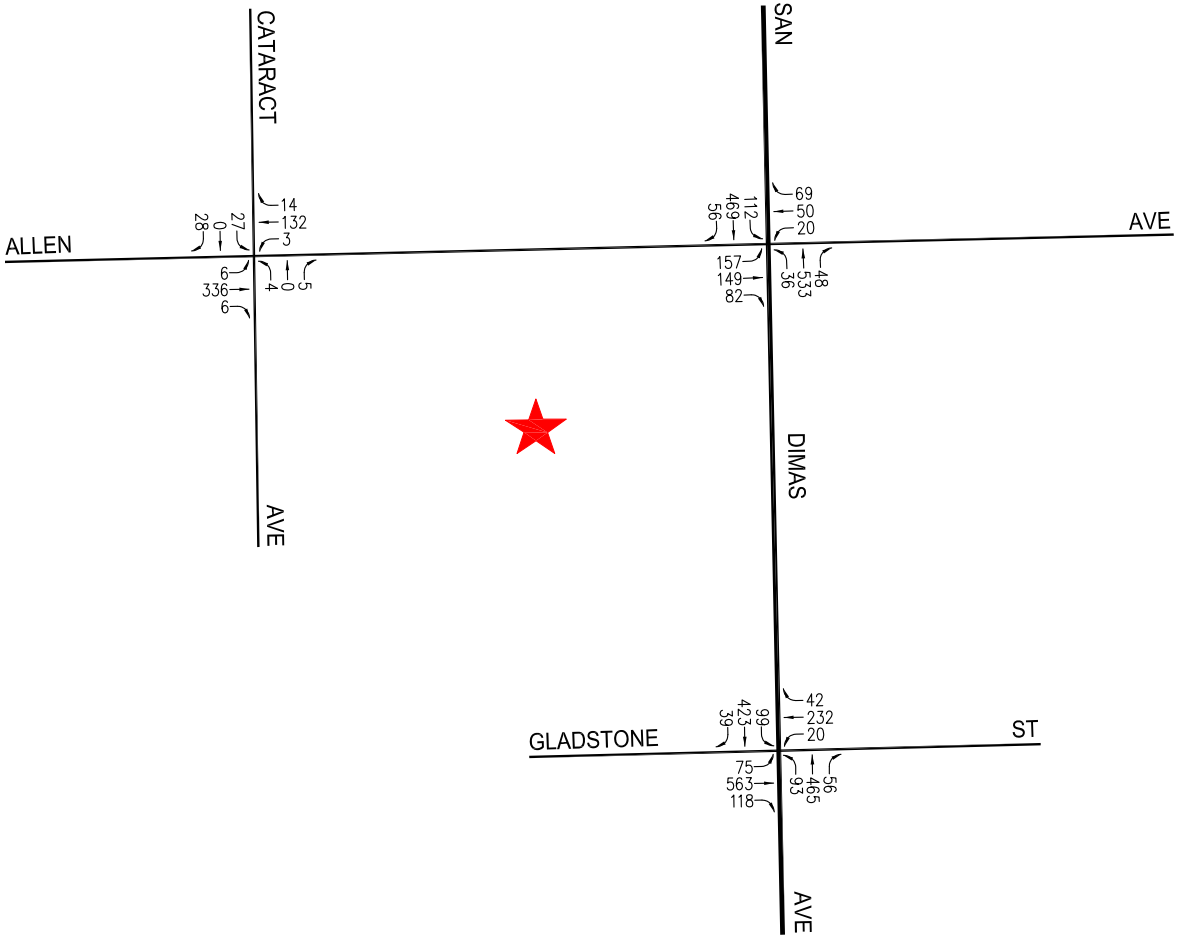
FIGURE 5-1
EXISTING TRAFFIC VOLUMES

WEEKDAY AM PEAK HOUR

OAK VALLEY PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

o:\job_file\4133\dwg\f5-1.dwg LDP 15:06:34 03/17/2016 rodriquez



PROJECT SITE

NOT TO SCALE

FIGURE 5-2
EXISTING TRAFFIC VOLUMES

WEEKDAY PM PEAK HOUR

OAK VALLEY PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

o:\job_file\4133\dwg\f5-2.dwg LDP 15:09:03 03/17/2016 rodriquez

6.0 CUMULATIVE DEVELOPMENT PROJECTS

The forecast of future pre-project conditions was prepared in accordance with procedures outlined in Section 15130 of the California Environmental Quality Act (CEQA) Guidelines. Specifically, the CEQA Guidelines provide two options for developing the future traffic volume forecast:

> "(A) A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the [lead] agency, or
>
> (B) A summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area-wide conditions contributing to the cumulative impact. Any such planning document shall be referenced and made available to the public at a location specified by the lead agency."

Accordingly, the traffic analysis provides a highly conservative estimate of future pre-project traffic volumes as it incorporates both the "A" and "B" options outlined in the CEQA Guidelines for purposes of developing the forecast.

6.1 Related Projects

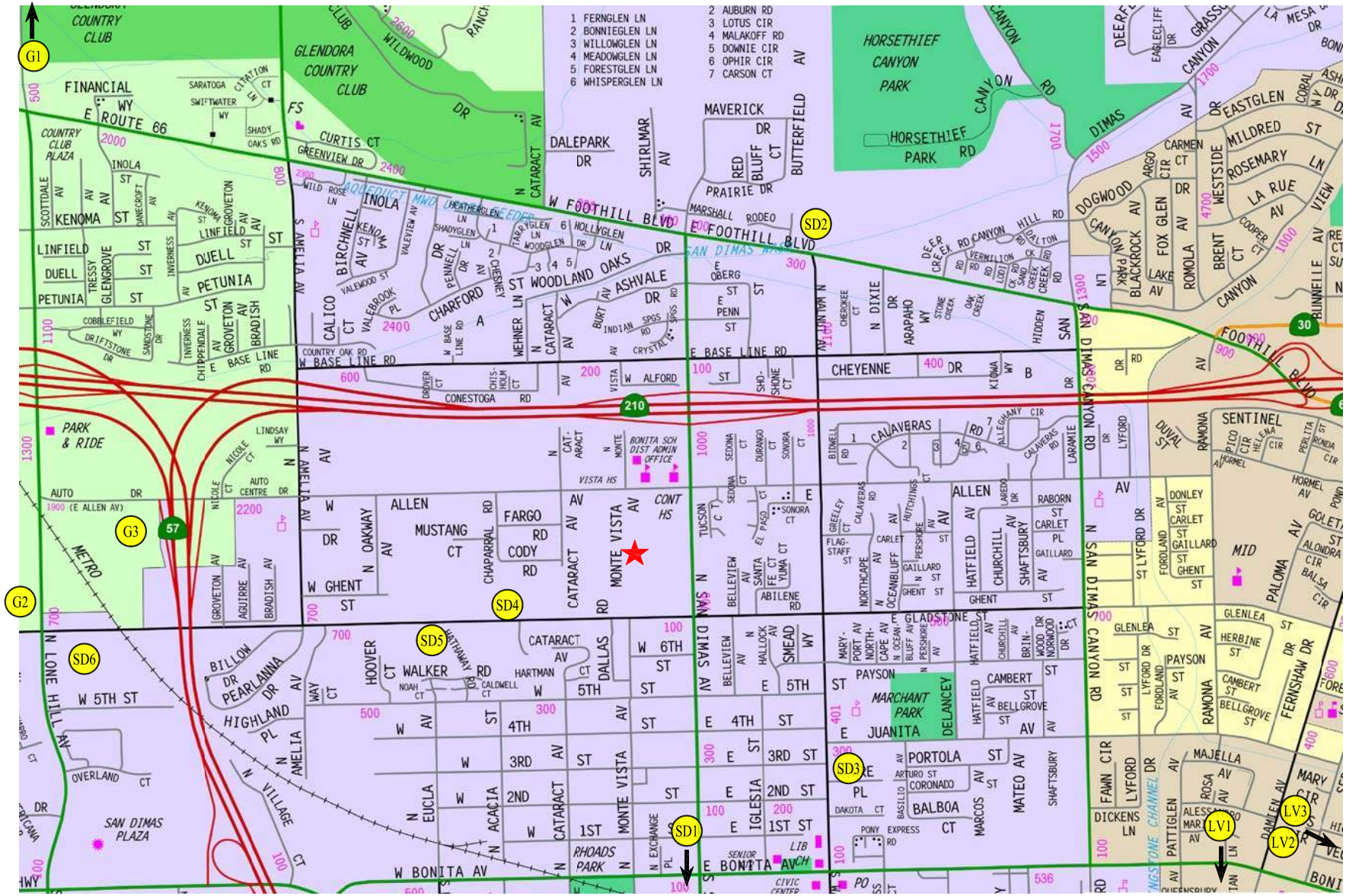
A forecast of on-street traffic conditions prior to implementation of the proposed project was prepared by incorporating the potential trips associated with other known development projects (related projects) in the area (i.e., within a two-mile radius from the project site). With this information, the potential impact of the proposed project can be evaluated within the context of the cumulative impact of all ongoing development. The City of San Dimas Development Services Department, the City of Glendora Planning Department, as well as the City of La Verne Community Development Department were consulted to obtain the list of development projects (related projects) in the area. A total of 12 related projects was identified and considered as part of the cumulative traffic analysis. The descriptions of each of the related projects are presented in ***Table 6–1***. The location of the related projects is shown in ***Figure 6–1***.

Traffic volumes expected to be generated by the related projects were calculated using rates provided in the ITE *Trip Generation Manual*. The related projects' respective traffic generation for the AM and PM peak hours, as well as daily trip volumes for a typical weekday, is summarized in *Table 6–1*. The anticipated distribution of the related projects traffic volumes to the study intersections during the AM and PM peak hours is displayed in ***Figures 6–2*** and ***6–3***, respectively.

Table 6-1
RELATED PROJECTS LIST AND TRIP GENERATION [1]

MAP NO.	PROJECT STATUS	PROJECT NAME/NUMBER ADDRESS/LOCATION	LAND USE DATA LAND-USE	LAND USE DATA SIZE	PROJECT DATA SOURCE	DAILY TRIP ENDS [2] VOLUMES	AM PEAK HOUR VOLUMES [2] IN	AM PEAK HOUR VOLUMES [2] OUT	AM PEAK HOUR VOLUMES [2] TOTAL	PM PEAK HOUR VOLUMES [2] IN	PM PEAK HOUR VOLUMES [2] OUT	PM PEAK HOUR VOLUMES [2] TOTAL
City of San Dimas												
SD1	Under Construction	301 S. San Dimas Avenue	Single-Family Detached Housing	5 DU	[3]	48	1	3	4	3	2	5
			Residential Condo./Townhouse	8 DU	[4]	46	1	3	4	3	1	4
			Live/Work Units	6 DU	[4]	35	1	2	3	2	1	3
SD2	Proposed	299 E. Foothill Boulevard	Single-Family Detached Housing	21 DU	[3]	200	4	12	16	13	8	21
SD3	Proposed	216-300 Walnut Avenue 343 Moore Lane	Single-Family Detached Housing	7 DU	[3]	67	1	4	5	4	3	7
SD4	Proposed	405 W. Gladstone Street	Single-Family Detached Housing	4 DU	[3]	38	1	2	3	3	1	4
SD5	Proposed	526 W. Gladstone Street	Single-Family Detached Housing	4 DU	[3]	38	1	2	3	3	1	4
SD6	Under Construction	Costco Commercial Center 1024-1054 E. Gladstone Street	Retail	19,127 GLSF	[5]	817	11	7	18	34	37	71
City of Glendora												
G1	Proposed	Tract 45858 Lone Hill Avenue at Gordon Ranch Road	Single-Family Detached Housing	19 DU	[3]	181	4	10	14	12	7	19
G2	Under Construction	Glendora Marketplace Gladstone Street at Lone Hill Avenue	Retail	50,000 GLSF	[5]	2,135	30	18	48	89	97	186
			Quality Restaurant	4,200 GSF	[6]	378	2	1	3	21	10	31
G3	Under Construction	WalMart Expansion 1950 Auto Centre Drive	Retail	29,000 GLSF	[5]	1,238	17	11	28	52	56	108
City of La Verne												
LV1	Proposed	Puddingstone Hill De Anza Heights Road	Single-Family Detached Housing	15 DU	[3]	143	3	8	11	9	6	15
LV2	Under Construction	Gilead Sciences 1800 Wheeler Avenue	Pharmaceutical Manufacturing	380,000 GSF	[7]	1,452	216	61	277	100	177	277
LV3	Proposed	University of La Verne Parking Structure 2021 D Street	University/College Parking Structure	1,000 Space	[8], [9]	5,182	402	113	515	165	350	515
			General Office	1,900 GSF		21	3	0	3	1	2	3
TOTAL						12,019	698	257	955	514	759	1,273

[1] Sources: City of San Dimas Development Services Department, City of Glendora Planning Department, City of La Verne Community Development Department. Trip generation for the related projects are based on ITE "Trip Generation Manual", 9th Edition, 2012 (as referenced in the Project Data Source column).
[2] Trips are one-way traffic movements, entering or leaving.
[3] ITE Land Use Code 210 (Single-Family Detached Housing) trip generation average rates.
[4] ITE Land Use Code 230 (Residential Condo./Townhouse) trip generation average rates.
[5] ITE Land Use Code 820 (Shopping Center) trip generation average rates.
[6] ITE Land Use Code 931 (Quality Restaurant) trip generation average rates.
[7] ITE Land Use Code 140 (Manufacturing) trip generation average rates.
[8] Source: "University of La Verne - Parking Lot D Parking Structure", prepared by LSA, November 2014.
[9] Source: "University of La Verne - Peer Review of the Parking Lot D Parking Structure", prepared by LLG Engineers, July 2015.



MAP SOURCE: RAND MCNALLY & COMPANY

N

NOT TO SCALE

PROJECT SITE

SD SAN DIMAS RELATED PROJECT

LV LA VERNE RELATED PROJECT

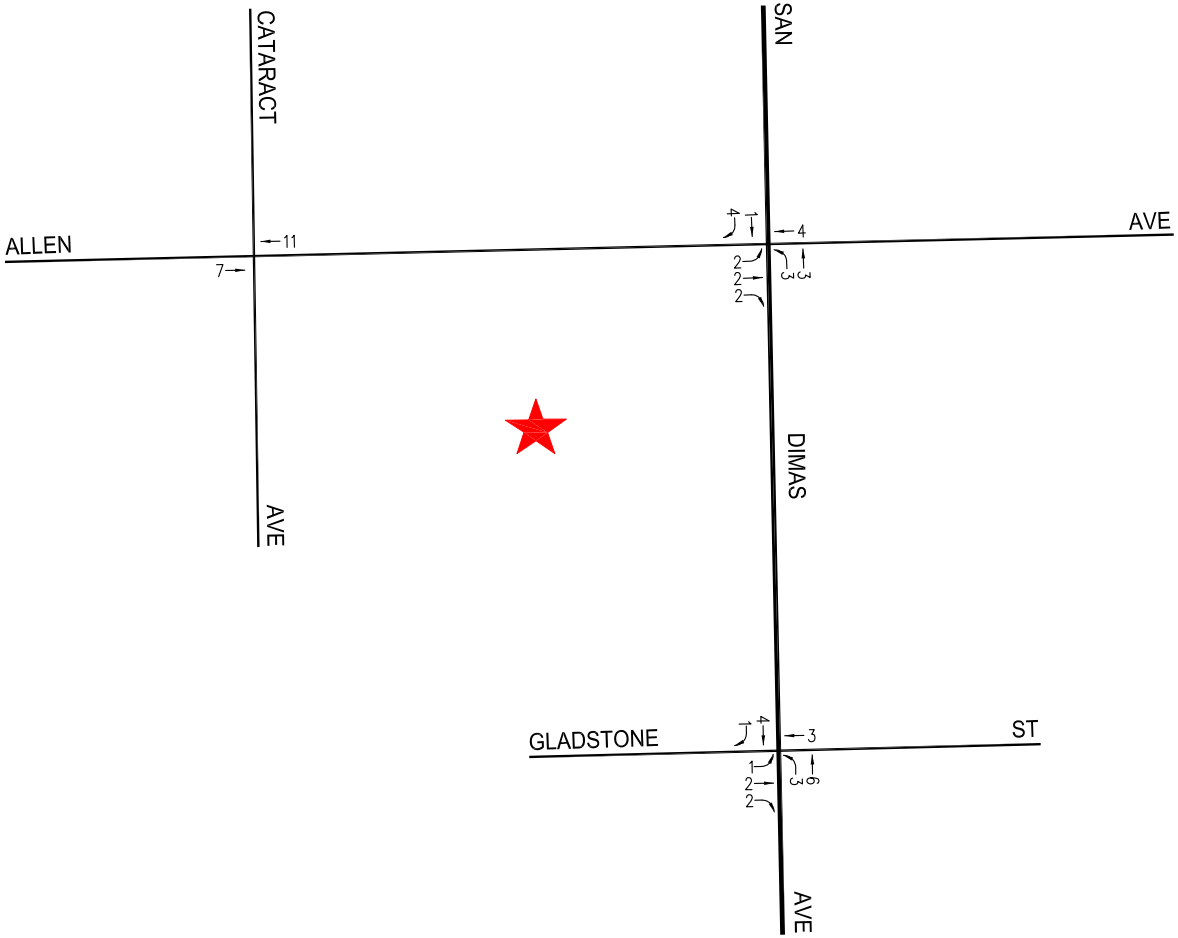
G GLENDORA RELATED PROJECT

FIGURE 6-1
LOCATION OF RELATED PROJECTS

LINSCOTT, LAW & GREENSPAN, engineers

OAK VALLEY PROJECT

o:\job_file\4133\dwg\f6-1.dwg LDP 15:09:29 03/17/2016 rodriquez



NOT TO SCALE

PROJECT SITE

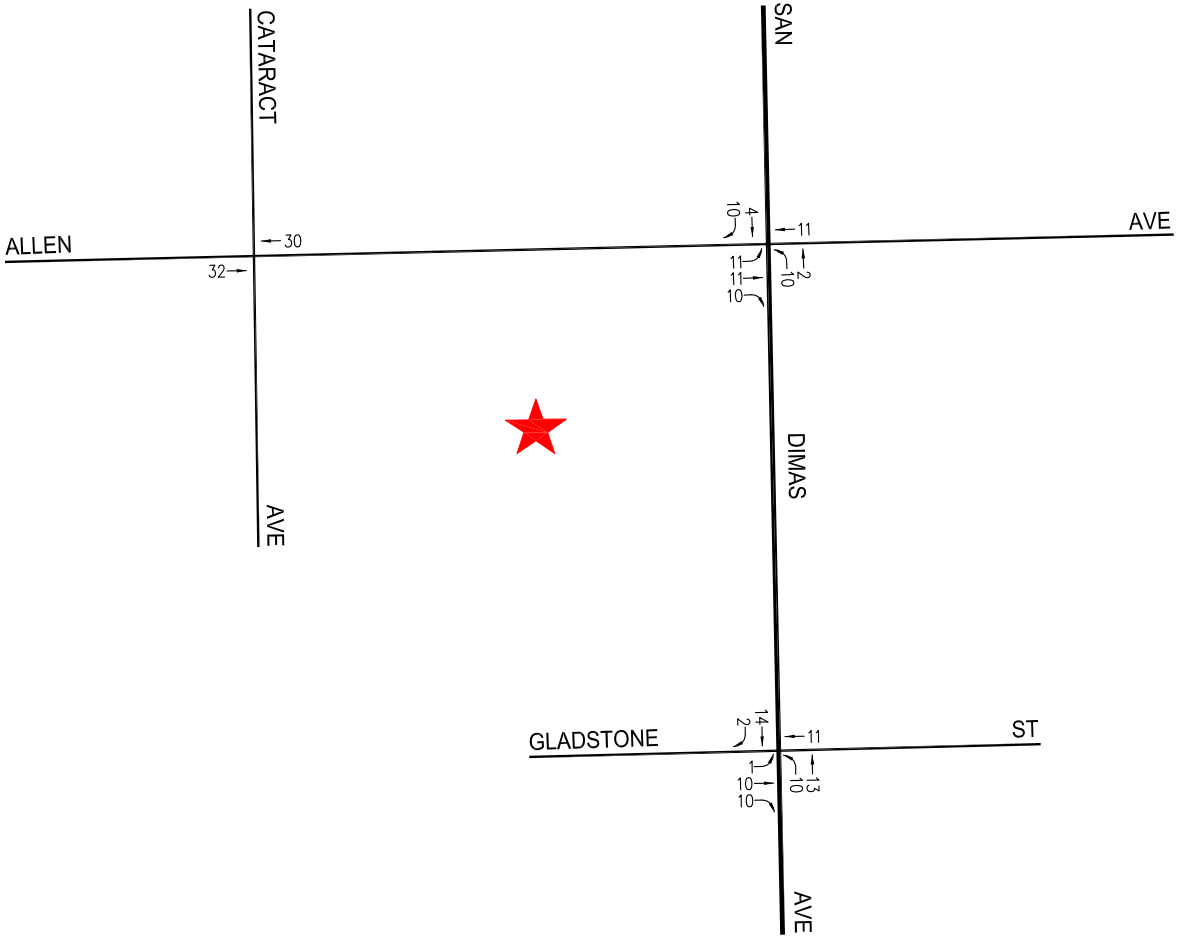
FIGURE 6-2
RELATED PROJECTS TRAFFIC VOLUMES

WEEKDAY AM PEAK HOUR

OAK VALLEY PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

o:\job_file\4133\dwg\f6-2.dwg LDP 15:10:44 03/17/2016 rodriquez



PROJECT SITE

NOT TO SCALE

FIGURE 6-3
RELATED PROJECTS TRAFFIC VOLUMES

WEEKDAY PM PEAK HOUR

OAK VALLEY PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

o:\job_file\4133\dwg\f6-3.dwg LDP 15:11:56 03/17/2016 rodriquez

6.2 Ambient Traffic Growth Factor

In order to account for unknown related projects not included in this analysis, the existing traffic volumes were increased at an annual rate of 1.60 percent (1.60%) per year to the year 2018 (i.e., the anticipated year of project build-out). The ambient growth factor was based on general traffic growth factors provided in the *2010 Congestion Management Program* (the "CMP manual"). The general traffic growth factors provided in the CMP manual for the Regional Statistical Area (RSA) #27, which includes the area bounded by San Dimas, Pomona, and Claremont, has an annual traffic volume growth rate of approximately 1.60% per year between years 2015 and 2020. For the forecast year 2035 conditions (i.e., assuming project build-out), the existing traffic volumes were increased at an annual rate of 0.84 percent (0.84%). It is noted that based on review of the general traffic growth factors provided in the CMP manual for the project study area (i.e., RSA 27), it is anticipated that the existing traffic volumes are expected to increase at an annual rate of 0.84% per year between the years 2010 and 2035. Application of an annual growth factor allows for a conservative, worst case forecast of future traffic volumes in the area. The CMP traffic growth rate is intended to anticipate future traffic generated by development projects in the project vicinity. Therefore, application of this ambient growth factor in addition to the forecast traffic generated by the related projects allows for a conservative forecast of future traffic volumes in the project study area as incorporation of both (i.e., an ambient traffic growth rate and a detailed list of cumulative development projects) is expected to overstate potential future traffic volumes. The cumulative development projects should already be incorporated as part of the growth rate projection per the adopted, local and regional planning documents (i.e., which account for the future population, housing, and employment [socio-economic data] projections). Further, as described in Section 6.0 above, CEQA only requires that one of these two approaches be employed in developing the future traffic volume forecast.

7.0 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 of the forecasting process is trip generation, which estimates the total arriving and departing traffic volumes on a peak hour and daily basis. The traffic generation potential is forecast by applying the appropriate vehicle trip generation rates to the project components that could generate traffic trips.

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

The third step of the forecasting process 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 (i.e., Levels of Service) conditions at the selected key intersection(s) using expected future traffic volumes with and without forecast project traffic. The need for any potential site-specific traffic improvements can then be evaluated and the significance of the project's impacts identified.

7.1 Project Traffic Generation

Traffic volumes expected to be generated by the proposed project during the AM and PM peak hours as well as on a daily basis were estimated using rates published in the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*[6]. The number of anticipated trips is based upon rates per number of dwelling units of the project. ITE Land Use Code 210 (Single-Family Detached Housing) trip generation average rates were used to forecast the traffic volumes expected to be generated by the 28 single family homes for Tentative Tract Map No. 73711. As mentioned previously, there are no specific development proposals for the remainder of the project area at this time. For purposes of analyzing potential traffic impacts for full build-out of the project area, it was assumed that the remainder of the project area would consist of the development of up to 50 detached single-family residential dwelling units in the western portion of the project area. As such, the ITE Land Use Code 210 trip generation average rates were also used to forecast the traffic volumes expected to be generated by the 50 single-family residential units for the remainder of the project area.

[6] Institute of Transportation Engineers *Trip Generation Manual*, 9th Edition, 2012.

The traffic generation forecast for the proposed project was submitted to City staff and is summarized in ***Table 7–1***. As shown, the proposed project is expected to generate 59 vehicle trips (15 inbound trips and 44 outbound trips) during the AM peak hour. During the PM peak hour, the proposed project is expected to generate 78 vehicle trips (50 inbound trips and 28 outbound trips). Over a 24-hour period, the project is forecast to generate 742 daily trip ends during a typical weekday (approximately 371 inbound trips and 371 outbound trips).

The volume of entering (i.e., inbound) left- and right-turning vehicles is forecast at no more than 5 vehicle trips during the AM peak hour and 18 vehicle trips during the PM peak hour when considering only development of the Oak Valley (TTM 73711) development site. This equates to approximately one vehicle every 12 minutes and one vehicle every 3 minutes during the AM and PM peak hours, respectively. When also considering the development of the remainder of the project area (i.e., which will provide an internal connection through to Cataract Avenue), it is estimated that the northbound left-turn volume from San Dimas Avenue to "A" Street would increase to a total of approximately 7 and 20 vehicles during the AM and PM peak hours, respectively.

7.2 Project Traffic Distribution and Assignment

Project traffic volumes both entering and exiting the site have been distributed and assigned to the adjacent street system based on the following considerations:

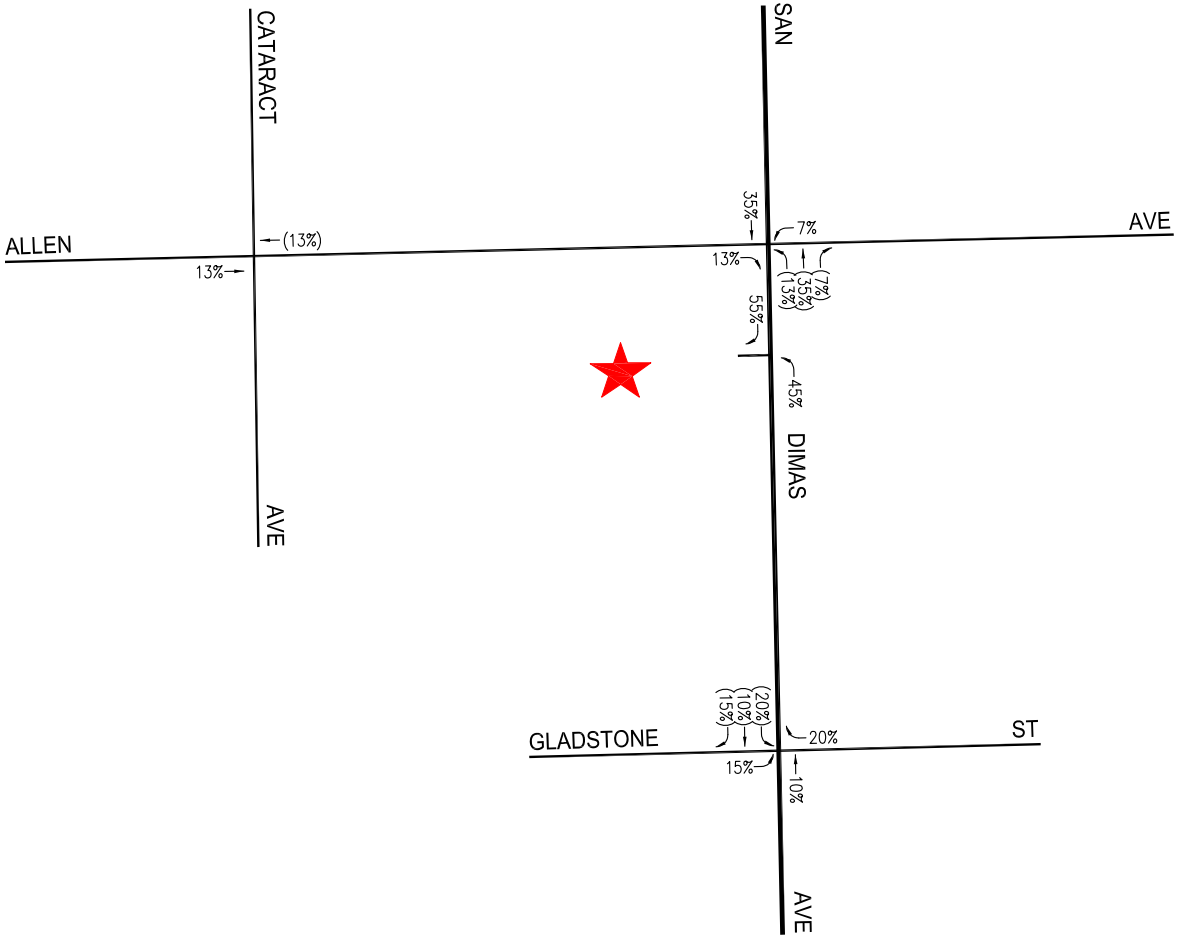
- The site's proximity to major traffic corridors (i.e., San Dimas Avenue, Cataract Avenue, Gladstone Street, Allen Avenue, etc.);
- Expected localized traffic flow patterns based on adjacent roadway channelization and presence of traffic signals;
- Existing intersection traffic volumes;
- Ingress/egress availability at the project site;
- The location of proposed parking areas; and
- Nearby population and employment centers.

The general, directional traffic distribution patterns for the proposed Oak Valley project (TTM 73711) and the remainder/western portion of the project area are presented in ***Figures 7–1*** and ***7–2***, respectively. While the regional traffic distribution patterns for the Oak Valley project and the remainder/western portion of the project area are similar in nature, the immediate access distribution along the new "A" Street at San Dimas Avenue and Cataract Avenue also accounts for the existing roadway network (i.e., Cataract Avenue terminates south of the project site). The forecast weekday AM and PM peak hour project traffic volumes associated with full build-out of the project area are presented in ***Figures 7–3*** and ***7–4***, respectively. The project traffic volume assignments presented in *Figures 7–3* and *7–4* reflect the traffic distribution characteristics shown in *Figures 7–1* and *7–2* as well as the project traffic generation forecast presented in *Table 7–1*.

Table 7-1
PROJECT TRIP GENERATION [1]

LAND USE	SIZE	DAILY TRIP ENDS [2] VOLUMES	AM PEAK HOUR VOLUMES [2]			PM PEAK HOUR VOLUMES [2]		
			IN	OUT	TOTAL	IN	OUT	TOTAL
Proposed Uses								
Oak Valley (TTM 73711)								
Single-Family Detached Housing [3]	28 DU	266	5	16	21	18	10	28
Adjacent Parcel Development								
Single-Family Detached Housing [3]	50 DU	476	10	28	38	32	18	50
TOTAL		**742**	**15**	**44**	**59**	**50**	**28**	**78**

[1] Source: ITE "Trip Generation Manual", 9th Edition, 2012.
[2] Trips are one-way traffic movements, entering or leaving.
[3] ITE Land Use Code 210 (Single-Family Detached Housing) trip generation average rates.
- Daily Trip Rate: 9.52 trips/dwelling unit; 50% inbound/50% outbound
- AM Peak Hour Trip Rate: 0.75 trips/dwelling unit; 25% inbound/75% outbound
- PM Peak Hour Trip Rate: 1.00 trip/dwelling unit; 63% inbound/37% outbound



N

NOT TO SCALE

PROJECT SITE

XX = INBOUND PERCENTAGE

(XX) = OUTBOUND PERCENTAGE

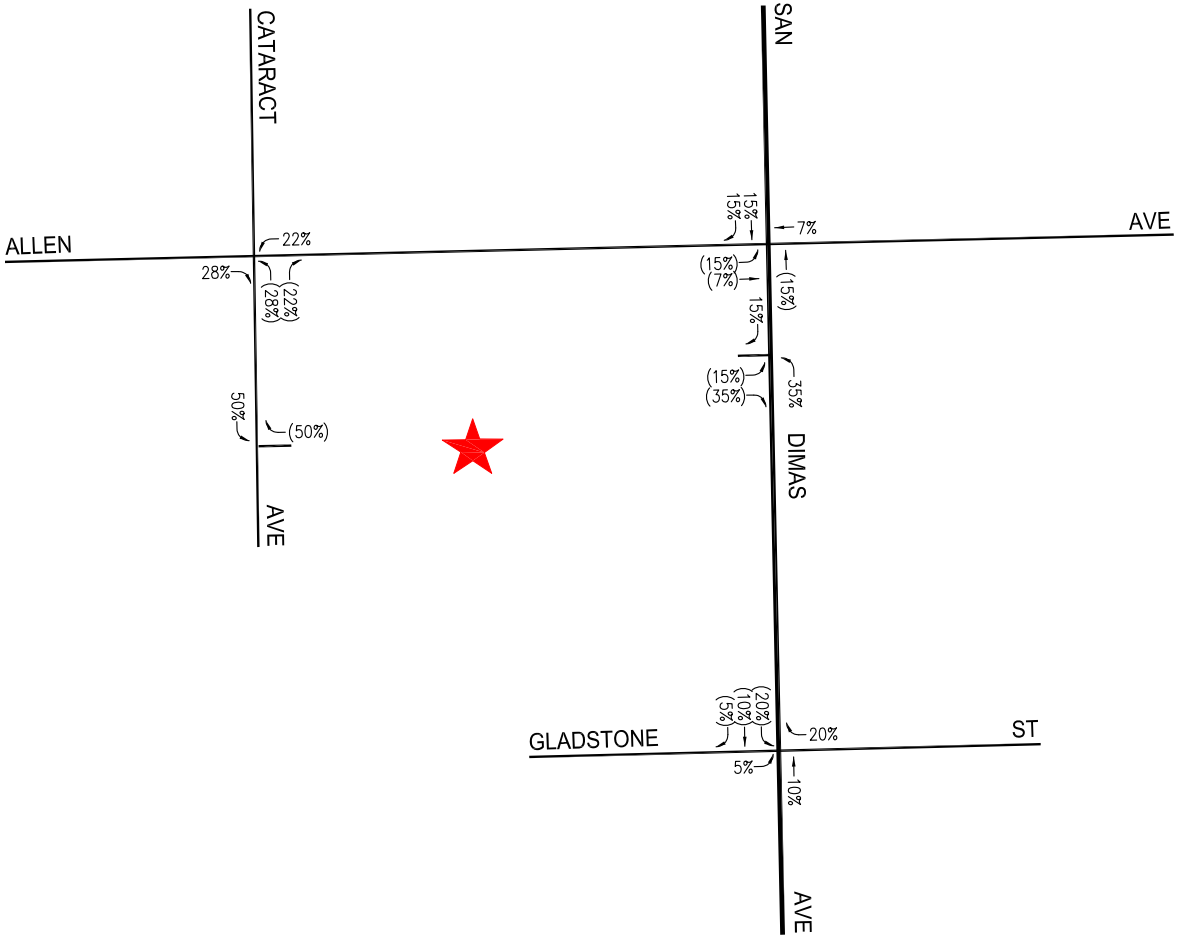
FIGURE 7-1
PROJECT TRIP DISTRIBUTION

OAK VALLEY (TTM 73711) COMPONENT

OAK VALLEY PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

o:\job_file\4133\dwg\f7-1.dwg LDP 14:31:59 03/17/2016 rodriquez



PROJECT SITE

XX = INBOUND PERCENTAGE

(XX) = OUTBOUND PERCENTAGE

N

NOT TO SCALE

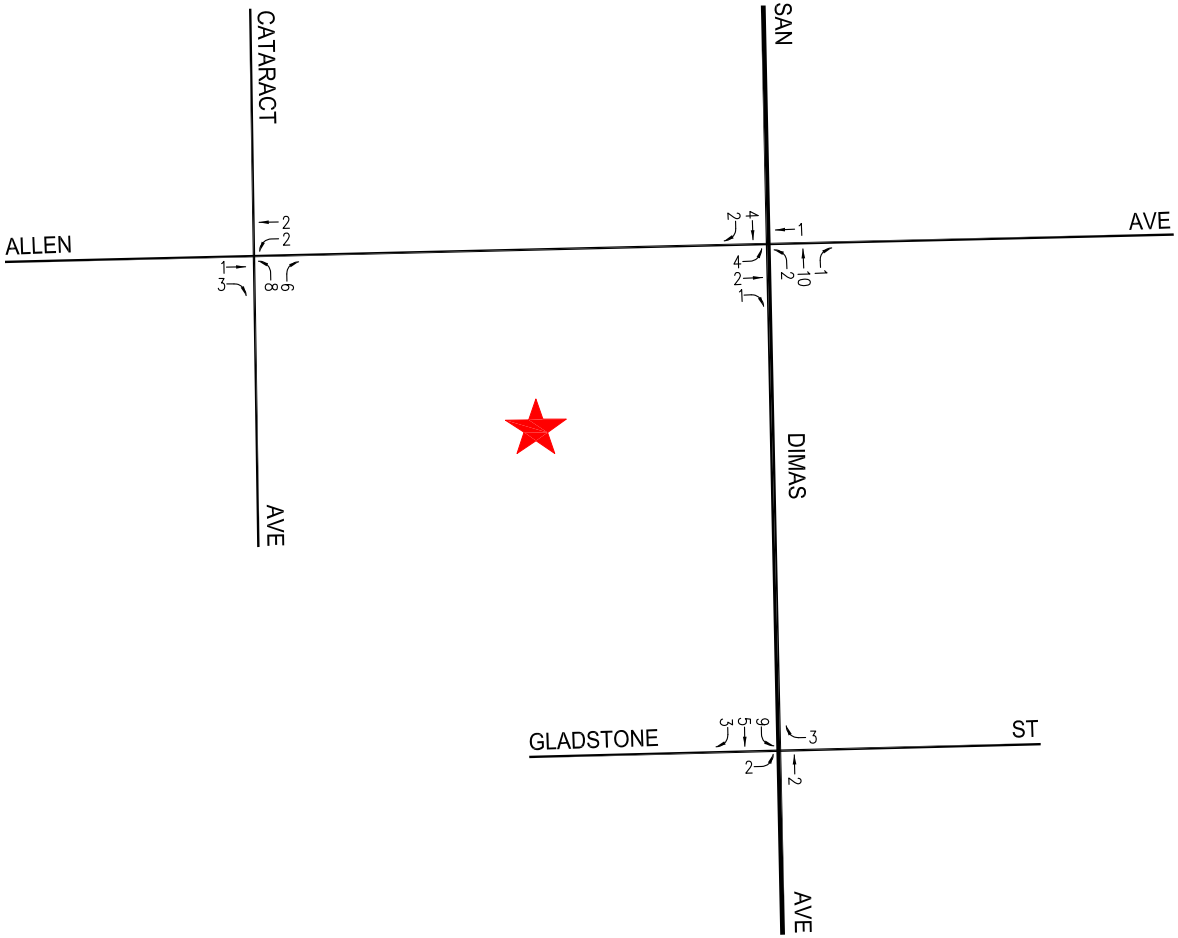
FIGURE 7-2
PROJECT TRIP DISTRIBUTION

ADJACENT PARCEL DEVELOPMENT

OAK VALLEY PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

o:\job_file\4133\dwg\f7-2.dwg LDP 14:32:32 03/17/2016 rodriquez



N

NOT TO SCALE

PROJECT SITE

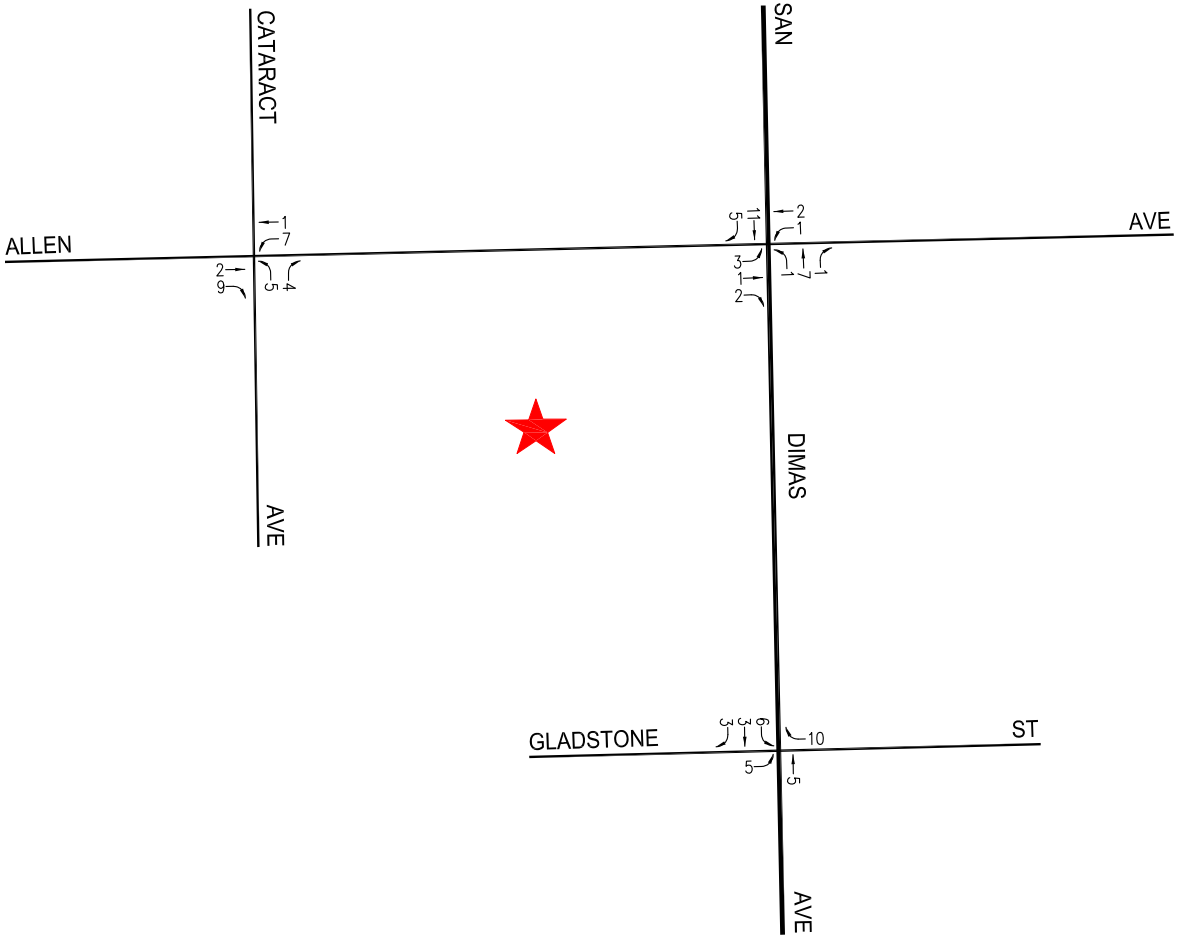
FIGURE 7-3
TOTAL PROJECT TRAFFIC VOLUMES

WEEKDAY AM PEAK HOUR

OAK VALLEY PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

o:\job_file\4133\dwg\f7-3.dwg LDP 15:13:23 03/17/2016 rodriquez



PROJECT SITE

N

NOT TO SCALE

FIGURE 7-4
TOTAL PROJECT TRAFFIC VOLUMES

WEEKDAY PM PEAK HOUR

OAK VALLEY PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

o:\job_file\4133\dwg\f7-4.dwg LDP 15:16:55 03/17/2016 rodriquez

8.0 TRAFFIC IMPACT ANALYSIS METHODOLOGY

The relative impact of the added project traffic volumes generated by the full build-out of the project area during the weekday AM and PM peak hours was evaluated based on analysis of existing and future operating conditions at the study intersections, without and with the proposed project. In conformance with the City of San Dimas and Los Angeles County Congestion Management Program requirements, existing weekday AM and PM peak hour operating conditions for the signalized study intersections were evaluated using the Intersection Capacity Utilization (ICU) method. The ICU methodology is intended for signalized intersection analyses 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. The overall intersection *v/c* ratio is subsequently assigned a Level of Service (LOS) value to describe intersection operations. Level of Service varies from LOS A (free flow) to LOS F (jammed condition). The six qualitative categories of Level of Service have been defined along with the corresponding ICU value range and are shown in ***Table 8–1***. A description of the ICU method and corresponding Level of Service is provided in ***Appendix C***.

TABLE 8-1
CITY OF SAN DIMAS
LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

Level of Service (LOS)	Intersection Capacity Utilization Value (V/C)	Level of Service Description
A	≤ 0.600	EXCELLENT. No vehicle waits longer than one red light, and no approach phase is fully used.
B	0.601 – 0.700	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.
C	0.701 – 0.800	GOOD. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	0.801 – 0.900	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	0.901 – 1.000	POOR. Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.
F	> 1.000	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.

The *Highway Capacity Manual 2010* (HCM2010) methodology outlined in Chapter 19 for unsignalized/two-way stop-controlled (TWSC) intersections was utilized for the analysis of the unsignalized intersection. The TWSC methodology estimates the average control delay for each minor-street movement (or shared movement) as well as major-street left-turns and determines the LOS for each constrained movement. It should be noted that LOS is not defined for the overall TWSC intersection because major-street movements with no delays typically result in a weighted average delay that is extremely low. Average control delay for any particular movement is a function of the capacity of the approach and the degree of saturation. The average control delay is measured in seconds per vehicle, and includes delay due to deceleration to a stop at the back of the queue from free-flow speed, move-up time within the queue, stopped delay at the front of the queue, and delay due to acceleration back to free-flow speed. A description of the HCM method and corresponding Level of Service is also provided in *Appendix C*. The six qualitative categories of Level of Service have been defined along with the corresponding HCM2010 control delay value range, as shown in ***Table 8–2***.

TABLE 8-2
CITY OF SAN DIMAS
LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

Level of Service (LOS)	Control 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

8.1 Impact Criteria and Thresholds

The relative impact of the added project traffic volumes to be generated by the full build-out of the project area during the AM and PM peak hours was evaluated based on analysis of future operating conditions at the study intersections, without and with the proposed project. The previously discussed capacity analysis procedures were utilized to evaluate the future *v/c* relationships and service level characteristics at the study intersections.

The significance of the potential project-generated traffic impacts at the study intersections was identified using criteria set forth in the Los Angeles County *Traffic Impact Analysis Report Guidelines*, January 1997. According to the County's published guidelines, the impact is

considered significant if the project-related increase in the *v/c* ratio equals or exceeds the thresholds presented in ***Table 8–3***.

Table 8-3 CITY OF SAN DIMAS INTERSECTION IMPACT THRESHOLD CRITERIA		
Pre-Project *v/c*	**Level of Service**	**Project Related Increase in *v/c***
≥ 0.71 - 0.80	C	equal to or greater than 0.04
≥ 0.81 - 0.90	D	equal to or greater than 0.02
≥ 0.91 or more	E/F	equal to or greater than 0.01

According to the County of Los Angeles requirements, the ICU calculations use a lane capacity of 1,600 vehicles per hour (vph) for left-turn, through, and right-turn lanes, and 2,880 vph for dual left-turn lanes. A clearance interval of 0.10 is also included in the ICU calculations.

The County's Sliding Scale Method requires mitigation of project traffic impacts whenever traffic generated by the proposed development causes an increase of the analyzed intersection *v/c* ratio by an amount equal to or greater than the values shown above.

8.2 Traffic Impact Analysis Scenarios

Level of Service calculations for the study intersections were analyzed for the following conditions for both existing and future year 2018 and 2035 conditions, which are consistent with methodologies required:

(a) Existing conditions.

(b) Condition (a) with 1.60 percent (1.60%) ambient traffic growth through analysis year 2018. Condition (a) with 0.84 percent (0.84%) ambient traffic growth through analysis year 2035.

(c) Condition (b) with completion and occupancy of the proposed project (i.e., full build-out of the project area).

(d) Condition (c) with implementation of project mitigation measures, where necessary.

(e) Condition (d) with completion and occupancy of the related projects, without any potential mitigation measures from the related projects.

(f) Condition (e) with implementation of cumulative mitigation measures, where necessary.

The traffic volumes for each new condition were added to the volumes in the prior condition to determine the change in capacity utilization at the study intersections.

9.0 TRAFFIC ANALYSIS

The traffic impact analysis prepared for the study intersections using the ICU and HCM methodology and application of the City of San Dimas/County of Los Angeles significant traffic impact criteria is summarized in ***Table 9–1***. The first column [1] of ICU or delay/LOS values in *Table 9–1* presents a summary of the existing AM and PM peak hour traffic conditions. The second column [2] presents projected background traffic conditions based on existing intersection geometry and the addition of ambient traffic growth. The third column [3] presents forecast year 2018 traffic conditions with the addition of project traffic (i.e., the proposed Oak Valley project and the build-out of the adjacent western portion). The third column [3] also shows the increase in ICU value due to the added peak hour project trips and indicates whether the traffic associated with the project is expected to result in a significant impact based on the City of San Dimas/County of Los Angeles LOS standards and the significance impact criteria defined in this report. The fourth column [4] presents the forecast year 2018 traffic conditions with the application of any proposed mitigation measures and indicates whether any significant impacts are mitigated. The fifth column [5] presents forecast year 2018 traffic conditions with the addition of traffic due to any related (cumulative) projects. The fifth column [5] also shows the increase in ICU value due to the added peak hour cumulative traffic (i.e., project and related project trips) and indicates whether the combined cumulative traffic is expected to result in a cumulative impact. The future year 2035 traffic impact analysis was prepared for the study intersections using the ICU and HCM methodologies with application of the City of San Dimas/County of Los Angeles significant traffic impact criteria and is summarized in ***Table 9–2***. The ICU and HCM data worksheets for the analyzed intersections are contained in *Appendix C*.

9.1 Existing Conditions

9.1.1 *Existing Conditions*

As indicated in column [1] of *Table 9–1*, two of the study intersections are presently operating at LOS B or better during both the weekday AM and PM peak hours under existing conditions. The remaining study intersection (Intersection No. 3: San Dimas Avenue/Gladstone Street) is operating at LOS E during the weekday PM peak hour under existing conditions as shown in *Table 9–1*. The existing traffic volumes at the study intersections during the weekday AM and PM peak hours are displayed in *Figures 5–1* and *5–2*, respectively.

9.2 Future Year 2018 Conditions

9.2.1 *Future Year 2018 With Ambient Growth Conditions*

Growth in traffic due to the combined effects of continuing development, intensification of existing developments and other factors were assumed to be 1.60 percent (1.60%) per year through year 2018. This growth in ambient traffic incrementally increases the *v/c* ratios at the study intersections. As shown in column [2] of *Table 9–1*, two of the study intersections are expected to operate at LOS B or better during both the AM and PM peak hours with the addition of ambient growth traffic. The remaining study intersection (Intersection No. 3: San Dimas

Table 9-1
SUMMARY OF VOLUME TO CAPACITY RATIOS
AND LEVELS OF SERVICE
WEEKDAY AM AND PM PEAK HOURS
EXISTING AND FUTURE YEAR 2018 CONDITIONS

			[1]		[2]		[3]				[4]				[5]			
NO.	INTERSECTION	PEAK HOUR	YEAR 2016 EXISTING V/C OR DELAY	LOS [b]	YEAR 2018 W/ AMBIENT GROWTH V/C OR DELAY	LOS [b]	YEAR 2018 W/ PROPOSED PROJECT [c] V/C OR DELAY	LOS [b]	CHANGE V/C [(3)-(2)]	SIGNIF. IMPACT [d]	YEAR 2018 W/ PROJECT MITIGATION V/C OR DELAY	LOS [b]	CHANGE V/C [(4)-(2)]	MITI-GATED	YEAR 2018 W/ PROJECT [c] & REL. PROJECTS V/C OR DELAY	LOS [b]	CHANGE V/C [(5)-(2)]	SIGNIF. IMPACT [d]
1	Cataract Avenue/ Allen Avenue [a]	AM	11.4	B	11.6	B	11.7	B	0.010	NO	11.7	B	0.010	---	11.9	B	0.017	NO
		PM	11.9	B	12.0	B	12.6	B	0.015	NO	12.6	B	0.015	---	13.3	B	0.035	NO
		AM	0.289		0.295		0.305				0.305				0.312			
		PM	0.357		0.365		0.380				0.380				0.400			
2	San Dimas Avenue/ Allen Avenue	AM	0.546	A	0.560	A	0.567	A	0.007	NO	0.567	A	0.007	---	0.574	A	0.014	NO
		PM	0.607	B	0.624	B	0.630	B	0.006	NO	0.630	B	0.006	---	0.651	B	0.027	NO
3	San Dimas Avenue/ Gladstone Street	AM	0.626	B	0.643	B	0.648	B	0.005	NO	0.648	B	0.005	---	0.655	B	0.012	NO
		PM	0.972	E	1.000	E	1.010	F	0.010	YES	0.934	E	-0.066	YES	0.949	E	-0.051	NO

[a] Unsignalized intersection. Reported delay values represent the delays associated with the most constrained approach of the intersection. For purposes of determining traffic impacts for unsignalized intersections, the ICU value is utilized to quantify the v/c ratio increases over the without project conditions with the LOS determined through use of the HCM method of analysis.

[b] Level of Service (LOS) is based on the reported ICU value for the signalized intersection and the delay value for the unsignalized intersection.

[c] The proposed project consists of the full buildout of the proposed Oak Valley development (TTM 73711) and the adjacent western portion of the project area.

[d] According to the County of Los Angeles Department of Public Works' *Traffic Impact Analysis Report Guidelines* , January 1, 1997, Page 6: an impact is considered significant if the project related increase in the volume-to-capacity ratio (v/c) equals or exceeds the thresholds shown below:

Level of Service	Pre-Project ICU	Project-Related Increase in V/C
C	> 0.700 - 0.800	equal to or greater than 0.040
D	> 0.800 - 0.900	equal to or greater than 0.020
E/F	> 0.900	equal to or greater than 0.010

Table 9-2
SUMMARY OF VOLUME TO CAPACITY RATIOS
AND LEVELS OF SERVICE
WEEKDAY AM AND PM PEAK HOURS
EXISTING AND FUTURE YEAR 2035 CONDITIONS

			[1]		[2]		[3]				[4]				[5]			
NO.	INTERSECTION	PEAK HOUR	YEAR 2016 EXISTING V/C OR DELAY	LOS [b]	YEAR 2035 W/ AMBIENT GROWTH V/C OR DELAY	LOS [b]	YEAR 2035 W/ PROPOSED PROJECT [c] V/C OR DELAY	LOS [b]	CHANGE V/C [(3)-(2)]	SIGNIF. IMPACT [d]	YEAR 2035 W/ PROJECT MITIGATION V/C OR DELAY	LOS [b]	CHANGE V/C [(4)-(2)]	MITI-GATED	YEAR 2035 W/ PROJECT [c] & REL. PROJECTS V/C OR DELAY	LOS [b]	CHANGE V/C [(5)-(2)]	SIGNIF. IMPACT [d]
1	Cataract Avenue/ Allen Avenue [a]	AM	11.4	B	12.1	B	12.3	B	0.010	NO	12.3	B	0.010	---	12.5	B	0.017	NO
		PM	11.9	B	12.7	B	13.5	B	0.015	NO	13.5	B	0.015	---	14.3	B	0.035	NO
		AM	0.289		0.319		0.329				0.329				0.336			
		PM	0.357		0.398		0.413				0.413				0.433			
2	San Dimas Avenue/ Allen Avenue	AM	0.546	A	0.617	B	0.624	B	0.007	NO	0.624	B	0.007	---	0.631	B	0.014	NO
		PM	0.607	B	0.688	B	0.695	B	0.007	NO	0.695	B	0.007	---	0.716	C	0.028	NO
3	San Dimas Avenue/ Gladstone Street	AM	0.626	B	0.710	C	0.715	C	0.005	NO	0.715	C	0.005	---	0.722	C	0.012	NO
		PM	0.972	E	1.112	F	1.122	F	0.010	YES	1.036	F	-0.076	YES	1.051	F	-0.061	NO

[a] Unsignalized intersection. Reported delay values represent the delays associated with the most constrained approach of the intersection. For purposes of determining traffic impacts for unsignalized intersections, the ICU value is utilized to quantify the v/c ratio increases over the without project conditions with the LOS determined through use of the HCM method of analysis.

[b] Level of Service (LOS) is based on the reported ICU value for the signalized intersection and the delay value for the unsignalized intersection.

[c] The proposed project consists of the full buildout of the proposed Oak Valley development (TTM 73711) and the adjacent western portion of the project area.

[d] According to the County of Los Angeles Department of Public Works' *Traffic Impact Analysis Report Guidelines* , January 1, 1997, Page 6: an impact is considered significant if the project related increase in the volume-to-capacity ratio (v/c) equals or exceeds the thresholds shown below:

Level of Service	Pre-Project ICU	Project-Related Increase in V/C
C	> 0.700 - 0.800	equal to or greater than 0.040
D	> 0.800 - 0.900	equal to or greater than 0.020
E/F	> 0.900	equal to or greater than 0.010

Avenue/Gladstone Street) is expected to continue to operate at LOS E during the weekday PM peak hour under future year 2018 with ambient growth conditions as shown in *Table 9–1*. The future year 2018 with ambient growth traffic volumes at the study intersections during the AM and PM peak hours are shown in ***Figures 9–1*** and ***9–2***, respectively.

9.2.2 *Future Year 2018 With Project Conditions*

The future year 2018 with project condition includes the ambient growth traffic as well as the forecast project traffic at the study intersections. As shown in column [3] of *Table 9–1*, application of the County's threshold criteria to the "Year 2018 With Proposed Project" scenario indicates that the proposed project is expected to result in a significant impact at one of the study intersections as shown below:

- Int. No. 3: San Dimas Avenue/Gladstone Street PM Peak Hour: *v/c* = 1.010, LOS F

A significant traffic impact is expected because the *v/c* ratio increase of 0.010 is equal to the 0.010 threshold for an intersection operating at LOS F (based on the impact threshold criteria presented in *Table 8–3*).

Incremental, but not significant, changes in the *v/c* ratio would occur at the study intersections during the weekday AM and PM peak hours with the addition of growth in ambient traffic and project traffic. The future year 2018 with project (existing, ambient growth, and project) traffic volumes at the study intersections during the weekday AM and PM peak hours are illustrated in ***Figures 9–3*** and ***9–4***, respectively.

9.2.3 *Future Year 2018 Cumulative With Project Conditions*

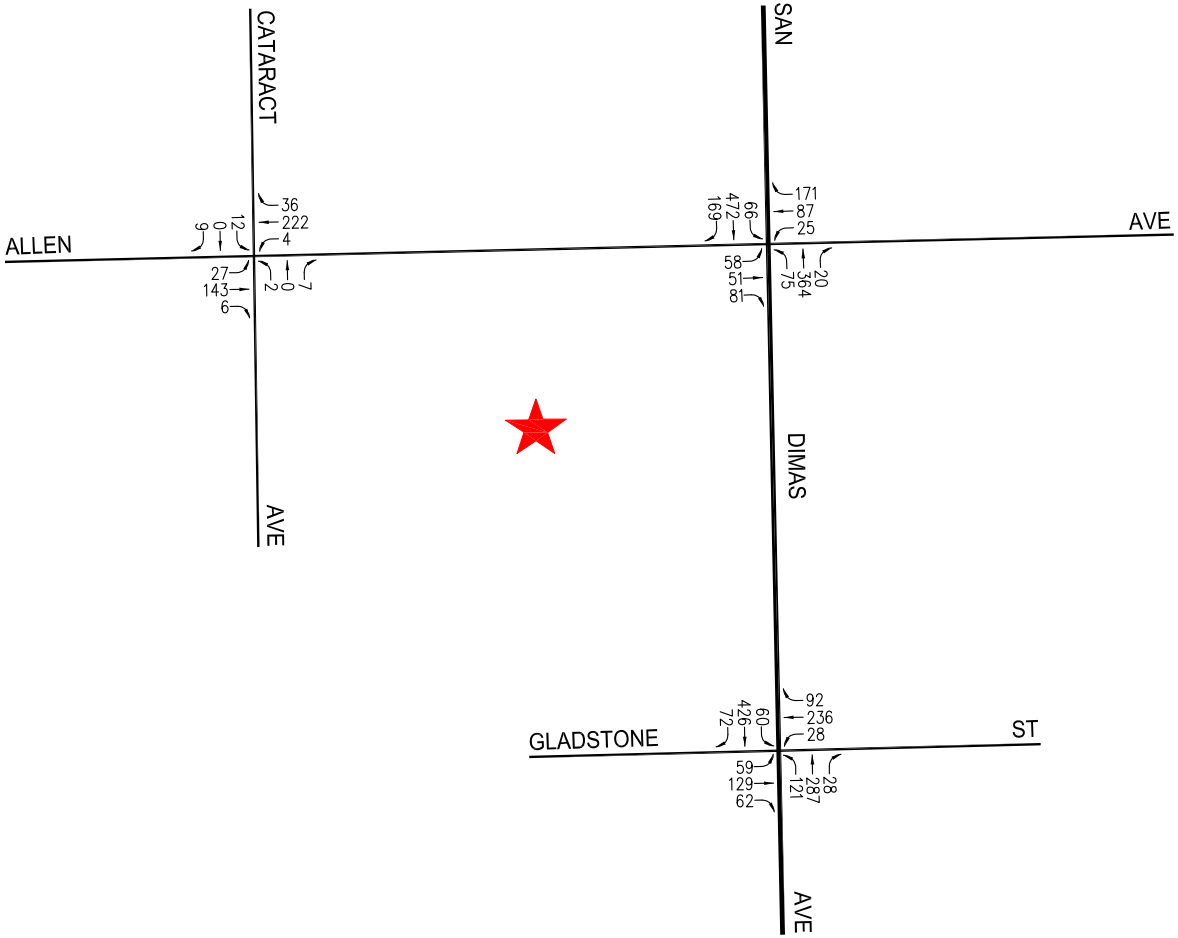
The *v/c* ratios at the study intersections incrementally increase with the addition of traffic generated by the operation of related projects listed in *Table 6–1*. As shown in column [5] of *Table 9–1*, the addition of growth in ambient traffic, project traffic, and related projects traffic is not expected to result in a significant impact at any of the study intersections under the future year 2018 cumulative with project conditions.

The future year 2018 cumulative with project (existing, ambient growth, project, and related projects) traffic volumes at the study intersections during the weekday AM and PM peak hours are presented in the ICU worksheets in *Appendix C*. The future year 2018 cumulative with project traffic volumes at the study intersections during the weekday AM and PM peak hours are illustrated in ***Figures 9–5*** and ***9–6***, respectively.

9.3 Future Year 2035 Conditions

9.3.1 *Future Year 2035 With Ambient Growth Conditions*

Growth in traffic due to the combined effects of continuing development, intensification of existing developments and other factors was assumed to be 0.84 percent (0.84%) per year through year 2035. This growth in ambient traffic incrementally increases the *v/c* ratios at the



NOT TO SCALE

PROJECT SITE

FIGURE 9-1

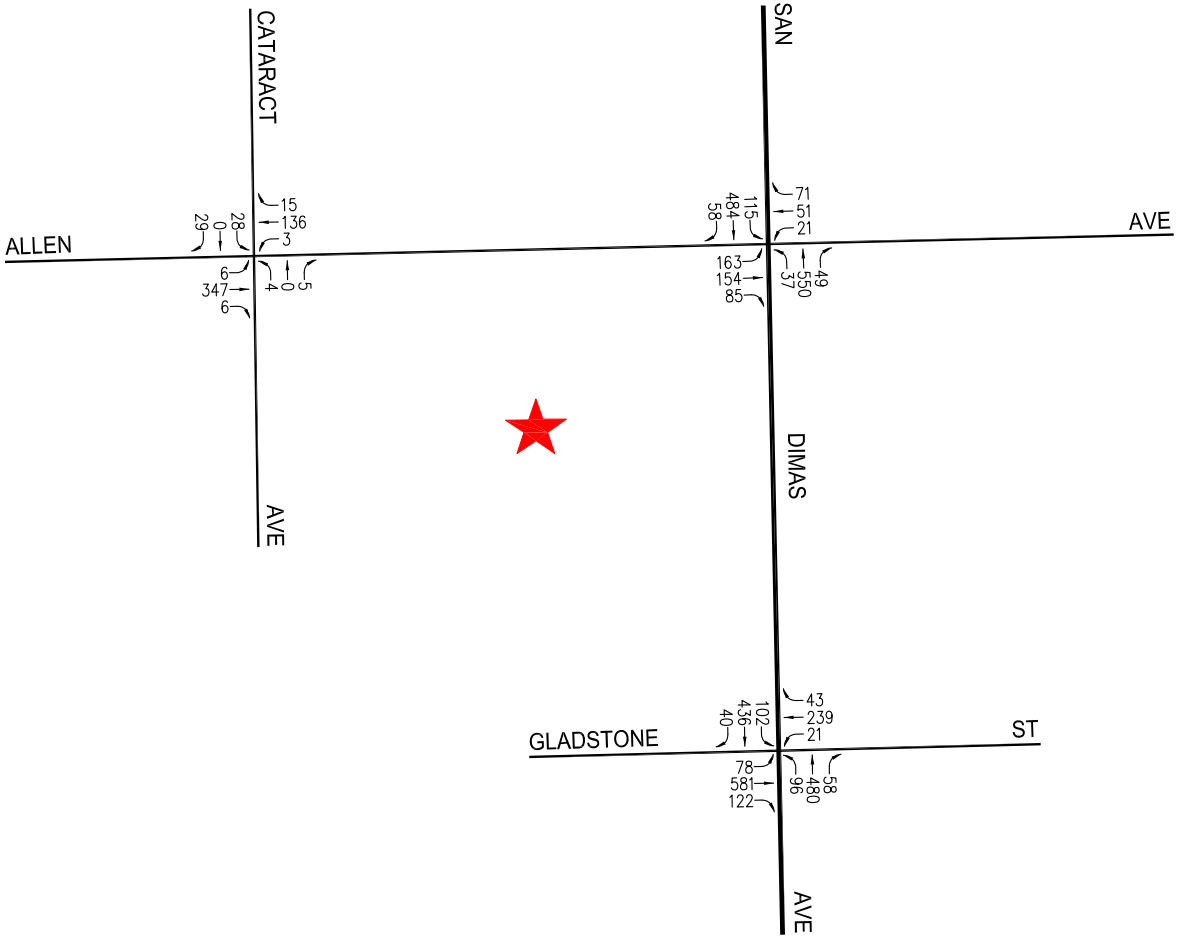
FUTURE YEAR 2018 WITH AMBIENT GROWTH TRAFFIC VOLUMES

WEEKDAY AM PEAK HOUR

OAK VALLEY PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

o:\job_file\4133\dwg\f9-1.dwg LDP 15:17:31 03/17/2016 rodriquez



PROJECT SITE

NOT TO SCALE

FIGURE 9-2

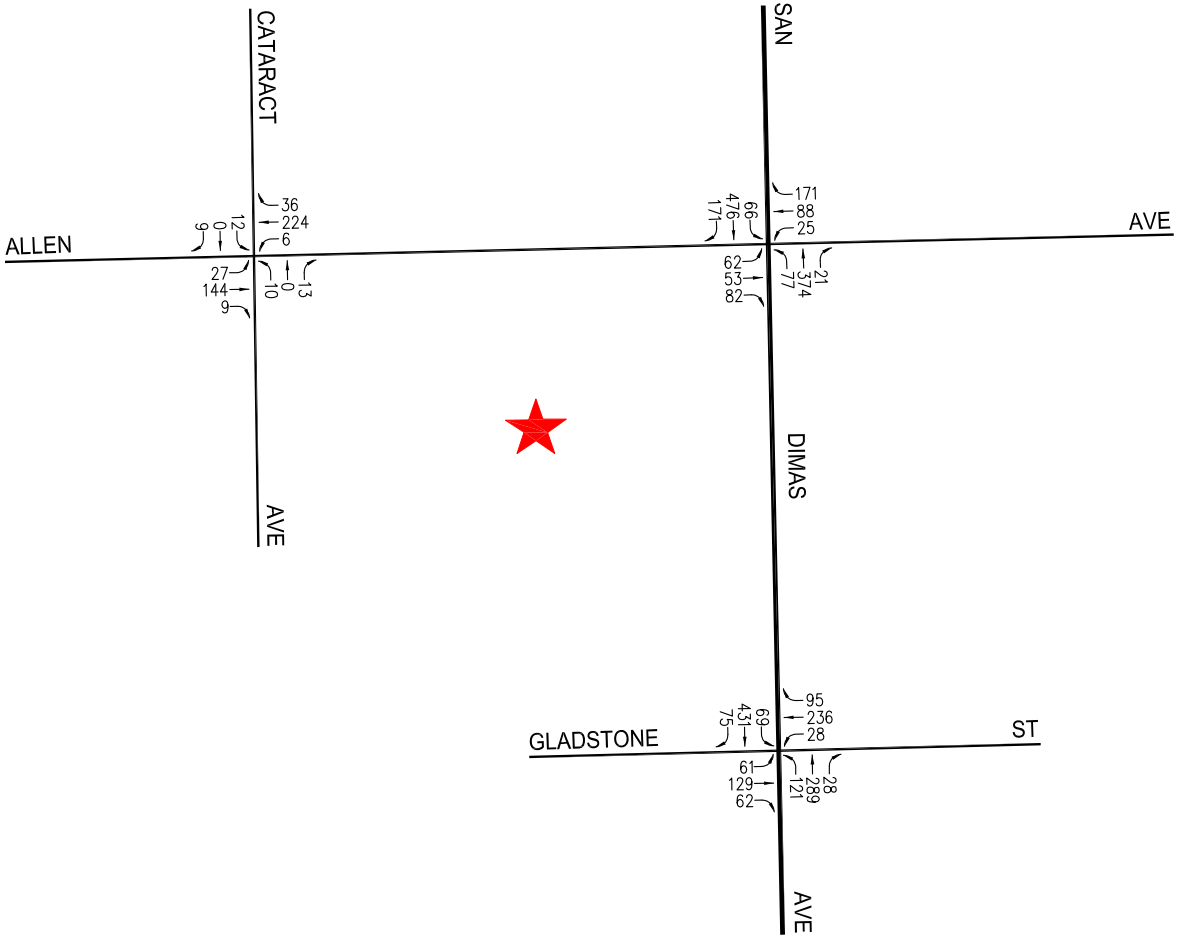
FUTURE YEAR 2018 WITH AMBIENT GROWTH TRAFFIC VOLUMES

WEEKDAY PM PEAK HOUR

OAK VALLEY PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

o:\job_file\4133\dwg\f9-2.dwg LDP 15:18:02 03/17/2016 rodriquez



NOT TO SCALE

PROJECT SITE

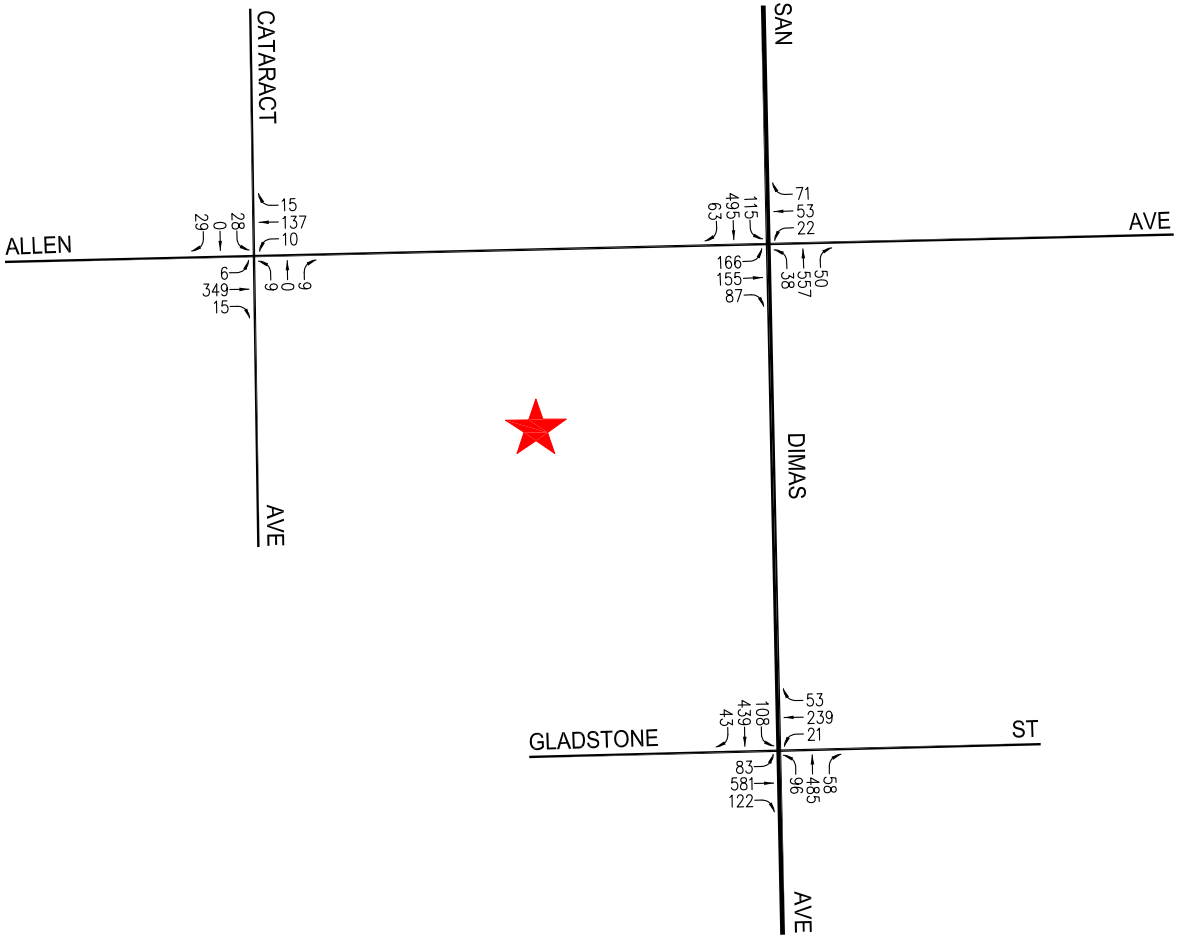
FIGURE 9-3
FUTURE YEAR 2018 WITH PROJECT TRAFFIC VOLUMES

WEEKDAY AM PEAK HOUR

OAK VALLEY PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

o:\job_file\4133\dwg\f9-3.dwg LDP 15:19:35 03/17/2016 rodriquez



PROJECT SITE

N

NOT TO SCALE

FIGURE 9-4

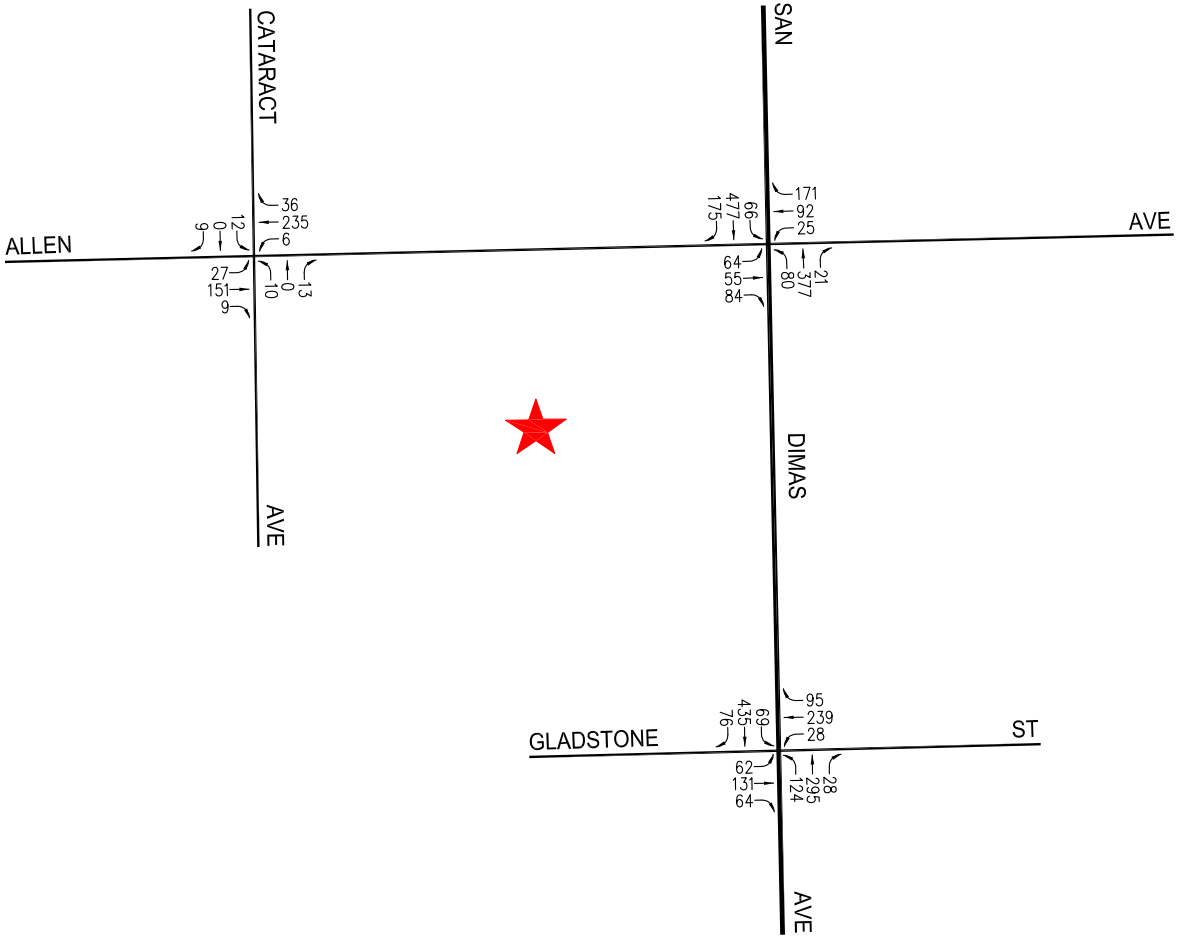
FUTURE YEAR 2018 WITH PROJECT TRAFFIC VOLUMES

WEEKDAY PM PEAK HOUR

OAK VALLEY PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

o:\job_file\4133\dwg\f9-4.dwg LDP 15:20:07 03/17/2016 rodriquez



PROJECT SITE

NOT TO SCALE

FIGURE 9-5

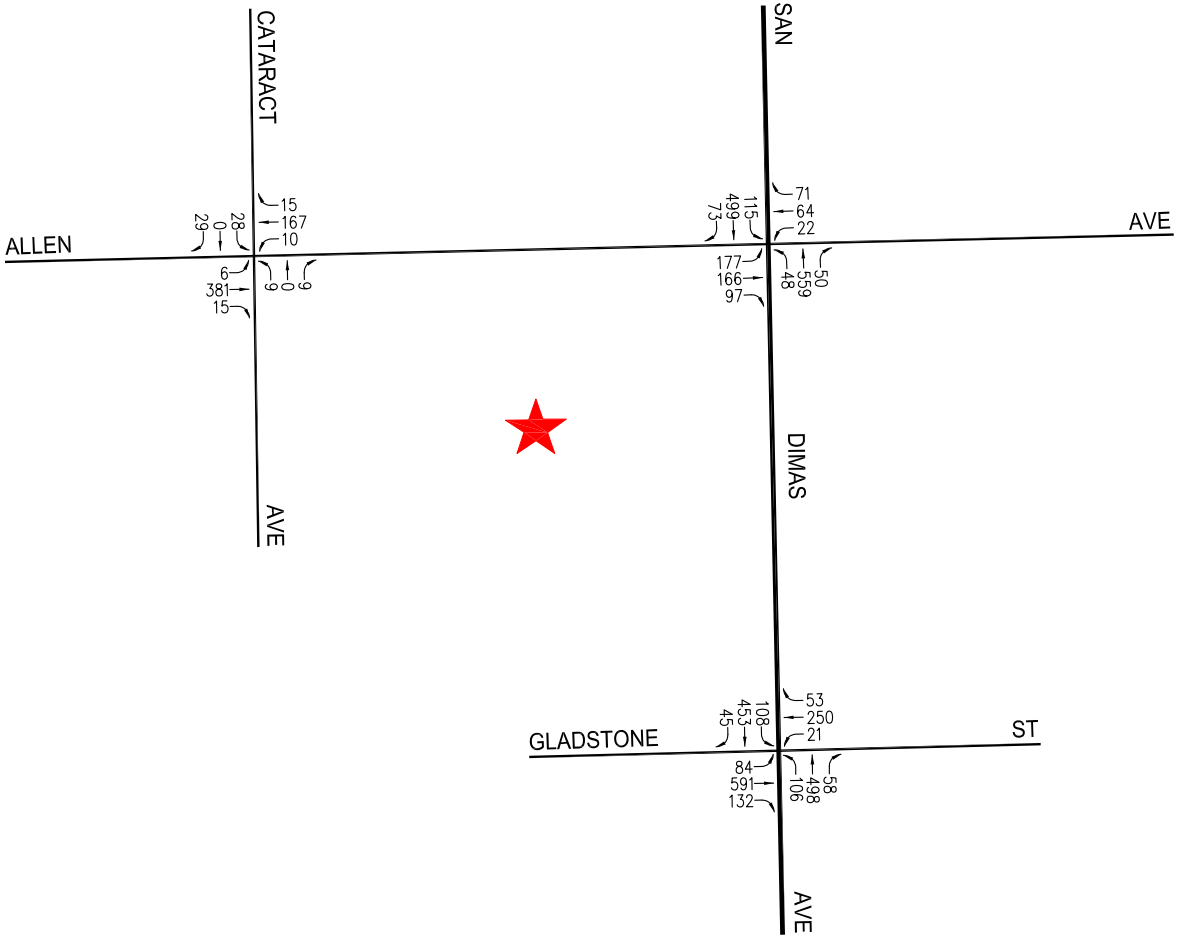
FUTURE YEAR 2018 CUMULATIVE WITH PROJECT TRAFFIC VOLUMES

WEEKDAY AM PEAK HOUR

OAK VALLEY PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

o:\job_file\4133\dwg\f9-5.dwg LDP 15:20:43 03/17/2016 rodriquez



PROJECT SITE

NOT TO SCALE

FIGURE 9-6

FUTURE YEAR 2018 CUMULATIVE WITH PROJECT TRAFFIC VOLUMES

WEEKDAY PM PEAK HOUR

OAK VALLEY PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

o:\job_file\4133\dwg\f9-6.dwg LDP 15:21:14 03/17/2016 rodriquez

study intersections. As shown in column [2] of *Table 9–2*, two of the study intersections are expected to operate at LOS B during both the AM and PM peak hours with the addition of ambient growth traffic. The remaining study intersection (Intersection No. 3: San Dimas Avenue/Gladstone Street) is expected to operate at LOS F during the weekday PM peak hour under future year 2035 with ambient growth conditions as shown in *Table 9–2*. The future year 2035 with ambient growth traffic volumes at the study intersections during the AM and PM peak hours are shown in ***Figures 9–7*** and ***9–8***, respectively.

9.3.2 *Future Year 2035 With Project Conditions*

The future year 2035 with project condition includes the ambient growth traffic as well as the forecast project traffic at the study intersections. As shown in column [3] of *Table 9–2*, application of the County's threshold criteria to the "Year 2035 With Proposed Project" scenario indicates that the proposed project is expected to result in a significant impact at one of the study intersections as shown below:

- Int. No. 3: San Dimas Avenue/Gladstone Street PM Peak Hour: *v/c* = 1.122, LOS F

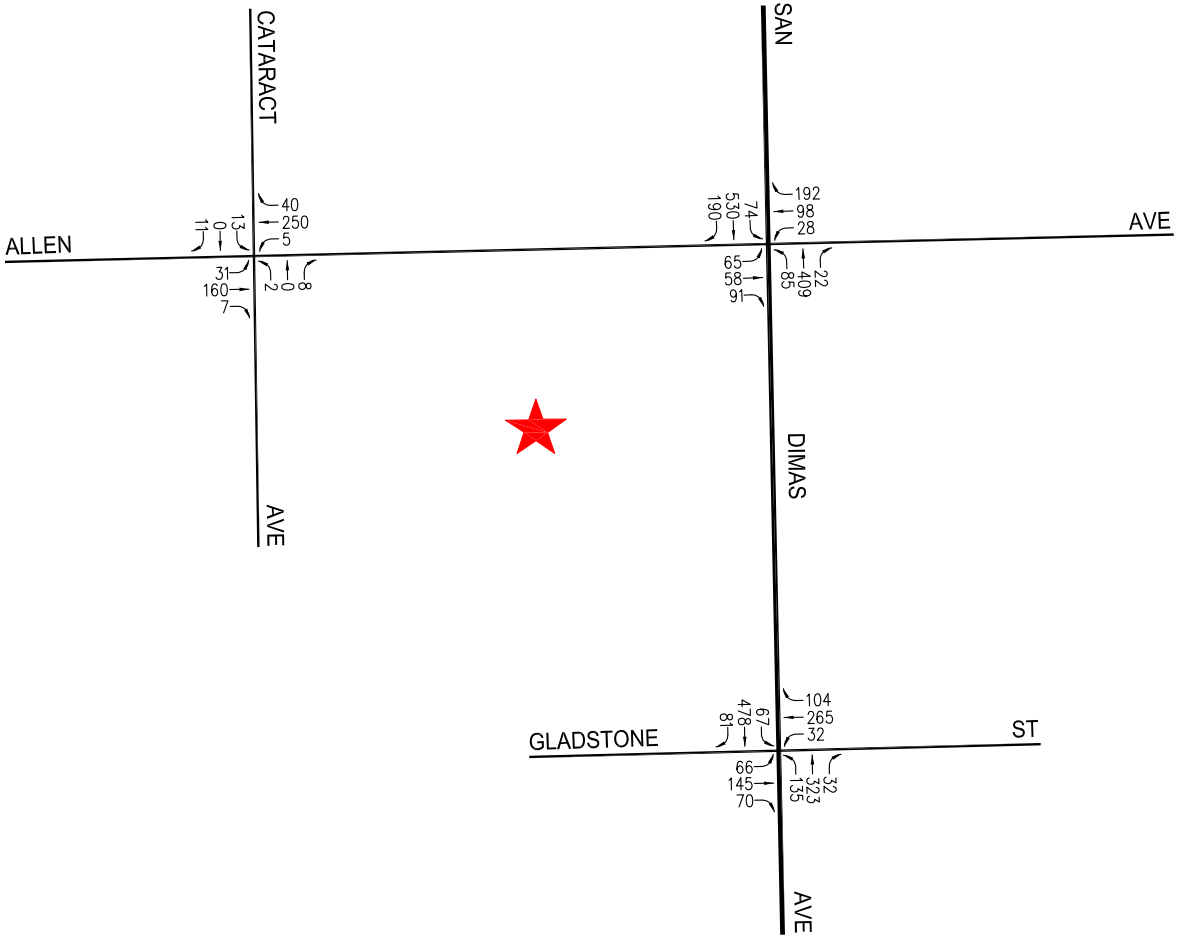
A significant traffic impact is expected because the *v/c* ratio increase of 0.010 is equal to the 0.010 threshold for an intersection operating at LOS F (based on the impact threshold criteria presented in *Table 8–3*).

Incremental, but not significant, changes in the *v/c* ratio would occur at the two remaining study intersections during the weekday AM and PM peak hours with the addition of growth in ambient traffic and project traffic. The future year 2035 with project (existing, ambient growth, and project) traffic volumes at the study intersections during the weekday AM and PM peak hours are illustrated in ***Figures 9–9*** and ***9–10***, respectively.

9.3.3 *Future Year 2035 Cumulative With Project Conditions*

The *v/c* ratios at the study intersections incrementally increase with the addition of traffic generated by the operation of related projects listed in *Table 6–1*. As shown in column [5] of *Table 9–2*, application of the County's threshold criteria to the "Year 2035 With Proposed Project and Related Projects" scenario indicates that the addition of growth in ambient traffic, project traffic, and related projects traffic is not expected to create a significant impact at any of study intersections.

The future year 2035 cumulative with project (existing, ambient growth, project, and related projects) traffic volumes at the study intersections during the weekday AM and PM peak hours are presented in the ICU worksheets in *Appendix C*. The future year 2035 cumulative with project traffic volumes at the study intersections during the weekday AM and PM peak hours are illustrated in ***Figures 9–11*** and ***9–12***, respectively.



NOT TO SCALE

PROJECT SITE

FIGURE 9-7

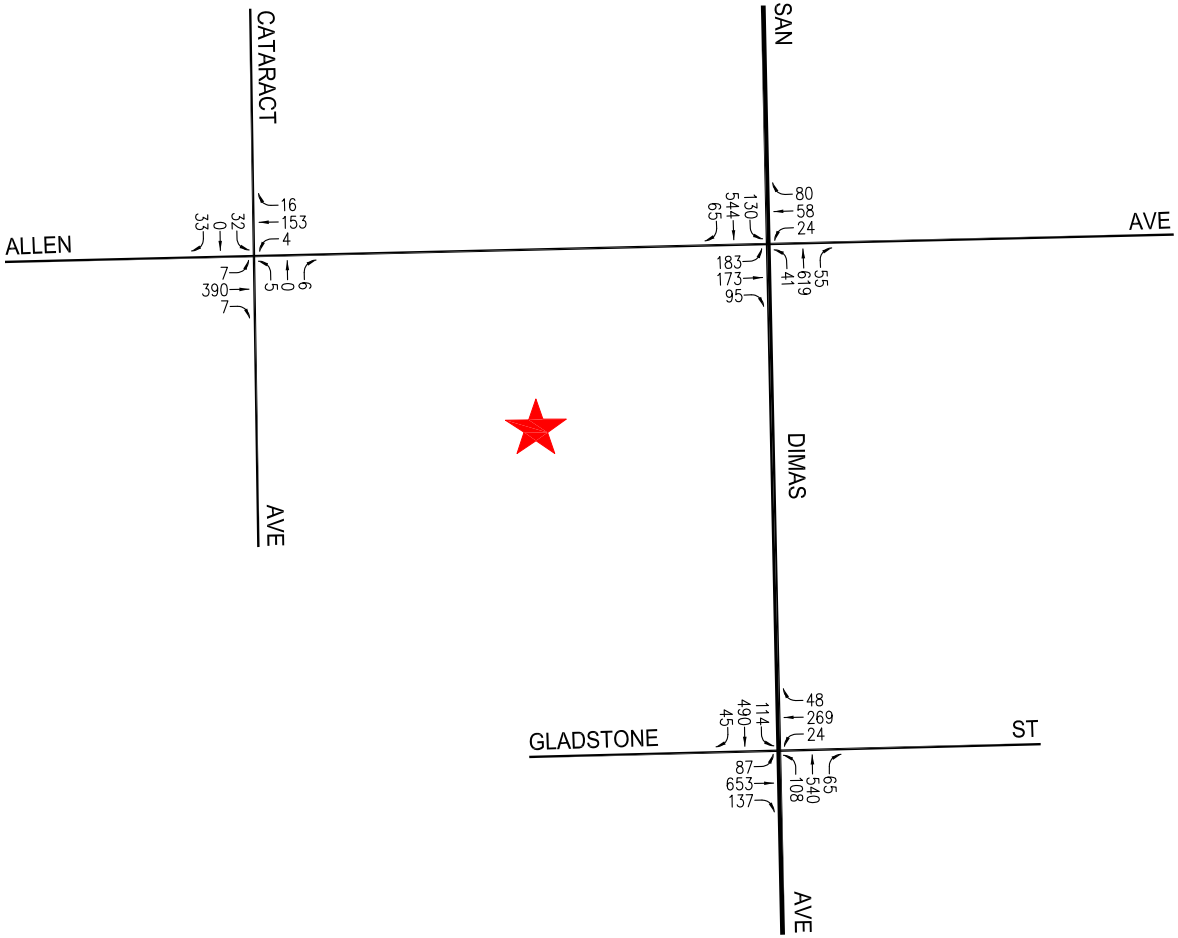
FUTURE YEAR 2035 WITH AMBIENT GROWTH TRAFFIC VOLUMES

WEEKDAY AM PEAK HOUR

OAK VALLEY PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

o:\job_file\4133\dwg\f9-7.dwg LDP 15:21:48 03/17/2016 rodriquez



NOT TO SCALE

PROJECT SITE

FIGURE 9-8

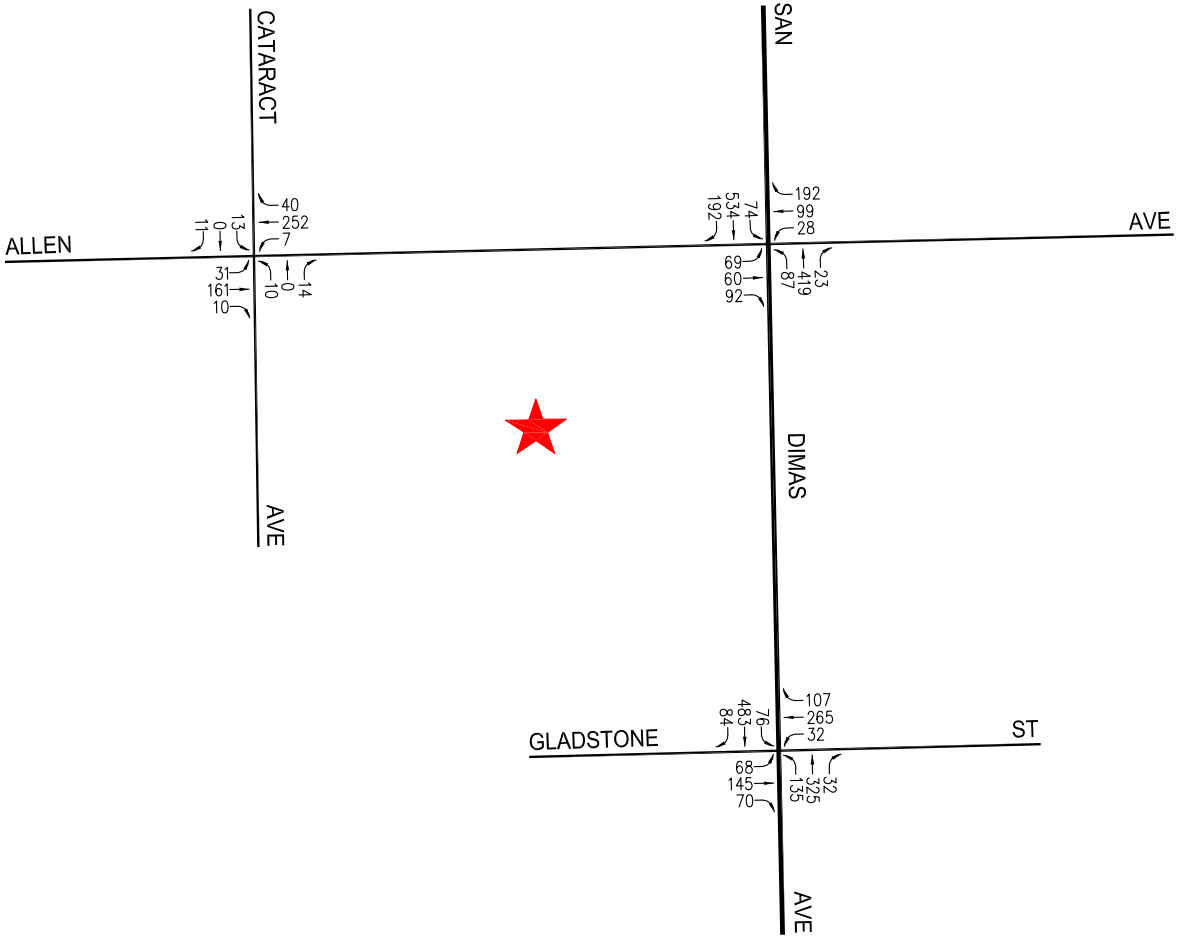
FUTURE YEAR 2035 WITH AMBIENT GROWTH TRAFFIC VOLUMES

WEEKDAY PM PEAK HOUR

OAK VALLEY PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

o:\job_file\4133\dwg\f9-8.dwg LDP 15:22:20 03/17/2016 rodriquez



PROJECT SITE

N

NOT TO SCALE

FIGURE 9-9

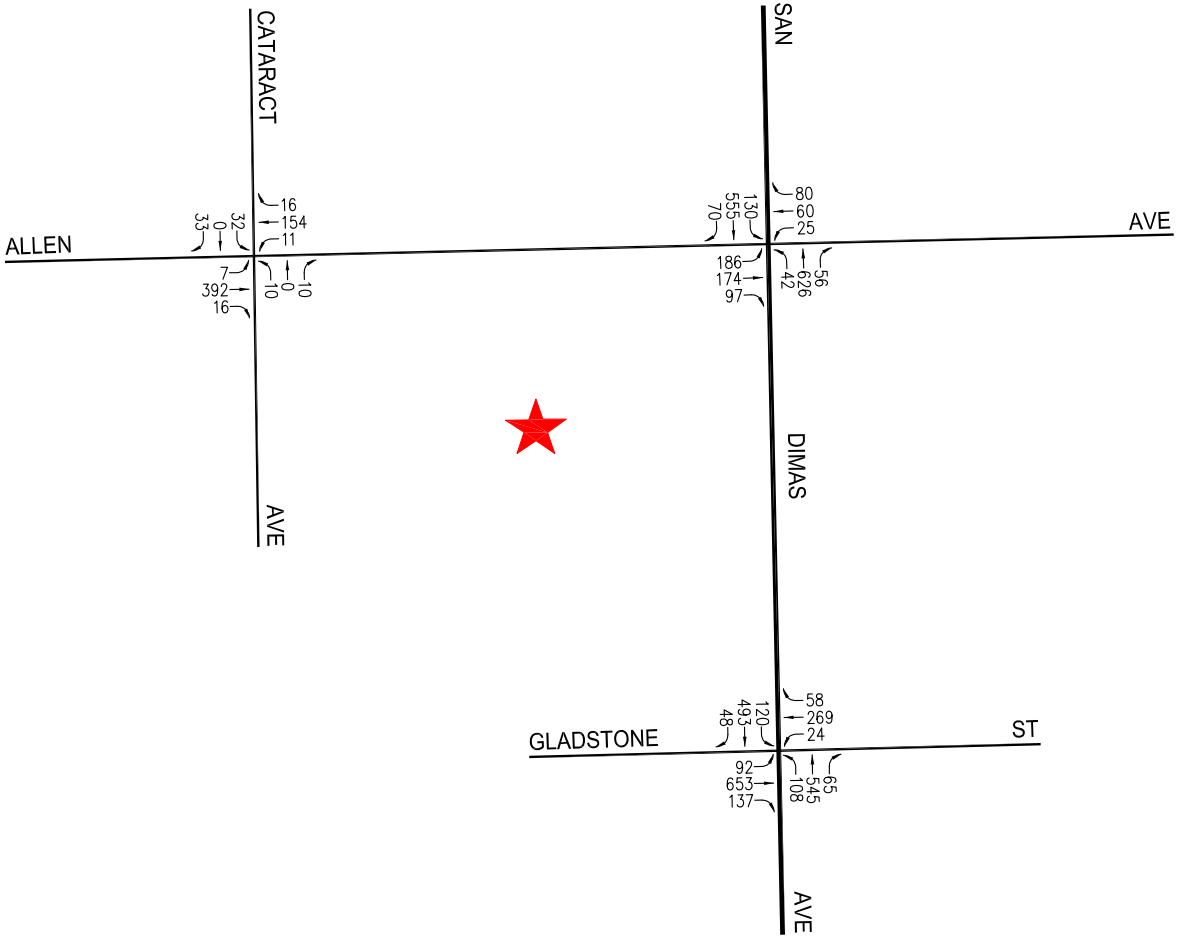
FUTURE YEAR 2035 WITH PROJECT TRAFFIC VOLUMES

WEEKDAY AM PEAK HOUR

OAK VALLEY PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

o:\job_file\4133\dwg\f9-9.dwg LDP 15:22:57 03/17/2016 rodriquez



PROJECT SITE

N

NOT TO SCALE

FIGURE 9-10

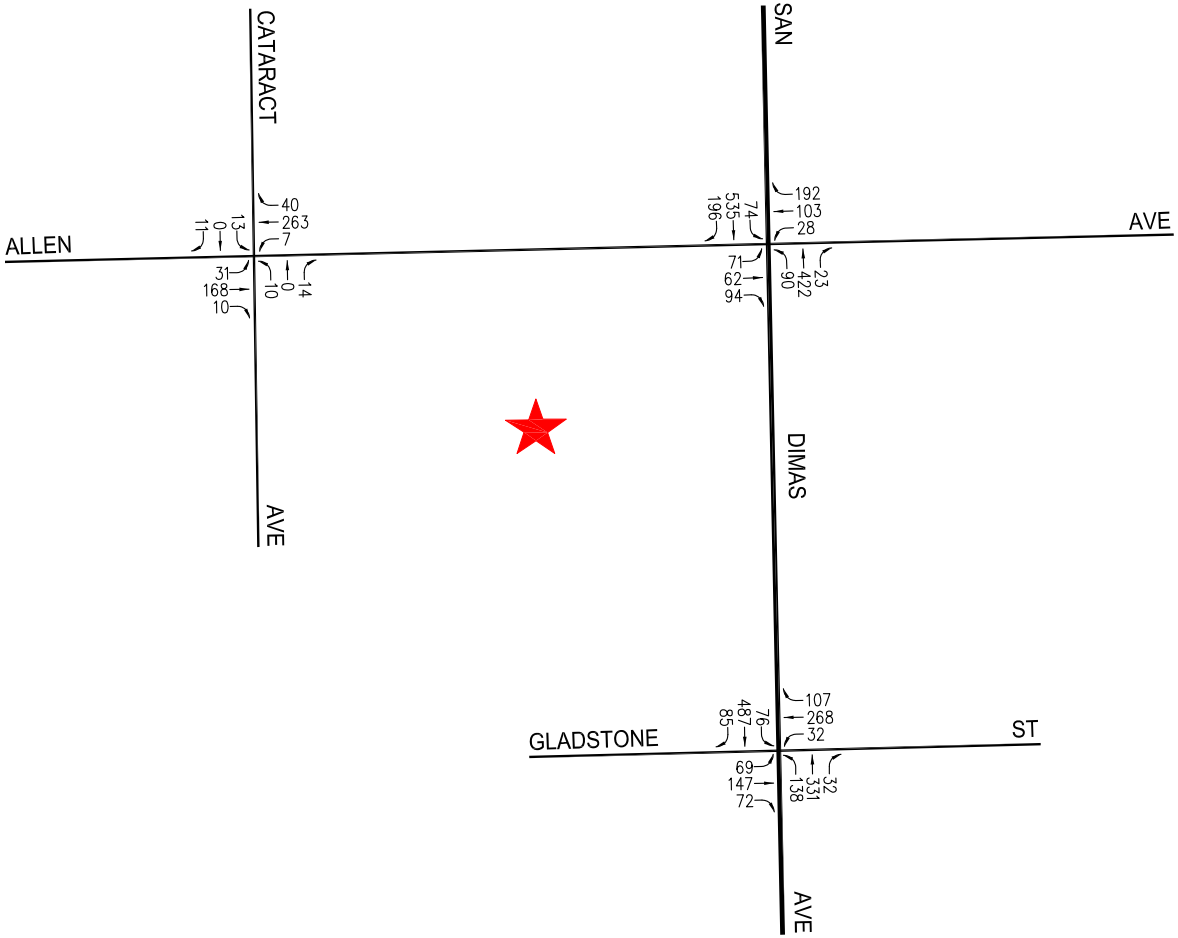
FUTURE YEAR 2035 WITH PROJECT TRAFFIC VOLUMES

WEEKDAY PM PEAK HOUR

OAK VALLEY PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

o:\job_file\4133\dwg\f9-10.dwg LDP 15:24:21 03/17/2016 rodriquez



PROJECT SITE

NOT TO SCALE

FIGURE 9-11

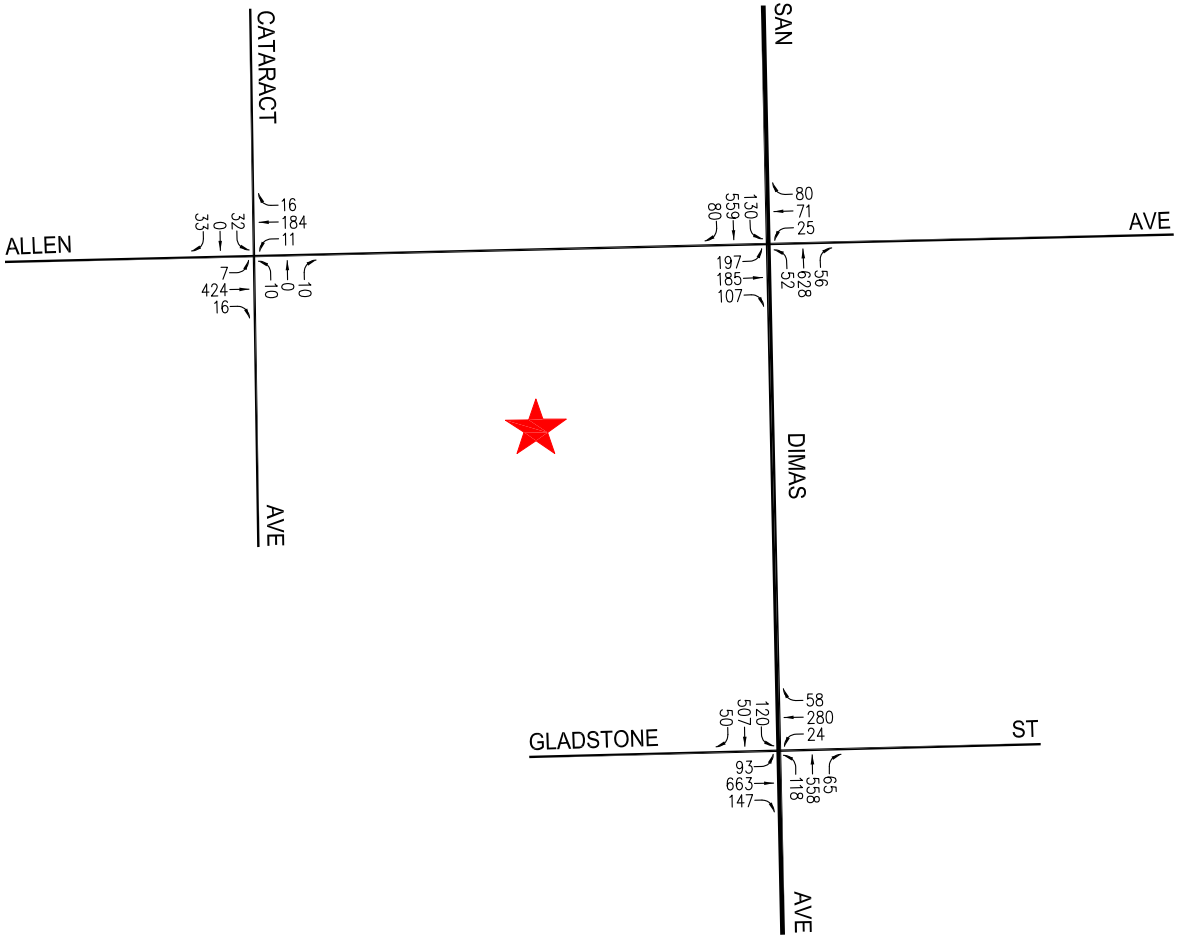
FUTURE YEAR 2035 CUMULATIVE WITH PROJECT TRAFFIC VOLUMES

WEEKDAY AM PEAK HOUR

OAK VALLEY PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

o:\job_file\4133\dwg\f9-11.dwg LDP 15:24:54 03/17/2016 rodriquez



PROJECT SITE

NOT TO SCALE

FIGURE 9-12

FUTURE YEAR 2035 CUMULATIVE WITH PROJECT TRAFFIC VOLUMES

WEEKDAY PM PEAK HOUR

OAK VALLEY PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

o:\job_file\4133\dwg\f9-12.dwg LDP 15:25:31 03/17/2016 rodriquez

10.0 TRANSPORTATION MITIGATION MEASURES

The following section provides an overview of a potential mitigation measure that is anticipated to reduce the significant transportation impact to less than significant levels. Based on the traffic analyses summarized in the previous section, it was determined that the full build-out of the entire project area is anticipated to result in a significant project-related impact at one of the study intersections for both future year 2018 and year 2035 conditions. The recommended traffic mitigation includes a physical roadway improvement. Pursuant to the City of San Dimas/County of Los Angeles methodology, the project would be required to fully fund and implement this measure in order to reduce the impact to less than significant levels. The following paragraph summarizes the recommended transportation mitigation measure.

- Intersection No. 3: San Dimas Avenue/Gladstone Street

  The recommended project mitigation measure consists of restriping the eastbound approach on Gladstone Street to provide one shared through/left-turn lane and an exclusive right-turn only lane. To accommodate the exclusive right-turn only lane, the existing roadway striping would need to be adjusted as needed for both the west and east legs of the intersection in order to provide for proper transitions. As indicated in *Table 9–1*, this measure is anticipated to reduce the forecast direct project impact to less than significant levels. The improvement is expected to improve operations to 0.934 (LOS E) from 1.010 (LOS F) during the PM peak hour for future year 2018 conditions. Additionally, as indicated in *Table 9–2* for future year 2035 conditions, this measure is also anticipated to reduce the forecast direct project impact to less than significant levels (i.e., to 1.036 [LOS F] from 1.122 [LOS F]).

11.0 CONGESTION MANAGEMENT PROGRAM TRAFFIC IMPACT ASSESSMENT

The Congestion Management Program (CMP) is a state-mandated program that was enacted by the State Legislature with the passage of Proposition 111 in 1990. The program is intended to address the impact of local growth on the regional transportation system.

As required by the *2010 Congestion Management Program*, a Traffic Impact Assessment (TIA) has been prepared to determine the potential impacts on designated monitoring locations on the CMP highway system. The analysis has been prepared in accordance with procedures outlined in the *2010 Congestion Management Program*.

According to Section D.9.1 (Appendix D, page D-6) of the 2010 CMP manual, the criteria for determining a significant impact are as follows:

> "For purposes of the CMP, a significant impact occurs when the proposed project increases traffic demand on a CMP facility by 2% of capacity (V/C $\geq$ 0.02), causing LOS F (V/C > 1.00); if the facility is already LOS F, a significant impact occurs when the proposed project increases traffic demand on a CMP facility by 2% of capacity (V/C $\geq$ 0.02)."

The CMP impact criteria apply for analysis of both freeway and intersection monitoring locations.

11.1 Freeways

The following CMP freeway monitoring location in the project vicinity has been identified:

- <u>CMP Station</u> <u>Segment</u>

  No. 1063 I-210, at San Dimas Avenue

The CMP TIA guidelines require that freeway monitoring locations must be examined if the proposed project will add 150 or more trips (in either direction) during either the weekday AM or PM peak hours. The proposed project will not add 150 or more trips (in either direction) during either the weekday AM or PM peak hours to the CMP freeway monitoring locations which is the threshold for preparing a traffic impact analysis, as stated in the CMP document. Therefore, no further review of potential impacts to freeway monitoring locations that are part of the CMP highway system is required.

11.2 Intersections

The following CMP intersection monitoring locations have been identified in the project vicinity:

- <u>CMP Station</u> <u>Location</u>

  No. 30 Base Line Road/Foothill Boulevard

No. 132 Arrow Highway/San Dimas Avenue

The CMP TIA guidelines require that intersection monitoring locations must be examined if the proposed project will add 50 or more trips during either the weekday AM or PM peak hours. Based on the project trip distribution assignment and the trip generation as shown in *Table 7–1*, the project is forecast to generate at most five (5) trips during the PM peak hour to the Base Line Road/Foothill Boulevard intersection and at most eight (8) trips during the PM peak hour to the Arrow Highway/San Dimas Avenue intersection. As such, the proposed project will not add 50 or more trips during the AM or PM peak hours at the CMP monitoring intersections, which is the threshold for preparing a traffic impact assessment, as stated in the CMP manual. Therefore, no further review of potential impacts to intersection monitoring locations that are part of the CMP highway system is required.

11.3 Transit

As required by the *2010 Congestion Management Program*, a review has been made of the CMP transit service. As previously discussed, existing transit service is provided in the vicinity of the proposed project. The project trip generation, as shown in *Table 7–1*, was adjusted by values set forth in the CMP (i.e., person trips equal 1.4 times vehicle trips, and transit trips equal 3.5 percent of the total person trips) to estimate transit trip generation. Pursuant to the CMP guidelines, the proposed project is forecast to generate demand for approximately three transit trips during the weekday AM peak hour and four transit trips during the weekday PM peak hour. Over a 24-hour period, the proposed project is forecast to generate demand for approximately 36 daily transit trips. The calculations are as follows:

- AM Peak Hour = 59 × 1.4 × 0.035 = 3 Transit Trips
- PM Peak Hour = 78 × 1.4 × 0.035 = 4 Transit Trips
- Daily Trips = 742 × 1.4 × 0.035 = 36 Transit Trips

As shown in *Table 4–2*, two Foothill Transit bus routes are provided in close proximity to the project site. As outlined in *Table 4–2* under the "No. of Buses" column, these transit lines provide service for an average (i.e., an average of the directional number of buses during the peak hours) of approximately 13 and 12 buses serving the project area during the AM and PM peak hours. Therefore, based on the above calculated AM and PM peak hour transit trips, this would correspond to an average of less than one new transit rider per bus due to the proposed project. It is anticipated that the existing transit service in the project area will adequately accommodate the project generated transit trips. Thus, given the low number of generated transit trips per bus, no impacts on existing or future transit services in the project area are expected to occur as a result of the proposed project.

12.0 SUMMARY AND CONCLUSIONS

- ***Project Description*** – The proposed Oak Valley Project (Tentative Tract No. 73711) consists of the development of 28 detached single-family residential dwelling units in the eastern portion of the project area. While the Oak Valley development (TTM 73711) is proposed on approximately 10.03 acres of the entire 27.12-acre project area, there are no specific development proposals for the remainder of the project area at this time. For purposes of analyzing potential traffic impacts for full build-out of the project area, it was assumed that the remainder of the project area would consist of the development of up to 50 detached single-family residential dwelling units. Completion of the project is anticipated to be built-out by year 2018.

- ***Vehicular Site Access*** – Primary vehicular access will be provided from San Dimas Avenue and Cataract Avenue via "A" Street. "A" Street will directly serve the internal roadways which terminate at five cul-de-sacs within the project area. The "A" Street project driveway will accommodate full access at the intersections with San Dimas Avenue and Cataract Avenue (i.e., both right-turn and left-turn ingress and egress turning movements) and will be constructed to City of San Dimas design standards.

- ***Sight Distance Analysis*** – A sight distance analysis was prepared at the San Dimas Avenue/Proposed Driveway intersection in order to determine the adequacy of motorists' lines of sight at the project access point. Some of the existing trees (and their lower level tree branches) and bushes located within the median island on San Dimas Avenue south of the driveway currently obstruct the line of sight assuming that a distance of eight (8) feet (i.e., the distance between the edge of the travel way and the exiting driveway motorists' eye) is maintained. From a horizontal perspective, the sight triangle area should be clear of any tall landscaping, signage, or objects (i.e., be less than 36 inches in height) and all lower level tree branches must be cleared so as to maintain a clear line of sight between exiting motorists and oncoming motorists. However, in order to maintain full access (i.e., left-turn and right-turn ingress and egress turning movements) for the existing east side residential driveway and provide adequate sight distances for both driveways (i.e., project driveway and the east side residential driveway) as well as motorists on San Dimas Avenue, a portion of the raised median could be removed to allow the installation of a two-way left-turn lane along San Dimas Avenue for left-turn access into both the proposed project driveway and the east side residential driveway.

- ***Study Scope –*** Three study intersections were selected for detailed peak hour level of service analyses under existing and future conditions (i.e., years 2018 and 2035), without and with the proposed project traffic. The analysis focused on assessing potential traffic impacts assuming full build-out of the project area during the AM and PM peak hours on a typical weekday.

- ***Project Trip Generation*** – On a typical weekday, the proposed project is expected to generate 59 vehicle trips (15 inbound trips and 44 outbound trips) during the AM peak hour. During the PM peak hour, the proposed project is expected to generate 78 vehicle trips (50 inbound trips and 28 outbound trips). Over a 24-hour period, the project is forecast to generate 742 daily trip ends during a typical weekday (approximately 371 inbound trips and 371 outbound trips).

- ***Related Projects*** – The City of San Dimas Development Services Department, the City of Glendora Planning Department, as well as the City of La Verne Community Development Department were consulted to obtain the list of development projects (related projects) in the area. A total of 12 related projects was identified and considered as part of the cumulative traffic analysis.

- ***Traffic Impact Analysis*** – It is concluded that the proposed project is anticipated to result in a significant project traffic impact at one of the study intersections (San Dimas Avenue/Gladstone Street) based on the City of San Dimas/County of Los Angeles thresholds of significance used for evaluating traffic impacts. As such, direct project specific traffic mitigation measures are recommended to reduce the impact to less than significant levels. Development of the cumulative development projects, plus ambient growth and the proposed project is not expected to result in a significant cumulative traffic impact at any of the study intersections for both the future year 2018 and year 2035 cumulative with project conditions based on the City of San Dimas/County of Los Angeles thresholds of significance.

- ***CMP Traffic Assessment*** – The results of the Los Angeles CMP traffic assessment indicated that the proposed project will not adversely affect any CMP arterial monitoring intersections or freeway monitoring locations. Therefore, no improvements/mitigation measures are required of this project for the CMP facilities.

APPENDIX A

RADAR SPEED SURVEYS
SUPPLEMENTAL TRAFFIC ADDENDUM MEMORANDUM

CITY OF SAN DIMAS

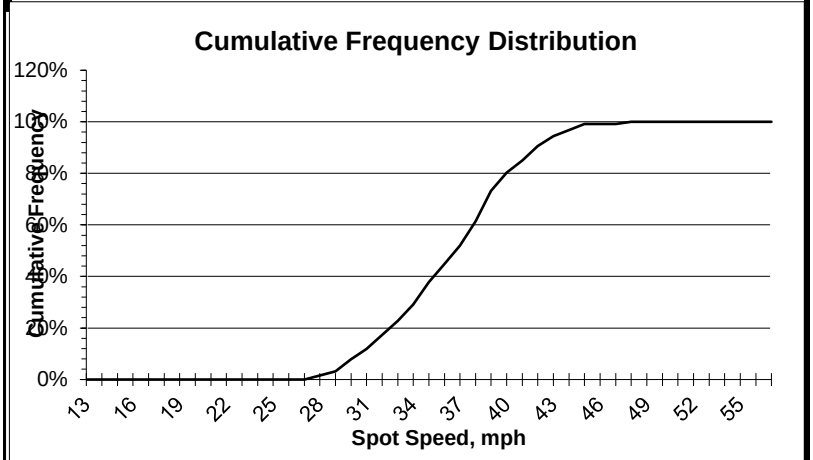
Client: LLG
Street: San Dimas Avenue
Spt.Spd. Location: Between Allen Avenue and Gladstone Street *Ref. # ?*

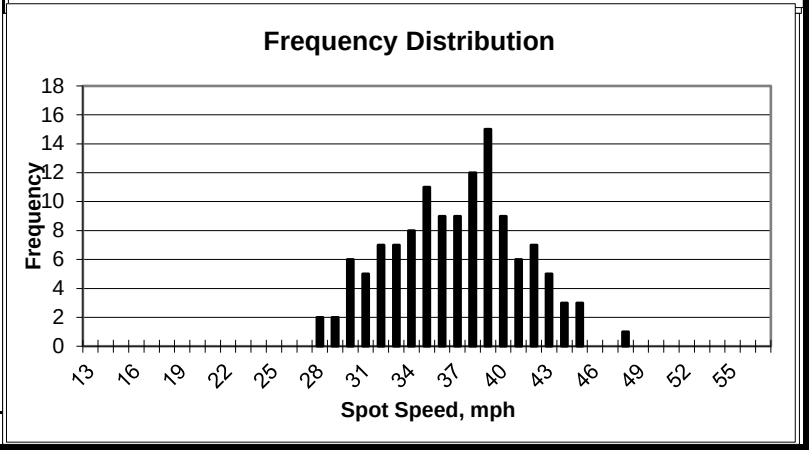
Speed	Frequency	Percent	Cumulative Percent
13	0	0.00%	0.00%
14	0	0.00%	0.00%
15	0	0.00%	0.00%
16	0	0.00%	0.00%
17	0	0.00%	0.00%
18	0	0.00%	0.00%
19	0	0.00%	0.00%
20	0	0.00%	0.00%
21	0	0.00%	0.00%
22	0	0.00%	0.00%
23	0	0.00%	0.00%
24	0	0.00%	0.00%
25	0	0.00%	0.00%
26	0	0.00%	0.00%
27	0	0.00%	0.00%
28	2	1.57%	1.57%
29	2	1.57%	3.15%
30	6	4.72%	7.87%
31	5	3.94%	11.81%
32	7	5.51%	17.32%
33	7	5.51%	22.83%
34	8	6.30%	29.13%
35	11	8.66%	37.80%
36	9	7.09%	44.88%
37	9	7.09%	51.97%
38	12	9.45%	61.42%
39	15	11.81%	73.23%
40	9	7.09%	80.31%
41	6	4.72%	85.04%
42	7	5.51%	90.55%
43	5	3.94%	94.49%
44	3	2.36%	96.85%
45	3	2.36%	99.21%
46	0	0.00%	99.21%
47	0	0.00%	99.21%
48	1	0.79%	100.00%
49	0	0.00%	100.00%
50	0	0.00%	100.00%
51	0	0.00%	100.00%
52	0	0.00%	100.00%
53	0	0.00%	100.00%
54	0	0.00%	100.00%
55	0	0.00%	100.00%
56	0	0.00%	100.00%
57	0	0.00%	100.00%
Total:	127	100%	

Date:	8/13/2015	**Day:**	Thursday
Weather:	Sunny		
Hours:	10:00 AM	**To**	11:00 AM
Number of Lanes:	02 NB / 02 SB	**Ped Activity:**	YES
Posted Speed:	40		
Channelization:	Concrete Medican 2-way traffic		
Street Width:	80'	**Sidewalks:**	Yes
Comm./Resid.:	Mostly Resid.	**Driveways:**	Yes
Direction:	Northbound	**Median:**	Yes

DATA ANALYSIS:

Mean Speed:	37		
Standard Deviation:	4		
Standard error of the mean:	0.35		
50th Percentile:	37		
85th Percentile:	41		
97th Percentile:	45		
10 Mile Pace:	32	to	41
% of Samples in 10-Mile Pace:	73.23%		
Comments:			





CITY OF SAN DIMAS

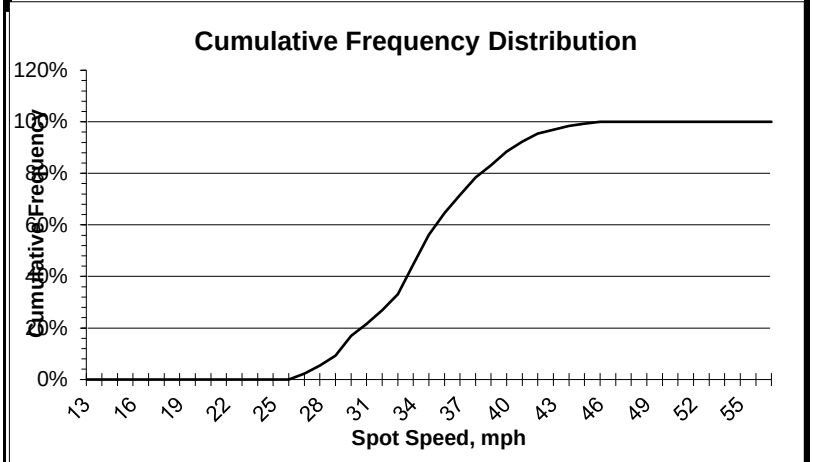
Client: LLG
Street: San Dimas Avenue
Spt.Spd. Location: Between Allen Avenue and Gladstone Street *Ref. # ?*

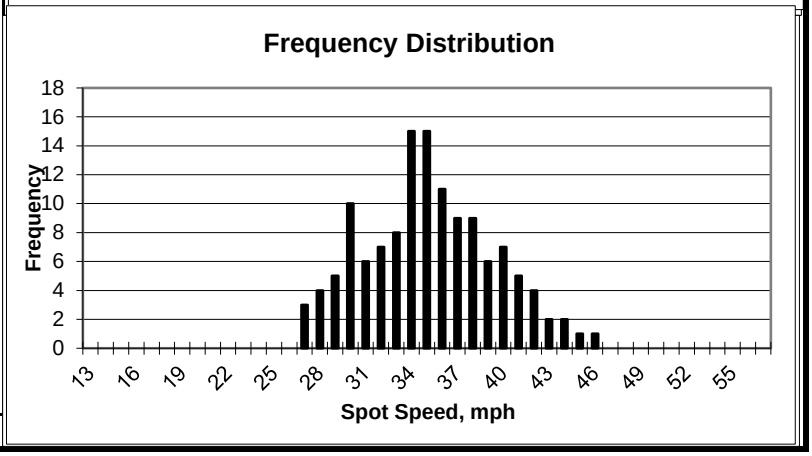
Speed	Frequency	Percent	Cumulative Percent
13	0	0.00%	0.00%
14	0	0.00%	0.00%
15	0	0.00%	0.00%
16	0	0.00%	0.00%
17	0	0.00%	0.00%
18	0	0.00%	0.00%
19	0	0.00%	0.00%
20	0	0.00%	0.00%
21	0	0.00%	0.00%
22	0	0.00%	0.00%
23	0	0.00%	0.00%
24	0	0.00%	0.00%
25	0	0.00%	0.00%
26	0	0.00%	0.00%
27	3	2.31%	2.31%
28	4	3.08%	5.38%
29	5	3.85%	9.23%
30	10	7.69%	16.92%
31	6	4.62%	21.54%
32	7	5.38%	26.92%
33	8	6.15%	33.08%
34	15	11.54%	44.62%
35	15	11.54%	56.15%
36	11	8.46%	64.62%
37	9	6.92%	71.54%
38	9	6.92%	78.46%
39	6	4.62%	83.08%
40	7	5.38%	88.46%
41	5	3.85%	92.31%
42	4	3.08%	95.38%
43	2	1.54%	96.92%
44	2	1.54%	98.46%
45	1	0.77%	99.23%
46	1	0.77%	100.00%
47	0	0.00%	100.00%
48	0	0.00%	100.00%
49	0	0.00%	100.00%
50	0	0.00%	100.00%
51	0	0.00%	100.00%
52	0	0.00%	100.00%
53	0	0.00%	100.00%
54	0	0.00%	100.00%
55	0	0.00%	100.00%
56	0	0.00%	100.00%
57	0	0.00%	100.00%
Total:	130	100%	

Date:	8/13/2015	**Day:**	Thursday
Weather:	Sunny		
Hours:	10:00 AM	**To**	11:00 AM
Number of Lanes:	02 NB / 02 SB	**Ped Activity:**	YES
Posted Speed:	40		
Channelization:	Concrete Medican 2-way traffic		
Street Width:	80'	**Sidewalks:**	Yes
Comm./Resid.:	Mostly Resid.	**Driveways:**	Yes
Direction:	Southbound	**Median:**	Yes

DATA ANALYSIS:

Mean Speed:	35		
Standard Deviation:	4		
Standard error of the mean:	0.35		
50th Percentile:	35		
85th Percentile:	40		
97th Percentile:	44		
10 Mile Pace:	30	to	39
% of Samples in 10-Mile Pace:	73.85%		
Comments:			





CITY OF SAN DIMAS

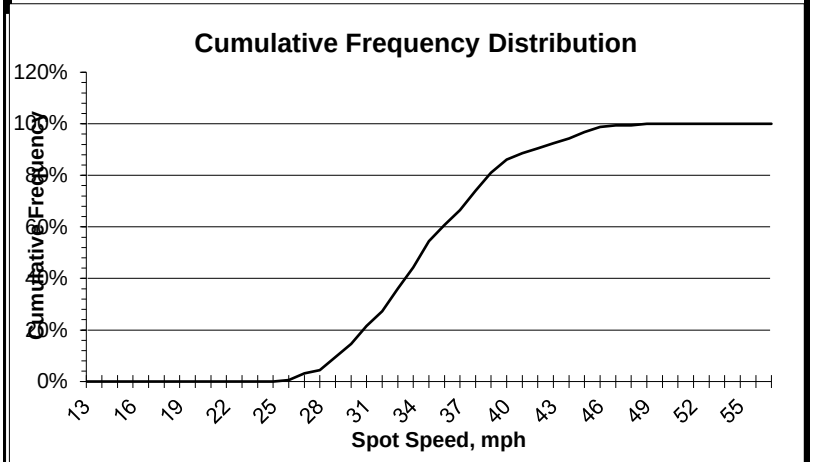
Client: LLG
Street: San Dimas Avenue
Spt.Spd. Location: Between Allen Avenue and Gladstone Street *Ref. # ?*

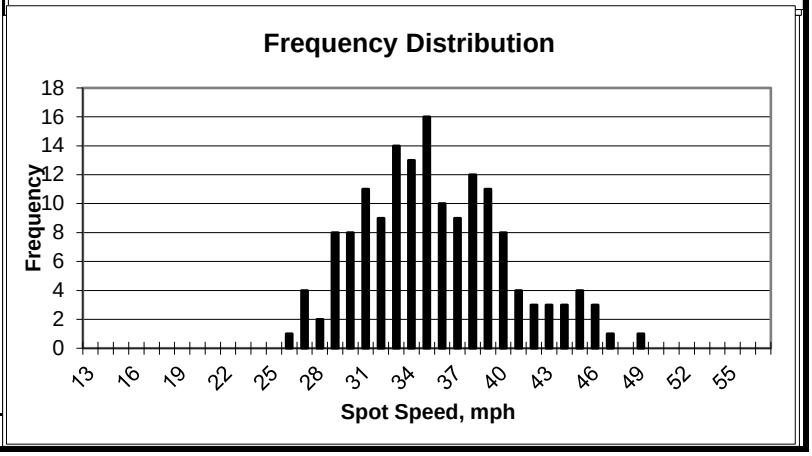
Speed	Frequency	Percent	Cumulative Percent
13	0	0.00%	0.00%
14	0	0.00%	0.00%
15	0	0.00%	0.00%
16	0	0.00%	0.00%
17	0	0.00%	0.00%
18	0	0.00%	0.00%
19	0	0.00%	0.00%
20	0	0.00%	0.00%
21	0	0.00%	0.00%
22	0	0.00%	0.00%
23	0	0.00%	0.00%
24	0	0.00%	0.00%
25	0	0.00%	0.00%
26	1	0.63%	0.63%
27	4	2.53%	3.16%
28	2	1.27%	4.43%
29	8	5.06%	9.49%
30	8	5.06%	14.56%
31	11	6.96%	21.52%
32	9	5.70%	27.22%
33	14	8.86%	36.08%
34	13	8.23%	44.30%
35	16	10.13%	54.43%
36	10	6.33%	60.76%
37	9	5.70%	66.46%
38	12	7.59%	74.05%
39	11	6.96%	81.01%
40	8	5.06%	86.08%
41	4	2.53%	88.61%
42	3	1.90%	90.51%
43	3	1.90%	92.41%
44	3	1.90%	94.30%
45	4	2.53%	96.84%
46	3	1.90%	98.73%
47	1	0.63%	99.37%
48	0	0.00%	99.37%
49	1	0.63%	100.00%
50	0	0.00%	100.00%
51	0	0.00%	100.00%
52	0	0.00%	100.00%
53	0	0.00%	100.00%
54	0	0.00%	100.00%
55	0	0.00%	100.00%
56	0	0.00%	100.00%
57	0	0.00%	100.00%
Total:	158	100%	

Date:	8/13/2015	**Day:**	Thursday
Weather:	Sunny		
Hours:	1:30 PM	**To**	2:30 PM
Number of Lanes:	02 NB / 02 SB	**Ped Activity:**	YES
Posted Speed:	40		
Channelization:	Concrete Medican 2-way traffic		
Street Width:	80'	**Sidewalks:**	Yes
Comm./Resid.:	Mostly Resid.	**Driveways:**	Yes
Direction:	Northbound	**Median:**	Yes

DATA ANALYSIS:

Mean Speed:	36		
Standard Deviation:	5		
Standard error of the mean:	0.4		
50th Percentile:	35		
85th Percentile:	40		
97th Percentile:	46		
10 Mile Pace:	30	to	39
% of Samples in 10-Mile Pace:	71.52%		
Comments:			





CITY OF SAN DIMAS

Client: LLG
Street: San Dimas Avenue
Spt.Spd. Location: Between Allen Avenue and Gladstone Street *Ref. # ?*

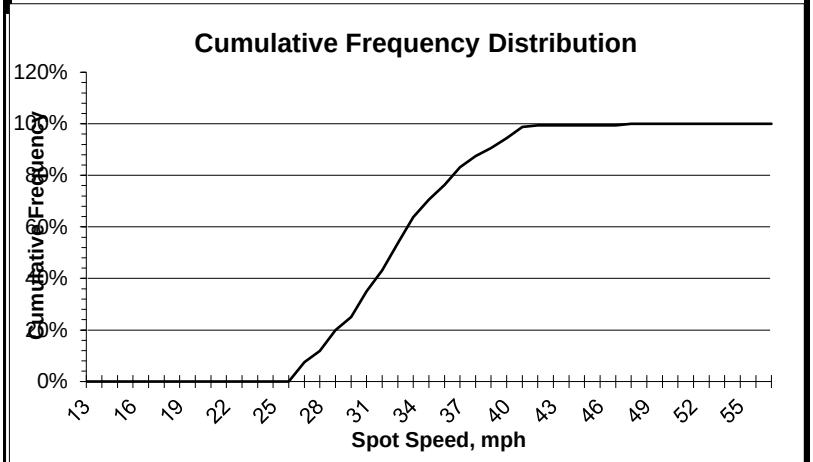
Speed	Frequency	Percent	Cumulative Percent
13	0	0.00%	0.00%
14	0	0.00%	0.00%
15	0	0.00%	0.00%
16	0	0.00%	0.00%
17	0	0.00%	0.00%
18	0	0.00%	0.00%
19	0	0.00%	0.00%
20	0	0.00%	0.00%
21	0	0.00%	0.00%
22	0	0.00%	0.00%
23	0	0.00%	0.00%
24	0	0.00%	0.00%
25	0	0.00%	0.00%
26	0	0.00%	0.00%
27	12	7.50%	7.50%
28	7	4.38%	11.88%
29	13	8.13%	20.00%
30	8	5.00%	25.00%
31	16	10.00%	35.00%
32	13	8.13%	43.13%
33	17	10.63%	53.75%
34	16	10.00%	63.75%
35	11	6.88%	70.63%
36	9	5.63%	76.25%
37	11	6.88%	83.13%
38	7	4.38%	87.50%
39	5	3.13%	90.63%
40	6	3.75%	94.38%
41	7	4.38%	98.75%
42	1	0.63%	99.38%
43	0	0.00%	99.38%
44	0	0.00%	99.38%
45	0	0.00%	99.38%
46	0	0.00%	99.38%
47	0	0.00%	99.38%
48	1	0.63%	100.00%
49	0	0.00%	100.00%
50	0	0.00%	100.00%
51	0	0.00%	100.00%
52	0	0.00%	100.00%
53	0	0.00%	100.00%
54	0	0.00%	100.00%
55	0	0.00%	100.00%
56	0	0.00%	100.00%
57	0	0.00%	100.00%
Total:	160	100%	

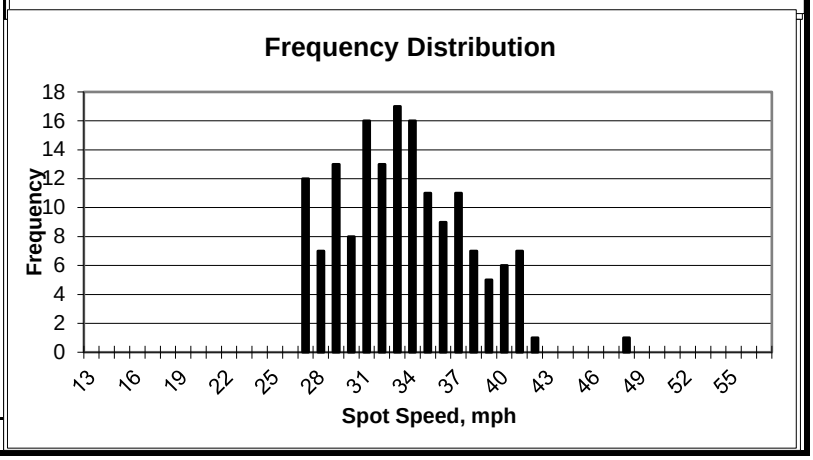
Date:	8/13/2015	**Day:**	Thursday
Weather:	Sunny		
Hours:	1:30 PM	**To**	2:30 PM
Number of Lanes:	02 NB / 02 SB	**Ped Activity:**	YES
Posted Speed:	40		
Channelization:	Concrete Medican 2-way traffic		
Street Width:	80'	**Sidewalks:**	Yes
Comm./Resid.:	Mostly Resid.	**Driveways:**	Yes
Direction:	Southbound	**Median:**	Yes

DATA ANALYSIS:

Mean Speed:	33		
Standard Deviation:	4		
Standard error of the mean:	0.32		
50th Percentile:	33		
85th Percentile:	38		
97th Percentile:	41		
10 Mile Pace:	27	to	36
% of Samples in 10-Mile Pace:	76.25%		

Comments:





MEMORANDUM

To:	Mr. Luis Torrico City of San Dimas, Development Services Department	Date:	December 2, 2015
From:	Clare M. Look-Jaeger, P.E. CL-Jaeger Chin S. Taing, PTP CST Linscott, Law & Greenspan, Engineers	LLG Ref:	1-15-4133-1
Subject:	**Supplemental Traffic Study Addendum for the Oak Valley Project, City of San Dimas, California**		

LINSCOTT LAW & GREENSPAN engineers

Engineers & Planners
Traffic
Transportation
Parking

Linscott, Law & Greenspan, Engineers
600 S. Lake Avenue
Suite 500
Pasadena, CA 91106
626.796.2322 T
626.792.0941 F
www.llgengineers.com

Pasadena
Irvine
San Diego
Woodland Hills

This memorandum has been prepared by Linscott, Law & Greenspan, Engineers (LLG) to respond to Item No. 2 of the City's Incompleteness Letter, dated November 20, 2015, with regard to the comments on the Traffic Impact Study (dated October 15, 2015). Pursuant to our coordination with the project applicant representative, the following summarizes each of the comments under Item No. 2 in italics and the corresponding responses to those comments.

Item No. 2. (a), page 2

"Traffic study for development for current (2 years with completion of proposed project) and future conditions (20 years after completion) is acceptable with two minor revisions that need to be addressed. The Traffic Study should analyze east/west split phase signal operation at the intersection of Gladstone and San Dimas Avenue as a potential mitigation for traffic impacts at this intersection. The intersection of San Dimas Avenue and "A" Street should be reviewed for signal warrants for the ultimate build out of the surrounding area not just the 28 lots. If a signal is warranted, the development should pay their contributory percentage."

As indicated in Section 10.0 of the Traffic Impact Study, the proposed cumulative mitigation measure that is expected to reduce the forecast significant impact to less than significant levels consists of restriping the eastbound approach on Gladstone Street to provide one shared through/left-turn lane and an exclusive right-turn only lane. LLG has reviewed the City-recommended measure of providing east/west split phase signal operation alone and determined that it would <u>not</u> be sufficient to mitigate the significant cumulative impact at this location for both future 2018 and 2035 cumulative with project conditions. It should also be noted that the proposed east/west split phase signal operation modification in combination with the proposed eastbound right-turn only lane would also <u>not</u> be sufficient to mitigate this significant cumulative impact to a less than significant level for both future 2018 and 2035 cumulative with project conditions. For informational purposes, the ICU calculation worksheets for both scenarios (i.e., [a] with the proposed east/west split phase signal operation only, or [b] with the proposed east/west split phase signal operation and eastbound right-turn only lane) for future (2018 and 2035) conditions are included in ***Attachment A***.

Traffic signal warrant analyses have also been prepared to determine whether a traffic signal installation is warranted for the San Dimas Avenue/Project Driveway ("A" Street) intersection upon completion of the proposed Oak Valley project and build-out of the adjacent parcel to the west. The determination of whether the installation of a traffic signal is warranted was based on criteria set forth in Chapter 4C of the California Manual on Uniform Traffic Control Devices (MUTCD)[1]. Specifically, Warrant No. 3 (Peak Hour Volume) and Warrant No. 6 (Coordinated Signal System) traffic signal warrants were prepared. The traffic signal warrant calculations were based on the forecast future year 2018 and 2035 cumulative with project traffic volumes contained in the Traffic Study (refer to *Figures 9-5* and *9-6* as well as *Figures 9-11* and *9-12*). The traffic signal warrant worksheets are contained in ***Attachment B***.

In reviewing the traffic signal warrant analysis, it is important to note the following:

- The San Dimas Avenue/Project Driveway ("A" Street) intersection was assumed to be a two-way stop controlled intersection with the stop sign facing the "A" Street eastbound approach.
- For the signal warrant analyses, the minor street approach volumes consist of the eastbound volumes for "A" Street. The major street approach volumes consist of the northbound and southbound volumes on San Dimas Avenue.
- The following lane configurations have been assumed for the intersection:
  - Southbound approach (San Dimas Avenue): one through lane, one combination through/right-turn shared lane
  - Northbound approach (San Dimas Avenue): one left-turn lane, two through lanes
  - Eastbound approach (Project Driveway/"A" Street): one left-through-right shared lane.

The following paragraphs provide detailed discussions of the traffic signal warrants prepared for the subject location.

<u>Warrant 3: Peak Hour Volume</u>

The Peak Hour Volume Warrant consists of Part A and Part B and is intended for application where traffic conditions are such that for one hour of the day minor street traffic suffers undue delay in entering or crossing the major street. The Peak Hour Volume Warrant applies when either Part A or Part B of the following criteria is satisfied:

[1] *California Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways*, State of California Business, Transportation and Housing Agency, Department of Transportation, 2014.

LINSCOTT LAW & GREENSPAN engineers

- Part A. If all three of the following conditions exist for the same one hour (any four consecutive 15-minute periods) of an average day:
    - The total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equals or exceeds 4 vehicle-hours for a one-lane approach, or 5 vehicle-hours for a two-lane approach, and
    - The volume on the same minor-street approach (one direction only) equals or exceeds 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes, and
    - The total entering volume serviced during the hour equals or exceeds 650 vehicles per hour for intersections with three approaches or 800 vehicles per hour for intersections with four or more approaches.
- Part B of Warrant No. 3 is satisfied when the plotted point, representing the vehicles per hour on the major street (northbound and southbound approaches) and the corresponding vehicles per hour on the higher volume minor street approach (eastbound approach only) for one hour of an average day, falls above the curve in Figure 4C-3 for the applicable number of approach lanes. The lower threshold for a minor street approach with one lane is 100 vehicles per hour while a minor street with two or more lanes is 150 vehicles per hour. The signal warrant is met when the plotted point falls above the appropriate curve.

As shown on the attached Figure 4C-3 provided in *Attachment B*, the plotted point for the peak hour falls below the applicable curve for the San Dimas Avenue/Project Driveway ("A" Street) intersection. Therefore, Warrant No. 3-Peak Hour is not met for the future cumulative (2018 and 2035) with project conditions for the San Dimas Avenue/Project Driveway ("A" Street) intersection.

<u>Warrant 6: Coordinated Signal System</u>

The Coordinated Signal System warrant applies when all of the following criteria are satisfied:

- The distance to the nearest traffic signal is greater than 1,000 feet, and
- On an isolated one-way street or street with one way traffic, the adjacent signals are so far apart that necessary platooning and speed control would be lost; or

- On a two-way street, where the adjacent signals do not provide the necessary degree of platooning and speed control, proposed signals could constitute a progressive signal system.

Warrant 6 is satisfied if the distance to the nearest traffic signal is greater than 1,000 feet; if the adjacent signals do not provide the necessary degree of platooning and the proposed and adjacent signals could constitute a progressive signal system. For the San Dimas Avenue/Project Driveway ("A" Street) intersection, the distance to the nearest traffic signal to the north (at San Dimas Avenue/Allen Avenue) and south (at San Dimas Avenue/Gladstone Street) is approximately 475 feet and 830 feet, respectively. Thus, there are signalized intersections to the north and south on San Dimas Avenue that are less than the 1,000-foot threshold for the subject intersection. Thus, Warrant 6 is not satisfied for the subject intersection.

In summary, the following conclusions are reached for the subject intersection (i.e., San Dimas Avenue/Project Driveway ["A" Street]) based on the traffic signal warrant analyses. The above traffic signal warrant analyses indicate that both warrants (Warrant Nos. 3 and 6) are not satisfied based on the future (2018 and 2035) cumulative with project traffic conditions at the subject intersection. Therefore, it is not recommended that the installation of a traffic signal at this location be considered at this time.

Item No. 2. (b), page 2

"The traffic study shall include plans for projected opening for the project that includes closure of existing median access to the existing driveway. Of concern, is the length of the new left turn pocket taking into account future development of master plan that includes development of adjacent area."

As shown in Figure 2-1, Site Plan, page 9 of the Traffic Impact Study, the site plan illustrates the project driveway design which includes the median modification that would restrict access to the existing four single family residential units on the east side of San Dimas Avenue south of the proposed project driveway ("A" Street).

Also as indicated on page 30 of the Traffic Impact Study, for the proposed Oak Valley project (i.e., 28 single-family residential units) in combination with the development of the adjacent parcel (i.e., 50 single-family residential units), it is estimated that the northbound left-turn volume into the project driveway ("A" Street), would total approximately seven (7) vehicles during the AM peak hour and 20 vehicles during the PM peak hour. The AM and PM peak hour inbound vehicle trips were then divided into 60 to determine the expected average number of inbound vehicles on a per minute basis during the peak hour. It was determined that an arrival rate of roughly one vehicle every 8 minutes during the AM peak hour and

approximately one vehicle every three minutes during the PM peak hour could be expected.

In order to account for potential peak arrival periods, the inbound arrival rate was multiplied by an entry peaking factor of 2.0. An average vehicle length of 20 feet (which includes the bumper to bumper length of a vehicle plus the distance between queued vehicles) is then applied to develop the storage length forecast to be necessary in order to accommodate peak arrival conditions. Based on these factors, a northbound left-turn storage length of 40 feet would be needed in order to accommodate the peak inbound arrival conditions at the driveway. The proposed northbound left-turn pocket storage length on San Dimas Avenue at the project driveway ("A" Street) is approximately 120 feet. Thus, sufficient storage length is anticipated to accommodate the peak inbound arrival conditions.

Item No. 2. (c), page 2-3

"Provide details on safe access for private drive at 722 N. San Dimas Avenue, taking into account that the intersection at San Dimas Avenue and Gladstone Street do not meet the minimum requirements for a U-turn."

As you have confirmed, the reference to the 722 N. San Dimas Avenue site relates to the existing four single family residential units on the east side of San Dimas Avenue, with its driveway currently opposite the existing Equestrian Center driveway. In the current project site plan, the proposed project driveway ("A" Street) alignment would require the modification of the landscaped median such that the southbound left-turn access to the east side residential driveway would be precluded. As shown in the existing traffic count data conducted in September 2015 and contained in ***Attachment C***, the existing southbound left-turn volumes (i.e., motorists turning into the east side residential driveway) consist of two (2) vehicles and three (3) vehicles during the AM and PM peak hours, respectively. One (1) outbound vehicle was observed to turn left from the existing driveway to proceed southbound on San Dimas Avenue during the PM peak hour. With the median modification, these turning movements are expected to be affected as some current inbound and outbound routes/circulation patterns would be diverted to other roadways since u-turn maneuvers are not permitted at San Dimas Avenue/Gladstone Street. While it is recognized that there are grading issues with the relocation of the proposed project driveway in order to align with the east side residential driveway, doing so would continue to permit full access for the east side residential driveway as well as the project driveway ("A" Street).

Another option for consideration would require that the proposed landscaped median on San Dimas Avenue be reduced in length between the project driveway ("A" Street) and the east side residential driveway. This would allow for the installation of both a northbound and southbound left-turn pockets with storage lengths of approximately 40 feet each with appropriate transitions (approximately 60 feet) in

LINSCOTT LAW & GREENSPAN engineers

between. This option would shorten the northbound and southbound left-turn pocket lengths on San Dimas Avenue for both driveways (i.e., project driveway ["A" Street] and the east side residential driveway), but would retain full access to both driveways.

If a portion of the landscaped median could be removed, another option to consider is the installation of a two-way left-turn lane along this portion of San Dimas Avenue. As indicated on page 8 of the Traffic Impact Study, "…in order to maintain full access (i.e., left-turn and right-turn ingress and egress turning movements) for the existing east side residential driveway and provide adequate sight distances for both driveways (i.e., project driveway and the east side residential driveway) as well as motorists on San Dimas Avenue, a portion of the raised median could be removed to allow the installation of a two-way left-turn lane along San Dimas Avenue for left-turn access into both the proposed project driveway and the east side residential driveway."

Please feel free to contact us should you have any questions regarding this addendum memorandum to the Oak Valley Project Traffic Impact Study.

cc: File
Stan Stringfellow, Development 1 Group, Inc.

ATTACHMENT A

ICU DATA WORKSHEETS – WEEKDAY AM AND PM PEAK HOURS

((FUTURE 2018 AND 2035 CONDITIONS – WITH CUMULATIVE MITIGATION MEASURES)

LINSCOTT, LAW & GREENSPAN, ENGINEERS
600 S. Lake Avenue, Suite 500, Pasadena, CA 91106
(626) 796-2322 Fax (626) 792-0941

INTERSECTION CAPACITY UTILIZATION

San Dimas Avenue @ Gladstone Street
Peak hr: AM
Annual Growth: 1.60%

N-S St: San Dimas Avenue
E-W St: Gladstone Street
Project: Oak Valley Project/1-15-4133-1
File: ICU3

Date: 12/01/2015
Date of Count: 2015
Projection Year: 2018

	2015 EXIST. TRAFFIC			2018 W/AMBIENT GROWTH			2018 W/PROJECT SITE TRAFFIC				2018 W/PROJECT MITIGATION				2018 W/RELATED PROJECTS				2018 W/REGIONAL MITIGATION [3]			
	1	2	V/C	Added	Total	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C
Movement	Volume	Capacity	Ratio	Volume	Volume	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio
Nb Left	115	1600	0.072 *	6	121	0.075 *	0	121	1600	0.075 *	0	121	1600	0.075 *	3	124	1600	0.077 *	0	124	1600	0.077 *
Nb Thru	274	1600	0.188	13	287	0.197	1	288	1600	0.198	0	288	1600	0.198	7	295	1600	0.202	0	295	1600	0.202
Nb Right	27	0	-	1	28	-	0	28	0	-	0	28	0	-	0	28	0	-	0	28	0	-
Sb Left	57	1600	0.036	3	60	0.037	3	63	1600	0.039	0	63	1600	0.039	6	69	1600	0.043	0	69	1600	0.043
Sb Thru	406	1600	0.254 *	19	425	0.266 *	2	427	1600	0.267 *	0	427	1600	0.267 *	7	434	1600	0.272 *	0	434	1600	0.272 *
Sb Right	69	1600	0.043	3	72	0.045	2	74	1600	0.046	0	74	1600	0.046	2	76	1600	0.048	0	76	1600	0.048
Eb Left	56	0	0.035 *	3	59	0.037 *	1	60	0	0.037 *	0	60	0	0.037 *	2	62	0	0.039 *	0	62	0	0.039
Eb Thru	123	1600	0.149	6	129	0.156	0	129	1600	0.157	0	129	1600	0.157	2	131	1600	0.160	0	131	1600	0.160 *
Eb Right	59	0	-	3	62	-	0	62	0	-	0	62	0	-	2	64	0	-	0	64	0	-
Wb Left	27	0	0.017	1	28	0.018	0	28	0	0.018	0	28	0	0.018	0	28	0	0.018	0	28	0	0.018
Wb Thru	225	1600	0.158 *	11	236	0.165 *	0	236	1600	0.165 *	0	236	1600	0.165 *	3	239	1600	0.167 *	0	239	1600	0.167 *
Wb Right	88	1600	0.055	4	92	0.058	1	93	1600	0.058	0	93	1600	0.058	2	95	1600	0.060	0	95	1600	0.060
Yellow Allowance:			0.100 *			0.100 *				0.100 *				0.100 *				0.100 *				0.100 *
ICU			0.618			0.643				0.645				0.645				0.654				0.776
LOS			B			B				B				B				B				C

09:33 AM

** Key conflicting movement as a part of ICU*
1 Counts conducted by The Traffic Solution
2 Capacity expressed in veh/hour of green
3 Cumulative mitigation measure consists of providing an east-west split phase operation.

LINSCOTT, LAW & GREENSPAN, ENGINEERS
600 S. Lake Avenue, Suite 500, Pasadena, CA 91106
(626) 796-2322 Fax (626) 792-0941

INTERSECTION CAPACITY UTILIZATION

San Dimas Avenue @ Gladstone Street
Peak hr: PM
Annual Growth: 1.60%

N-S St: San Dimas Avenue
E-W St: Gladstone Street
Project: Oak Valley Project/1-15-4133-1
File: ICU3

Date: 12/01/2015
Date of Count: 2015
Projection Year: 2018

	2015 EXIST. TRAFFIC			2018 W/AMBIENT GROWTH			2018 W/PROJECT SITE TRAFFIC				2018 W/PROJECT MITIGATION				2018 W/RELATED PROJECTS				2018 W/REGIONAL MITIGATION [3]			
	1	2	V/C	Added	Total	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C
Movement	Volume	Capacity	Ratio	Volume	Volume	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio
Nb Left	92	1600	0.058	4	96	0.060	0	96	1600	0.060	0	96	1600	0.060	10	106	1600	0.067	0	106	1600	0.067
Nb Thru	458	1600	0.321 *	22	480	0.336 *	2	482	1600	0.337 *	0	482	1600	0.337 *	16	498	1600	0.347 *	0	498	1600	0.347 *
Nb Right	55	0	-	3	58	-	0	58	0	-	0	58	0	-	0	58	0	-	0	58	0	-
Sb Left	97	1600	0.061 *	5	102	0.064 *	2	104	1600	0.065 *	0	104	1600	0.065 *	4	108	1600	0.067 *	0	108	1600	0.067 *
Sb Thru	416	1600	0.260	20	436	0.272	1	437	1600	0.273	0	437	1600	0.273	16	453	1600	0.283	0	453	1600	0.283
Sb Right	38	1600	0.024	2	40	0.025	2	42	1600	0.026	0	42	1600	0.026	3	45	1600	0.028	0	45	1600	0.028
Eb Left	74	0	0.046	4	78	0.048	3	81	0	0.050	0	81	0	0.050	3	84	0	0.052	0	84	0	0.052
Eb Thru	554	1600	0.465 *	27	581	0.487 *	0	581	1600	0.489 *	0	581	1600	0.489 *	10	591	1600	0.504 *	0	591	1600	0.504 *
Eb Right	116	0	-	6	122	-	0	122	0	-	0	122	0	-	10	132	0	-	0	132	0	-
Wb Left	20	0	0.013 *	1	21	0.013 *	0	21	0	0.013 *	0	21	0	0.013 *	0	21	0	0.013 *	0	21	0	0.013
Wb Thru	228	1600	0.155	11	239	0.162	0	239	1600	0.162	0	239	1600	0.162	11	250	1600	0.169	0	250	1600	0.169 *
Wb Right	41	1600	0.026	2	43	0.027	4	47	1600	0.029	0	47	1600	0.029	6	53	1600	0.033	0	53	1600	0.033
Yellow Allowance:			0.100 *			0.100 *				0.100 *				0.100 *				0.100 *				0.100 *
ICU			0.959			1.000				1.004				1.004				1.031				1.187
LOS			E			E				F				F				F				F

09:33 AM

** Key conflicting movement as a part of ICU*
1 Counts conducted by The Traffic Solution
2 Capacity expressed in veh/hour of green
3 Cumulative mitigation measure consists of providing an east-west split phase operation.

LINSCOTT, LAW & GREENSPAN, ENGINEERS
600 S. Lake Avenue, Suite 500, Pasadena, CA 91106
(626) 796-2322 Fax (626) 792-0941

INTERSECTION CAPACITY UTILIZATION

San Dimas Avenue @ Gladstone Street
Peak hr: AM
Annual Growth: 1.60%

N-S St: San Dimas Avenue
E-W St: Gladstone Street
Project: Oak Valley Project/1-15-4133-1
File: ICU3

Date: 12/01/2015
Date of Count: 2015
Projection Year: 2018

	2015 EXIST. TRAFFIC			2018 W/AMBIENT GROWTH			2018 W/PROJECT SITE TRAFFIC				2018 W/PROJECT MITIGATION				2018 W/RELATED PROJECTS				2018 W/REGIONAL MITIGATION [3]			
	1	2	V/C	Added	Total	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C
Movement	Volume	Capacity	Ratio	Volume	Volume	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio
Nb Left	115	1600	0.072 *	6	121	0.075 *	0	121	1600	0.075 *	0	121	1600	0.075 *	3	124	1600	0.077 *	0	124	1600	0.077 *
Nb Thru	274	1600	0.188	13	287	0.197	1	288	1600	0.198	0	288	1600	0.198	7	295	1600	0.202	0	295	1600	0.202
Nb Right	27	0	-	1	28	-	0	28	0	-	0	28	0	-	0	28	0	-	0	28	0	-
Sb Left	57	1600	0.036	3	60	0.037	3	63	1600	0.039	0	63	1600	0.039	6	69	1600	0.043	0	69	1600	0.043
Sb Thru	406	1600	0.254 *	19	425	0.266 *	2	427	1600	0.267 *	0	427	1600	0.267 *	7	434	1600	0.272 *	0	434	1600	0.272 *
Sb Right	69	1600	0.043	3	72	0.045	2	74	1600	0.046	0	74	1600	0.046	2	76	1600	0.048	0	76	1600	0.048
Eb Left	56	0	0.035 *	3	59	0.037 *	1	60	0	0.037 *	0	60	0	0.037 *	2	62	0	0.039 *	0	62	0	0.039
Eb Thru	123	1600	0.149	6	129	0.156	0	129	1600	0.157	0	129	1600	0.157	2	131	1600	0.160	0	131	1600	0.120 *
Eb Right	59	0	-	3	62	-	0	62	0	-	0	62	0	-	2	64	0	-	0	64	1600	0.040
Wb Left	27	0	0.017	1	28	0.018	0	28	0	0.018	0	28	0	0.018	0	28	0	0.018	0	28	0	0.018
Wb Thru	225	1600	0.158 *	11	236	0.165 *	0	236	1600	0.165 *	0	236	1600	0.165 *	3	239	1600	0.167 *	0	239	1600	0.167 *
Wb Right	88	1600	0.055	4	92	0.058	1	93	1600	0.058	0	93	1600	0.058	2	95	1600	0.060	0	95	1600	0.060
Yellow Allowance:			0.100 *			0.100 *				0.100 *				0.100 *				0.100 *				0.100 *
ICU			0.618			0.643				0.645				0.645				0.654				0.736
LOS			B			B				B				B				B				C

08:41 AM

** Key conflicting movement as a part of ICU*
1 Counts conducted by The Traffic Solution
2 Capacity expressed in veh/hour of green
3 Cumulative mitigation measure consists of modifying the eastbound approach to provide one shared left/through lane and one right-turn only lane and providing an east-west split phase operation.

LINSCOTT, LAW & GREENSPAN, ENGINEERS
600 S. Lake Avenue, Suite 500, Pasadena, CA 91106
(626) 796-2322 Fax (626) 792-0941

INTERSECTION CAPACITY UTILIZATION

San Dimas Avenue @ Gladstone Street
Peak hr: PM
Annual Growth: 1.60%

N-S St: San Dimas Avenue
E-W St: Gladstone Street
Project: Oak Valley Project/1-15-4133-1
File: ICU3

Date: 12/01/2015
Date of Count: 2015
Projection Year: 2018

	2015 EXIST. TRAFFIC			2018 W/AMBIENT GROWTH			2018 W/PROJECT SITE TRAFFIC				2018 W/PROJECT MITIGATION				2018 W/RELATED PROJECTS				2018 W/REGIONAL MITIGATION [3]			
	1	2	V/C	Added	Total	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C
Movement	Volume	Capacity	Ratio	Volume	Volume	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio
Nb Left	92	1600	0.058	4	96	0.060	0	96	1600	0.060	0	96	1600	0.060	10	106	1600	0.067	0	106	1600	0.067
Nb Thru	458	1600	0.321 *	22	480	0.336 *	2	482	1600	0.337 *	0	482	1600	0.337 *	16	498	1600	0.347 *	0	498	1600	0.347 *
Nb Right	55	0	-	3	58	-	0	58	0	-	0	58	0	-	0	58	0	-	0	58	0	-
Sb Left	97	1600	0.061 *	5	102	0.064 *	2	104	1600	0.065 *	0	104	1600	0.065 *	4	108	1600	0.067 *	0	108	1600	0.067 *
Sb Thru	416	1600	0.260	20	436	0.272	1	437	1600	0.273	0	437	1600	0.273	16	453	1600	0.283	0	453	1600	0.283
Sb Right	38	1600	0.024	2	40	0.025	2	42	1600	0.026	0	42	1600	0.026	3	45	1600	0.028	0	45	1600	0.028
Eb Left	74	0	0.046	4	78	0.048	3	81	0	0.050	0	81	0	0.050	3	84	0	0.052	0	84	0	0.052
Eb Thru	554	1600	0.465 *	27	581	0.487 *	0	581	1600	0.489 *	0	581	1600	0.489 *	10	591	1600	0.504 *	0	591	1600	0.421 *
Eb Right	116	0	-	6	122	-	0	122	0	-	0	122	0	-	10	132	0	-	0	132	1600	0.082
Wb Left	20	0	0.013 *	1	21	0.013 *	0	21	0	0.013 *	0	21	0	0.013 *	0	21	0	0.013 *	0	21	0	0.013
Wb Thru	228	1600	0.155	11	239	0.162	0	239	1600	0.162	0	239	1600	0.162	11	250	1600	0.169	0	250	1600	0.169 *
Wb Right	41	1600	0.026	2	43	0.027	4	47	1600	0.029	0	47	1600	0.029	6	53	1600	0.033	0	53	1600	0.033
Yellow Allowance:			0.100 *			0.100 *				0.100 *				0.100 *				0.100 *				0.100 *
ICU			0.959			1.000				1.004				1.004				1.031				1.105
LOS			E			E				F				F				F				F

08:41 AM

** Key conflicting movement as a part of ICU*
1 Counts conducted by The Traffic Solution
2 Capacity expressed in veh/hour of green
3 Cumulative mitigation measure consists of modifying the eastbound approach to provide one shared left/through lane and one right-turn only lane and providing an east-west split phase operation.

LINSCOTT, LAW & GREENSPAN, ENGINEERS
600 S. Lake Avenue, Suite 500, Pasadena, CA 91106
(626) 796-2322 Fax (626) 792-0941

INTERSECTION CAPACITY UTILIZATION

San Dimas Avenue @ Gladstone Street
Peak hr: AM
Annual Growth: 0.84%

N-S St: San Dimas Avenue
E-W St: Gladstone Street
Project: Oak Valley Project/1-15-4133-1
File: ICU3

Date: 12/01/2015
Date of Count: 2015
Projection Year: 2035

	2015 EXIST. TRAFFIC			2035 W/AMBIENT GROWTH			2035 W/PROJECT SITE TRAFFIC				2035 W/PROJECT MITIGATION				2035 W/RELATED PROJECTS				2035 W/REGIONAL MITIGATION [3]			
	1	2	V/C	Added	Total	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C
Movement	Volume	Capacity	Ratio	Volume	Volume	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio
Nb Left	115	1600	0.072 *	19	134	0.084 *	0	134	1600	0.084 *	0	134	1600	0.084 *	3	137	1600	0.086 *	0	137	1600	0.086 *
Nb Thru	274	1600	0.188	46	320	0.220	1	321	1600	0.220	0	321	1600	0.220	7	328	1600	0.225	0	328	1600	0.225
Nb Right	27	0	-	5	32	-	0	32	0	-	0	32	0	-	0	32	0	-	0	32	0	-
Sb Left	57	1600	0.036	10	67	0.042	3	70	1600	0.043	0	70	1600	0.043	6	76	1600	0.047	0	76	1600	0.047
Sb Thru	406	1600	0.254 *	68	474	0.296 *	2	476	1600	0.298 *	0	476	1600	0.298 *	7	483	1600	0.302 *	0	483	1600	0.302 *
Sb Right	69	1600	0.043	12	81	0.050	2	83	1600	0.052	0	83	1600	0.052	2	85	1600	0.053	0	85	1600	0.053
Eb Left	56	0	0.035 *	9	65	0.041 *	1	66	0	0.042 *	0	66	0	0.042 *	2	68	0	0.043 *	0	68	0	0.043
Eb Thru	123	1600	0.149	21	144	0.174	0	144	1600	0.174	0	144	1600	0.174	2	146	1600	0.178	0	146	1600	0.178 *
Eb Right	59	0	-	10	69	-	0	69	0	-	0	69	0	-	2	71	0	-	0	71	0	-
Wb Left	27	0	0.017	5	32	0.020	0	32	0	0.020	0	32	0	0.020	0	32	0	0.020	0	32	0	0.020
Wb Thru	225	1600	0.158 *	38	263	0.184 *	0	263	1600	0.184 *	0	263	1600	0.184 *	3	266	1600	0.186 *	0	266	1600	0.186 *
Wb Right	88	1600	0.055	15	103	0.064	1	104	1600	0.065	0	104	1600	0.065	2	106	1600	0.066	0	106	1600	0.066
Yellow Allowance:			0.100 *			0.100 *				0.100 *				0.100 *				0.100 *				0.100 *
ICU			0.618			0.705				0.707				0.707				0.716				0.852
LOS			B			C				C				C				C				D

09:37 AM

** Key conflicting movement as a part of ICU*
1 Counts conducted by The Traffic Solution
2 Capacity expressed in veh/hour of green
3 Cumulative mitigation measure consists of providing an east-west split phase operation.

LINSCOTT, LAW & GREENSPAN, ENGINEERS
600 S. Lake Avenue, Suite 500, Pasadena, CA 91106
(626) 796-2322 Fax (626) 792-0941

INTERSECTION CAPACITY UTILIZATION

San Dimas Avenue @ Gladstone Street
Peak hr: PM
Annual Growth: 0.84%

N-S St: San Dimas Avenue
E-W St: Gladstone Street
Project: Oak Valley Project/1-15-4133-1
File: ICU3

Date: 12/01/2015
Date of Count: 2015
Projection Year: 2035

	2015 EXIST. TRAFFIC			2035 W/AMBIENT GROWTH			2035 W/PROJECT SITE TRAFFIC				2035 W/PROJECT MITIGATION				2035 W/RELATED PROJECTS				2035 W/REGIONAL MITIGATION [3]			
	1	2	V/C	Added	Total	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C
Movement	Volume	Capacity	Ratio	Volume	Volume	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio
Nb Left	92	1600	0.058	15	107	0.067	0	107	1600	0.067	0	107	1600	0.067	10	117	1600	0.073	0	117	1600	0.073
Nb Thru	458	1600	0.321 *	77	535	0.374 *	2	537	1600	0.376 *	0	537	1600	0.376 *	16	553	1600	0.386 *	0	553	1600	0.386 *
Nb Right	55	0	-	9	64	-	0	64	0	-	0	64	0	-	0	64	0	-	0	64	0	-
Sb Left	97	1600	0.061 *	16	113	0.071 *	2	115	1600	0.072 *	0	115	1600	0.072 *	4	119	1600	0.075 *	0	119	1600	0.075 *
Sb Thru	416	1600	0.260	70	486	0.304	1	487	1600	0.304	0	487	1600	0.304	16	503	1600	0.314	0	503	1600	0.314
Sb Right	38	1600	0.024	6	44	0.028	2	46	1600	0.029	0	46	1600	0.029	3	49	1600	0.031	0	49	1600	0.031
Eb Left	74	0	0.046	12	86	0.054	3	89	0	0.056	0	89	0	0.056	3	92	0	0.058	0	92	0	0.058
Eb Thru	554	1600	0.465 *	93	647	0.543 *	0	647	1600	0.545 *	0	647	1600	0.545 *	10	657	1600	0.559 *	0	657	1600	0.559 *
Eb Right	116	0	-	19	135	-	0	135	0	-	0	135	0	-	10	145	0	-	0	145	0	-
Wb Left	20	0	0.013 *	3	23	0.015 *	0	23	0	0.015 *	0	23	0	0.015 *	0	23	0	0.015 *	0	23	0	0.015
Wb Thru	228	1600	0.155	38	266	0.181	0	266	1600	0.181	0	266	1600	0.181	11	277	1600	0.188	0	277	1600	0.188 *
Wb Right	41	1600	0.026	7	48	0.030	4	52	1600	0.032	0	52	1600	0.032	6	58	1600	0.036	0	58	1600	0.036
Yellow Allowance:			0.100 *			0.100 *				0.100 *				0.100 *				0.100 *				0.100 *
ICU			0.959			1.103				1.107				1.107				1.134				1.308
LOS			E			F				F				F				F				F

09:37 AM

** Key conflicting movement as a part of ICU*
1 Counts conducted by The Traffic Solution
2 Capacity expressed in veh/hour of green
3 Cumulative mitigation measure consists of providing an east-west split phase operation.

LINSCOTT, LAW & GREENSPAN, ENGINEERS
600 S. Lake Avenue, Suite 500, Pasadena, CA 91106
(626) 796-2322 Fax (626) 792-0941

INTERSECTION CAPACITY UTILIZATION

San Dimas Avenue @ Gladstone Street
Peak hr: AM
Annual Growth: 0.84%

N-S St: San Dimas Avenue
E-W St: Gladstone Street
Project: Oak Valley Project/1-15-4133-1
File: ICU3

Date: 12/01/2015
Date of Count: 2015
Projection Year: 2035

	2015 EXIST. TRAFFIC			2035 W/AMBIENT GROWTH			2035 W/PROJECT SITE TRAFFIC				2035 W/PROJECT MITIGATION				2035 W/RELATED PROJECTS				2035 W/REGIONAL MITIGATION [3]			
	1	2	V/C	Added	Total	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C
Movement	Volume	Capacity	Ratio	Volume	Volume	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio
Nb Left	115	1600	0.072 *	19	134	0.084 *	0	134	1600	0.084 *	0	134	1600	0.084 *	3	137	1600	0.086 *	0	137	1600	0.086 *
Nb Thru	274	1600	0.188	46	320	0.220	1	321	1600	0.220	0	321	1600	0.220	7	328	1600	0.225	0	328	1600	0.225
Nb Right	27	0	-	5	32	-	0	32	0	-	0	32	0	-	0	32	0	-	0	32	0	-
Sb Left	57	1600	0.036	10	67	0.042	3	70	1600	0.043	0	70	1600	0.043	6	76	1600	0.047	0	76	1600	0.047
Sb Thru	406	1600	0.254 *	68	474	0.296 *	2	476	1600	0.298 *	0	476	1600	0.298 *	7	483	1600	0.302 *	0	483	1600	0.302 *
Sb Right	69	1600	0.043	12	81	0.050	2	83	1600	0.052	0	83	1600	0.052	2	85	1600	0.053	0	85	1600	0.053
Eb Left	56	0	0.035 *	9	65	0.041 *	1	66	0	0.042 *	0	66	0	0.042 *	2	68	0	0.043 *	0	68	0	0.043
Eb Thru	123	1600	0.149	21	144	0.174	0	144	1600	0.174	0	144	1600	0.174	2	146	1600	0.178	0	146	1600	0.134 *
Eb Right	59	0	-	10	69	-	0	69	0	-	0	69	0	-	2	71	0	-	0	71	1600	0.044
Wb Left	27	0	0.017	5	32	0.020	0	32	0	0.020	0	32	0	0.020	0	32	0	0.020	0	32	0	0.020
Wb Thru	225	1600	0.158 *	38	263	0.184 *	0	263	1600	0.184 *	0	263	1600	0.184 *	3	266	1600	0.186 *	0	266	1600	0.186 *
Wb Right	88	1600	0.055	15	103	0.064	1	104	1600	0.065	0	104	1600	0.065	2	106	1600	0.066	0	106	1600	0.066
Yellow Allowance:			0.100 *			0.100 *				0.100 *				0.100 *				0.100 *				0.100 *
ICU			0.618			0.705				0.707				0.707				0.716				0.807
LOS			B			C				C				C				C				D

09:36 AM

** Key conflicting movement as a part of ICU*
1 Counts conducted by The Traffic Solution
2 Capacity expressed in veh/hour of green
3 Cumulative mitigation measure consists of modifying the eastbound approach to provide one shared left/through lane and one right-turn only lane and providing an east-west split phase operation.

LINSCOTT, LAW & GREENSPAN, ENGINEERS
600 S. Lake Avenue, Suite 500, Pasadena, CA 91106
(626) 796-2322 Fax (626) 792-0941

INTERSECTION CAPACITY UTILIZATION

San Dimas Avenue @ Gladstone Street
Peak hr: PM
Annual Growth: 0.84%

N-S St: San Dimas Avenue
E-W St: Gladstone Street
Project: Oak Valley Project/1-15-4133-1
File: ICU3

Date: 12/01/2015
Date of Count: 2015
Projection Year: 2035

	2015 EXIST. TRAFFIC			2035 W/AMBIENT GROWTH			2035 W/PROJECT SITE TRAFFIC				2035 W/PROJECT MITIGATION				2035 W/RELATED PROJECTS				2035 W/REGIONAL MITIGATION [3]			
	1	2	V/C	Added	Total	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C
Movement	Volume	Capacity	Ratio	Volume	Volume	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio
Nb Left	92	1600	0.058	15	107	0.067	0	107	1600	0.067	0	107	1600	0.067	10	117	1600	0.073	0	117	1600	0.073
Nb Thru	458	1600	0.321 *	77	535	0.374 *	2	537	1600	0.376 *	0	537	1600	0.376 *	16	553	1600	0.386 *	0	553	1600	0.386 *
Nb Right	55	0	-	9	64	-	0	64	0	-	0	64	0	-	0	64	0	-	0	64	0	-
Sb Left	97	1600	0.061 *	16	113	0.071 *	2	115	1600	0.072 *	0	115	1600	0.072 *	4	119	1600	0.075 *	0	119	1600	0.075 *
Sb Thru	416	1600	0.260	70	486	0.304	1	487	1600	0.304	0	487	1600	0.304	16	503	1600	0.314	0	503	1600	0.314
Sb Right	38	1600	0.024	6	44	0.028	2	46	1600	0.029	0	46	1600	0.029	3	49	1600	0.031	0	49	1600	0.031
Eb Left	74	0	0.046	12	86	0.054	3	89	0	0.056	0	89	0	0.056	3	92	0	0.058	0	92	0	0.058
Eb Thru	554	1600	0.465 *	93	647	0.543 *	0	647	1600	0.545 *	0	647	1600	0.545 *	10	657	1600	0.559 *	0	657	1600	0.468 *
Eb Right	116	0	-	19	135	-	0	135	0	-	0	135	0	-	10	145	0	-	0	145	1600	0.091
Wb Left	20	0	0.013 *	3	23	0.015 *	0	23	0	0.015 *	0	23	0	0.015 *	0	23	0	0.015 *	0	23	0	0.015
Wb Thru	228	1600	0.155	38	266	0.181	0	266	1600	0.181	0	266	1600	0.181	11	277	1600	0.188	0	277	1600	0.188 *
Wb Right	41	1600	0.026	7	48	0.030	4	52	1600	0.032	0	52	1600	0.032	6	58	1600	0.036	0	58	1600	0.036
Yellow Allowance:			0.100 *			0.100 *				0.100 *				0.100 *				0.100 *				0.100 *
ICU			0.959			1.103				1.107				1.107				1.134				1.217
LOS			E			F				F				F				F				F

09:36 AM

** Key conflicting movement as a part of ICU*
1 Counts conducted by The Traffic Solution
2 Capacity expressed in veh/hour of green
3 Cumulative mitigation measure consists of modifying the eastbound approach to provide one shared left/through lane and one right-turn only lane and providing an east-west split phase operation.

ATTACHMENT B

TRAFFIC SIGNAL WARRANTS

SAN DIMAS AVENUE/PROJECT DRIVEWAY ("A" STREET)
FUTURE 2018 AND 2035 CUMULATIVE WITH PROJECT CONDITIONS

San Dimas Avenue/Project Driveway ("A" Street)

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 1 of 5)

COUNT DATE 9/1/15
CALC _____ DATE 12/1/15
CHK _____ DATE _____

DIST ____ CO ____ RTE ____ PM ____

Major St: San Dimas Avenue — Critical Approach Speed 40 mph
Minor St: Project Driveway ("A" Street) — Critical Approach Speed _____ mph

Speed limit or critical speed on major street traffic > 40 mph..... ☐
or
In built up area of isolated community of < 10,000 population..... ☐
} **RURAL (R)**

☑ **URBAN (U)**

WARRANT 1 - Eight Hour Vehicular Volume **SATISFIED YES ☐ NO ☐**
(Condition A or Condition B or combination of A and B must be satisfied)

Condition A - Minimum Vehicle Volume **100% SATISFIED YES ☐ NO ☐**
80% SATISFIED YES ☐ NO ☐

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)												Hour
	U	R	U	R									
APPROACH LANES	1		2 or More										
Both Approaches Major Street	500 (400)	350 (280)	600 (480)	420 (336)									
Highest Approach Minor Street	150 (120)	105 (84)	200 (160)	140 (112)									

Condition B - Interruption of Continuous Traffic **100% SATISFIED YES ☐ NO ☐**
80% SATISFIED YES ☐ NO ☐

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)												Hour
	U	R	U	R									
APPROACH LANES	1		2 or More										
Both Approaches Major Street	750 (600)	525 (420)	900 (720)	630 (504)									
Highest Approach Minor Street	75 (60)	53 (42)	100 (80)	70 (56)									

Combination of Conditions A & B **SATISFIED YES ☐ NO ☐**

REQUIREMENT	CONDITION	✓	FULFILLED
TWO CONDITIONS SATISFIED 80%	A. MINIMUM VEHICULAR VOLUME		Yes ☐ No ☐
	AND, B. INTERRUPTION OF CONTINUOUS TRAFFIC		
AND, AN ADEQUATE TRIAL OF OTHER ALTERNATIVES THAT COULD CAUSE LESS DELAY AND INCONVENIENCE TO TRAFFIC HAS FAILED TO SOLVE THE TRAFFIC PROBLEMS			Yes ☐ No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

San Dimas Avenue/Project Driveway ("A" Street)

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 5)

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED* YES ☐ NO ☐**

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One	2 or More					Hour
Both Approaches - Major Street							
Higher Approach - Minor Street							

*All plotted points fall above the applicable curve in Figure 4C-1. (URBAN AREAS)	Yes ☐	No ☐
OR, All plotted points fall above the applicable curve in Figure 4C-2. (RURAL AREAS)	Yes ☐	No ☐

WARRANT 3 - Peak Hour **SATISFIED YES ☐ NO ☑**
(Part A or Part B must be satisfied)

PART A **SATISFIED YES ☐ NO ☑**
(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND (30 veh)*(12.6 sec/veh)/(3600 sec/hr) = 0.105 veh-hrs	Yes ☐	No ☑
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	Yes ☐	No ☑
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	Yes ☑	No ☐

PART B **SATISFIED YES ☐ NO ☑**

APPROACH LANES	One	2 or More	AM Peak Hour	Hour
Both Approaches - Major Street		✓	1038	
Higher Approach - Minor Street	✓		30	

The plotted point falls above the applicable curve in Figure 4C-3. (URBAN AREAS)	Yes ☐	No ☑
OR, The plotted point falls above the applicable curve in Figure 4C-4. (RURAL AREAS)	Yes ☐	No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

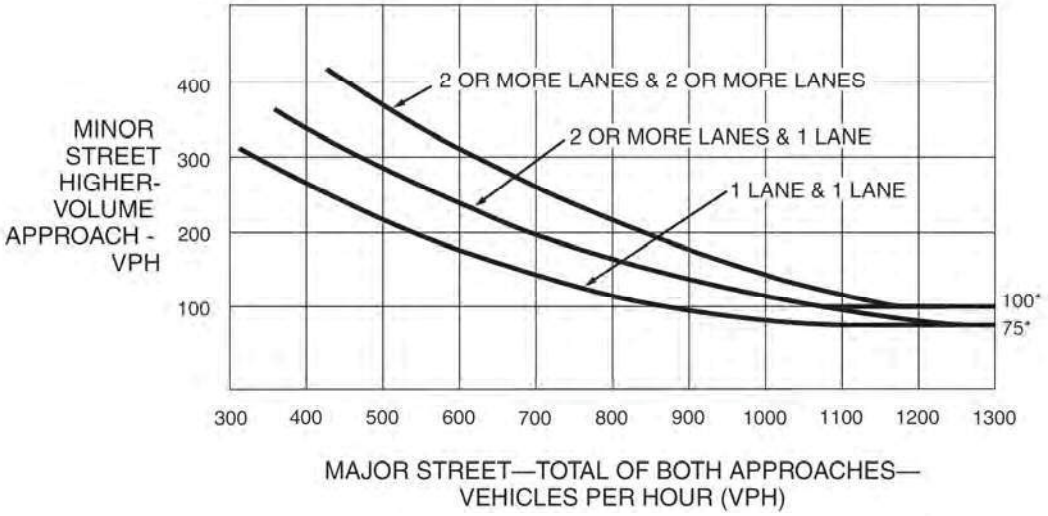
San Dimas Avenue/Project Driveway ("A" Street)

Figure 4C-3. Warrant 3, Peak Hour

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

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



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

San Dimas Avenue/Project Driveway ("A" Street)

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 4 of 5)

WARRANT 6 - Coordinated Signal System (All Parts Must Be Satisfied) **SATISFIED YES ☐ NO ☑**

MINIMUM REQUIREMENTS	DISTANCE TO NEAREST SIGNAL	
≥ 1000 ft	N 475 ft, S 830 ft, E n/a ft, W n/a ft	Yes ☐ No ☑
On a one-way street or a street that has traffic predominantly in one direction, the adjacent traffic control signals are so far apart that they do not provide the necessary degree of vehicular platooning.		Yes ☐ No ☑
OR, On a two-way street, adjacent traffic control signals do not provide the necessary degree of platooning and the proposed and adjacent traffic control signals will collectively provide a progressive operation.		

WARRANT 7 - Crash Experience Warrant (All Parts Must Be Satisfied) **SATISFIED YES ☐ NO ☐**

Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce the crash frequency.			Yes ☐ No ☐
REQUIREMENTS	Number of crashes reported within a 12 month period susceptible to correction by a traffic signal, and involving injury or damage exceeding the requirements for a reportable crash.		Yes ☐ No ☐
5 OR MORE			
REQUIREMENTS	CONDITIONS	✓	
ONE CONDITION SATISFIED 80%	Warrant 1, Condition A - Minimum Vehicular Volume		Yes ☐ No ☐
	OR, Warrant 1, Condition B - Interruption of Continuous Traffic		
	OR, Warrant 4, Pedestrian Volume Condition Ped Vol ≥ 80% of Figure 4C-5 through Figure 4C-8		

WARRANT 8 - Roadway Network (All Parts Must Be Satisfied) **SATISFIED YES ☐ NO ☐**

MINIMUM VOLUME REQUIREMENTS	ENTERING VOLUMES - ALL APPROACHES		✓	FULFILLED
1000 Veh/Hr	During Typical Weekday Peak Hour _____ Veh/Hr and has 5-year projected traffic volumes that meet one or more of Warrants 1, 2, and 3 during an average weekday.			Yes ☐ No ☐
	OR During Each of Any 5 Hrs. of a Sat. or Sun _____ Veh/Hr			
CHARACTERISTICS OF MAJOR ROUTES		MAJOR ROUTE A	MAJOR ROUTE B	
Hwy. System Serving as Principal Network for Through Traffic				
Rural or Suburban Highway Outside Of, Entering, or Traversing a City				
Appears as Major Route on an Official Plan				
Any Major Route Characteristics Met, Both Streets				Yes ☐ No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

San Dimas Avenue/Project Driveway ("A" Street)

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 1 of 5)

COUNT DATE 9/1/15
CALC _____ DATE 12/1/15
CHK _____ DATE _____

DIST ____ CO ____ RTE ____ PM ____

Major St: San Dimas Avenue — Critical Approach Speed 40 mph
Minor St: Project Driveway ("A" Street) — Critical Approach Speed _____ mph

Speed limit or critical speed on major street traffic > 40 mph..... ☐ or
In built up area of isolated community of < 10,000 population..... ☐ } **RURAL (R)**
☑ **URBAN (U)**

WARRANT 1 - Eight Hour Vehicular Volume **SATISFIED YES ☐ NO ☐**
(Condition A or Condition B or combination of A and B must be satisfied)

Condition A - Minimum Vehicle Volume **100% SATISFIED YES ☐ NO ☐**
80% SATISFIED YES ☐ NO ☐

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)												Hour
	U	R	U	R									
APPROACH LANES	1		2 or More										
Both Approaches Major Street	500 (400)	350 (280)	600 (480)	420 (336)									
Highest Approach Minor Street	150 (120)	105 (84)	200 (160)	140 (112)									

Condition B - Interruption of Continuous Traffic **100% SATISFIED YES ☐ NO ☐**
80% SATISFIED YES ☐ NO ☐

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)												Hour
	U	R	U	R									
APPROACH LANES	1		2 or More										
Both Approaches Major Street	750 (600)	525 (420)	900 (720)	630 (504)									
Highest Approach Minor Street	75 (60)	53 (42)	100 (80)	70 (56)									

Combination of Conditions A & B **SATISFIED YES ☐ NO ☐**

REQUIREMENT	CONDITION	✓	FULFILLED
TWO CONDITIONS SATISFIED 80%	A. MINIMUM VEHICULAR VOLUME		Yes ☐ No ☐
	AND, B. INTERRUPTION OF CONTINUOUS TRAFFIC		
AND, AN ADEQUATE TRIAL OF OTHER ALTERNATIVES THAT COULD CAUSE LESS DELAY AND INCONVENIENCE TO TRAFFIC HAS FAILED TO SOLVE THE TRAFFIC PROBLEMS			Yes ☐ No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

San Dimas Avenue/Project Driveway ("A" Street)

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 5)

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED* YES ☐ NO ☐**

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One	2 or More					Hour
Both Approaches - Major Street							
Higher Approach - Minor Street							

*All plotted points fall above the applicable curve in Figure 4C-1. (URBAN AREAS)	Yes ☐	No ☐
OR, All plotted points fall above the applicable curve in Figure 4C-2. (RURAL AREAS)	Yes ☐	No ☐

WARRANT 3 - Peak Hour **SATISFIED YES ☐ NO ☑**
(Part A or Part B must be satisfied)

PART A **SATISFIED YES ☐ NO ☑**
(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND (30 veh)*(13.2 sec/veh)/(3600 sec/hr) = 0.11 veh-hrs	Yes ☐	No ☑
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	Yes ☐	No ☑
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	Yes ☑	No ☐

PART B **SATISFIED YES ☐ NO ☑**

APPROACH LANES	One	2 or More	AM Peak Hour	Hour
Both Approaches - Major Street		✓	1154	
Higher Approach - Minor Street	✓		30	

The plotted point falls above the applicable curve in Figure 4C-3. (URBAN AREAS)	Yes ☐	No ☑
OR, The plotted point falls above the applicable curve in Figure 4C-4. (RURAL AREAS)	Yes ☐	No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

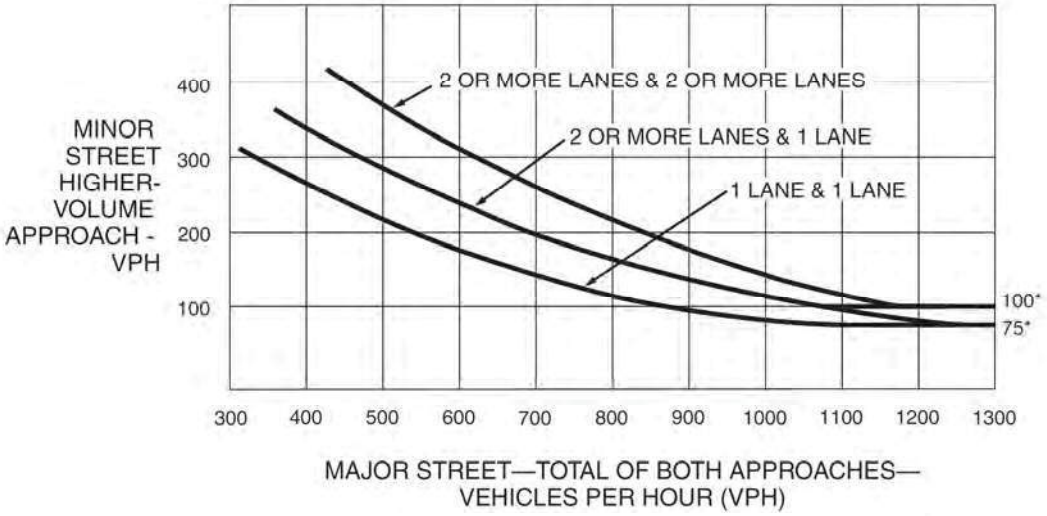
San Dimas Avenue/Project Driveway ("A" Street)

Figure 4C-3. Warrant 3, Peak Hour

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

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



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

San Dimas Avenue/Project Driveway ("A" Street)

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 4 of 5)

WARRANT 6 - Coordinated Signal System (All Parts Must Be Satisfied) **SATISFIED YES ☐ NO ☑**

MINIMUM REQUIREMENTS	DISTANCE TO NEAREST SIGNAL	
≥ 1000 ft	N 475 ft, S 830 ft, E n/a ft, W n/a ft	Yes ☐ No ☑
On a one-way street or a street that has traffic predominantly in one direction, the adjacent traffic control signals are so far apart that they do not provide the necessary degree of vehicular platooning. OR, On a two-way street, adjacent traffic control signals do not provide the necessary degree of platooning and the proposed and adjacent traffic control signals will collectively provide a progressive operation.		Yes ☐ No ☑

WARRANT 7 - Crash Experience Warrant (All Parts Must Be Satisfied) **SATISFIED YES ☐ NO ☐**

Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce the crash frequency.			Yes ☐ No ☐
REQUIREMENTS	Number of crashes reported within a 12 month period susceptible to correction by a traffic signal, and involving injury or damage exceeding the requirements for a reportable crash.		Yes ☐ No ☐
5 OR MORE			
REQUIREMENTS	CONDITIONS	✓	
ONE CONDITION SATISFIED 80%	Warrant 1, Condition A - Minimum Vehicular Volume		Yes ☐ No ☐
	OR, Warrant 1, Condition B - Interruption of Continuous Traffic		
	OR, Warrant 4, Pedestrian Volume Condition Ped Vol ≥ 80% of Figure 4C-5 through Figure 4C-8		

WARRANT 8 - Roadway Network (All Parts Must Be Satisfied) **SATISFIED YES ☐ NO ☐**

MINIMUM VOLUME REQUIREMENTS	ENTERING VOLUMES - ALL APPROACHES		✓	FULFILLED
1000 Veh/Hr	During Typical Weekday Peak Hour _____ Veh/Hr and has 5-year projected traffic volumes that meet one or more of Warrants 1, 2, and 3 during an average weekday.			Yes ☐ No ☐
	OR During Each of Any 5 Hrs. of a Sat. or Sun _____ Veh/Hr			
CHARACTERISTICS OF MAJOR ROUTES		MAJOR ROUTE A	MAJOR ROUTE B	
Hwy. System Serving as Principal Network for Through Traffic				
Rural or Suburban Highway Outside Of, Entering, or Traversing a City				
Appears as Major Route on an Official Plan				
Any Major Route Characteristics Met, Both Streets				Yes ☐ No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

ATTACHMENT C

MANUAL INTERSECTION TRAFFIC COUNT DATA – WEEKDAY AM AND PM PEAK PERIODS

SAN DIMAS AVENUE/EAST SIDE RESIDENTIAL DRIVEWAY

INTERSECTION TURNING MOVEMENT COUNT SUMMARY

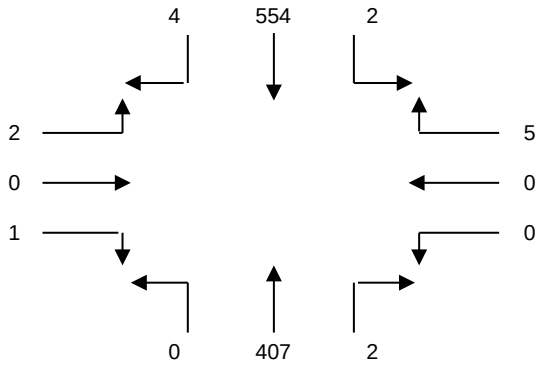
CLIENT:		LINSCOTT LAW & GREENSPAN
PROJECT:		SAN DIMAS RESIDENTIAL
DATE:		TUESDAY, SEPTEMBER 1, 2015
PERIOD:		07:00 AM TO 09:00 AM
INTERSECTION	N/S	SAN DIMAS AVENUE
	E/W	EQUESTRIAN CENTER / RESIDENTIAL DRWYS
FILE NUMBER:		3-AM

15 MINUTE	1	2	3	4	5	6	7	8	9	10	11	12
TOTALS	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT
0700-0715	1	92	1	0	0	0	0	76	0	0	0	0
0715-0730	0	109	0	0	0	0	0	83	0	0	0	0
0730-0745	0	105	0	0	0	0	0	104	0	0	0	1
0745-0800	0	152	0	2	0	0	1	134	0	0	0	0
0800-0815	2	146	1	0	0	0	0	106	0	1	0	0
0815-0830	2	131	1	2	0	0	0	82	0	0	0	0
0830-0845	0	125	0	1	0	0	1	85	0	0	0	2
0845-0900	0	113	1	0	0	0	0	94	0	1	0	0

1 HOUR	1	2	3	4	5	6	7	8	9	10	11	12	
TOTALS	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTALS
0700-0800	1	458	1	2	0	0	1	397	0	0	0	1	861
0715-0815	2	512	1	2	0	0	1	427	0	1	0	1	947
0730-0830	4	534	2	4	0	0	1	426	0	1	0	1	973
0745-0845	4	554	2	5	0	0	2	407	0	1	0	2	977
0800-0900	4	515	3	3	0	0	1	367	0	2	0	2	897

A.M. PEAK HOUR
0745-0845

EQUESTRIAN CENTER /
RESIDENTIAL DRWYS



SAN DIMAS AVENUE

THE TRAFFIC SOLUTION
329 DIAMOND STREET
ARCADIA, CALIFORNIA 91006
626.448.7978 PHONE
626.448.2877 FAX

INTERSECTION TURNING MOVEMENT COUNT SUMMARY

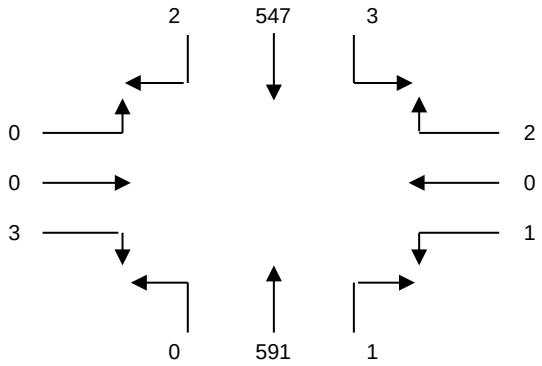
CLIENT:		LINSCOTT LAW & GREENSPAN
PROJECT:		SAN DIMAS RESIDENTIAL
DATE:		TUESDAY, SEPTEMBER 1, 2015
PERIOD:		04:00 PM TO 06:00 PM
INTERSECTION	N/S	SAN DIMAS AVENUE
	E/W	EQUESTRIAN CENTER / RESIDENTIAL DRWYS
FILE NUMBER:		3-PM

15 MINUTE	1	2	3	4	5	6	7	8	9	10	11	12
TOTALS	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT
0400-0415	0	124	1	0	0	0	0	134	0	2	0	1
0415-0430	2	116	0	0	0	0	1	123	0	0	0	0
0430-0445	2	138	1	0	0	0	0	133	0	1	0	0
0445-0500	0	136	0	1	0	0	0	140	0	2	0	0
0500-0515	0	141	1	0	0	0	0	169	0	0	0	0
0515-0530	1	138	2	1	0	1	1	131	0	0	0	0
0530-0545	1	132	0	0	0	0	0	151	0	1	0	0
0545-0600	3	117	1	1	0	0	0	124	0	1	0	0

1 HOUR	1	2	3	4	5	6	7	8	9	10	11	12	
TOTALS	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTALS
0400-0500	4	514	2	1	0	0	1	530	0	5	0	1	1058
0415-0515	4	531	2	1	0	0	1	565	0	3	0	0	1107
0430-0530	3	553	4	2	0	1	1	573	0	3	0	0	1140
0445-0545	2	547	3	2	0	1	1	591	0	3	0	0	1150
0500-0600	5	528	4	2	0	1	1	575	0	2	0	0	1118

P.M. PEAK HOUR
0445-0545

EQUESTRIAN CENTER /
RESIDENTIAL DRWYS



SAN DIMAS AVENUE

THE TRAFFIC SOLUTION
329 DIAMOND STREET
ARCADIA, CALIFORNIA 91006
626.448.7978 PHONE
626.448.2877 FAX

PEDESTRIAN - BICYCLE COUNT SUMMARY

CLIENT: LLG ENGINEERS - PASADENA

PROJECT: SAN DIMAS RESIDENTIAL

DATE: TUESDAY, SEPTEMBER 01, 2015

PERIOD: 07:00 AM TO 09:00 AM

04:00 PM TO 06:00 PM

INTERSECTION: SAN DIMAS AVENUE / EQUESTRIAN - RESIDENTIAL DRWYS

FILE: 03-AM_PM

	PEDESTRIAN MOVEMENTS			
15-MINUTE PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D
0700-0715	0	1	0	1
0715-0730	0	0	0	0
0730-0745	0	3	0	0
0745-0800	0	3	0	1
0800-0815	0	0	0	2
0815-0830	0	3	0	2
0830-0845	0	0	0	4
0845-0900	0	1	0	3

	BICYCLIST MOVEMENTS			
15-MINUTE PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D
0700-0715	0	1	0	1
0715-0730	0	0	0	1
0730-0745	0	0	0	0
0745-0800	0	2	0	0
0800-0815	0	0	0	2
0815-0830	0	1	0	0
0830-0845	0	0	0	0
0845-0900	0	0	0	0

	PEDESTRIAN MOVEMENTS				
1-HOUR PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D	TOTALS
0700-0800	0	7	0	2	9
0715-0815	0	6	0	3	9
0730-0830	0	9	0	5	14
0745-0845	0	6	0	9	15
0800-0900	0	4	0	11	15

	BICYCLIST MOVEMENTS				
1-HOUR PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D	TOTALS
0700-0800	0	3	0	2	5
0715-0815	0	2	0	3	5
0730-0830	0	3	0	2	5
0745-0845	0	3	0	2	5
0800-0900	0	1	0	2	3

THE TRAFFIC SOLUTION
329 DIAMOND STREET
ARCADIA, CALIFORNIA 91006

PEDESTRIAN - BICYCLE COUNT SUMMARY

CLIENT: LLG ENGINEERS - PASADENA

PROJECT: SAN DIMAS RESIDENTIAL

DATE: TUESDAY, SEPTEMBER 01, 2015

PERIOD: 07:00 AM TO 09:00 AM

04:00 PM TO 06:00 PM

INTERSECTION: SAN DIMAS AVENUE / EQUESTRIAN - RESIDENTIAL DRWYS

FILE: 03-AM_PM

	PEDESTRIAN MOVEMENTS			
15-MINUTE PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D
0400-0415	0	0	0	1
0415-0430	0	1	0	0
0430-0445	0	1	0	1
0445-0500	0	0	0	1
0500-0515	0	1	0	1
0515-0530	0	1	0	1
0530-0545	0	0	0	0
0545-0600	0	0	0	0

	BICYCLIST MOVEMENTS			
15-MINUTE PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D
0400-0415	0	1	0	0
0415-0430	0	0	0	0
0430-0445	0	1	0	0
0445-0500	0	0	0	1
0500-0515	0	1	0	1
0515-0530	0	0	0	1
0530-0545	0	2	0	0
0545-0600	0	0	0	0

	PEDESTRIAN MOVEMENTS				
1-HOUR PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D	TOTALS
0400-0500	0	2	0	3	5
0415-0515	0	3	0	3	6
0430-0530	0	3	0	4	7
0445-0545	0	2	0	3	5
0500-0600	0	2	0	2	4

	BICYCLIST MOVEMENTS				
1-HOUR PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D	TOTALS
0400-0500	0	2	0	1	3
0415-0515	0	2	0	2	4
0430-0530	0	2	0	3	5
0445-0545	0	3	0	3	6
0500-0600	0	3	0	2	5

THE TRAFFIC SOLUTION
329 DIAMOND STREET
ARCADIA, CALIFORNIA 91006

APPENDIX B

MANUAL INTERSECTION TRAFFIC COUNT DATA – WEEKDAY AM AND PM PEAK PERIODS

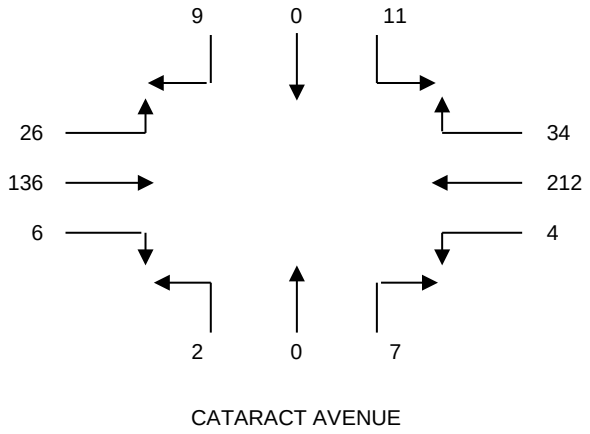
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT:		LINSCOTT LAW & GREENSPAN
PROJECT:		SAN DIMAS RESIDENTIAL
DATE:		TUESDAY, SEPTEMBER 1, 2015
PERIOD:		07:00 AM TO 09:00 AM
INTERSECTION	N/S	CATARACT AVENUE
	E/W	ALLEN AVENUE
FILE NUMBER:		1-AM

15 MINUTE	1	2	3	4	5	6	7	8	9	10	11	12
TOTALS	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT
0700-0715	1	0	4	5	33	2	0	0	1	0	10	2
0715-0730	2	0	3	5	47	1	1	0	0	0	17	4
0730-0745	2	0	1	10	44	1	3	0	0	1	23	4
0745-0800	1	0	3	7	66	0	1	0	1	1	33	6
0800-0815	2	0	5	12	66	1	2	0	0	0	49	8
0815-0830	4	0	2	5	36	2	1	0	1	4	31	8
0830-0845	4	0	1	3	46	0	2	0	3	1	20	5
0845-0900	2	0	2	3	31	3	0	0	1	1	25	3

1 HOUR	1	2	3	4	5	6	7	8	9	10	11	12	
TOTALS	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTALS
0700-0800	6	0	11	27	190	4	5	0	2	2	83	16	346
0715-0815	7	0	12	34	223	3	7	0	1	2	122	22	433
0730-0830	9	0	11	34	212	4	7	0	2	6	136	26	447
0745-0845	11	0	11	27	214	3	6	0	5	6	133	27	443
0800-0900	12	0	10	23	179	6	5	0	5	6	125	24	395

A.M. PEAK HOUR
0730-0830



THE TRAFFIC SOLUTION
329 DIAMOND STREET
ARCADIA, CALIFORNIA 91006
626.448.7978 PHONE
626.448.2877 FAX

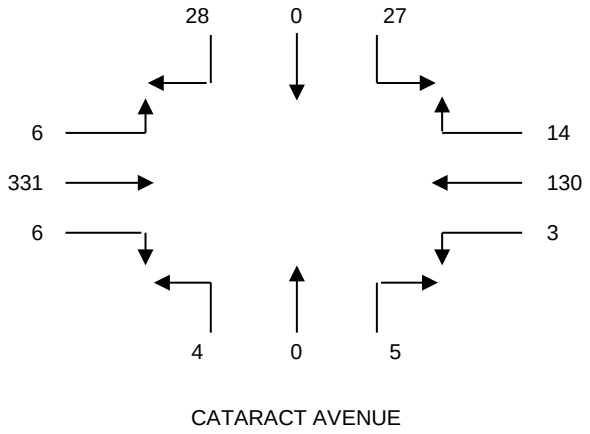
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT:		LINSCOTT LAW & GREENSPAN
PROJECT:		SAN DIMAS RESIDENTIAL
DATE:		TUESDAY, SEPTEMBER 1, 2015
PERIOD:		04:00 PM TO 06:00 PM
INTERSECTION	N/S	CATARACT AVENUE
	E/W	ALLEN AVENUE
FILE NUMBER:		1-PM

15 MINUTE	1	2	3	4	5	6	7	8	9	10	11	12
TOTALS	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT
0400-0415	5	0	6	2	31	3	2	0	0	0	99	2
0415-0430	3	0	5	2	39	2	0	0	0	2	97	6
0430-0445	6	0	7	3	31	0	0	0	2	1	73	4
0445-0500	3	0	5	2	20	2	0	0	1	0	84	1
0500-0515	7	0	8	2	35	0	1	0	0	0	95	1
0515-0530	10	0	10	5	28	1	3	0	1	1	72	2
0530-0545	7	0	5	2	32	2	1	0	1	4	77	1
0545-0600	4	0	4	5	35	0	0	0	2	1	87	2

1 HOUR	1	2	3	4	5	6	7	8	9	10	11	12	
TOTALS	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTALS
0400-0500	17	0	23	9	121	7	2	0	3	3	353	13	551
0415-0515	19	0	25	9	125	4	1	0	3	3	349	12	550
0430-0530	26	0	30	12	114	3	4	0	4	2	324	8	527
0445-0545	27	0	28	11	115	5	5	0	3	5	328	5	532
0500-0600	28	0	27	14	130	3	5	0	4	6	331	6	554

P.M. PEAK HOUR
0500-0600



THE TRAFFIC SOLUTION
329 DIAMOND STREET
ARCADIA, CALIFORNIA 91006
626.448.7978 PHONE
626.448.2877 FAX

PEDESTRIAN - BICYCLE COUNT SUMMARY

CLIENT: LLG ENGINEERS - PASADENA

PROJECT: SAN DIMAS RESIDENTIAL

DATE: TUESDAY, SEPTEMBER 01, 2015

PERIOD: 07:00 AM TO 09:00 AM

04:00 PM TO 06:00 PM

INTERSECTION: CATARACT AVENUE / ALLEN AVENUE

FILE: 01-AM_PM

	PEDESTRIAN MOVEMENTS			
15-MINUTE PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D
0700-0715	3	0	2	0
0715-0730	3	0	1	0
0730-0745	1	1	1	0
0745-0800	0	0	0	0
0800-0815	0	0	0	0
0815-0830	0	0	1	0
0830-0845	1	0	0	0
0845-0900	1	0	0	0

	BICYCLIST MOVEMENTS			
15-MINUTE PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D
0700-0715	0	0	0	0
0715-0730	0	0	0	0
0730-0745	0	0	0	0
0745-0800	0	0	0	0
0800-0815	2	0	0	0
0815-0830	2	0	0	0
0830-0845	1	0	0	0
0845-0900	0	0	0	0

	PEDESTRIAN MOVEMENTS				
1-HOUR PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D	TOTALS
0700-0800	7	1	4	0	12
0715-0815	4	1	2	0	7
0730-0830	1	1	2	0	4
0745-0845	1	0	1	0	2
0800-0900	2	0	1	0	3

	BICYCLIST MOVEMENTS				
1-HOUR PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D	TOTALS
0700-0800	0	0	0	0	0
0715-0815	2	0	0	0	2
0730-0830	4	0	0	0	4
0745-0845	5	0	0	0	5
0800-0900	5	0	0	0	5

THE TRAFFIC SOLUTION
329 DIAMOND STREET
ARCADIA, CALIFORNIA 91006

PEDESTRIAN - BICYCLE COUNT SUMMARY

CLIENT: LLG ENGINEERS - PASADENA

PROJECT: SAN DIMAS RESIDENTIAL

DATE: TUESDAY, SEPTEMBER 01, 2015

PERIOD: 07:00 AM TO 09:00 AM

04:00 PM TO 06:00 PM

INTERSECTION: CATARACT AVENUE / ALLEN AVENUE

FILE: 01-AM_PM

	PEDESTRIAN MOVEMENTS			
15-MINUTE PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D
0400-0415	0	0	0	0
0415-0430	0	2	0	0
0430-0445	0	0	1	0
0445-0500	0	0	1	0
0500-0515	1	0	0	0
0515-0530	2	0	0	0
0530-0545	0	0	0	0
0545-0600	0	0	0	0

	BICYCLIST MOVEMENTS			
15-MINUTE PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D
0400-0415	0	0	0	0
0415-0430	0	0	0	0
0430-0445	0	0	0	0
0445-0500	0	0	0	0
0500-0515	1	1	0	0
0515-0530	2	0	0	0
0530-0545	0	0	1	0
0545-0600	0	0	0	0

	PEDESTRIAN MOVEMENTS				
1-HOUR PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D	TOTALS
0400-0500	0	2	2	0	4
0415-0515	1	2	2	0	5
0430-0530	3	0	2	0	5
0445-0545	3	0	1	0	4
0500-0600	3	0	0	0	3

	BICYCLIST MOVEMENTS				
1-HOUR PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D	TOTALS
0400-0500	0	0	0	0	0
0415-0515	1	1	0	0	2
0430-0530	3	1	0	0	4
0445-0545	3	1	1	0	5
0500-0600	3	1	1	0	5

THE TRAFFIC SOLUTION
329 DIAMOND STREET
ARCADIA, CALIFORNIA 91006

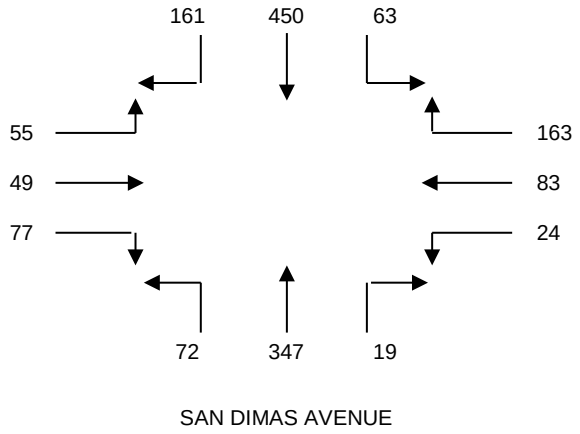
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT:		LINSCOTT LAW & GREENSPAN
PROJECT:		SAN DIMAS RESIDENTIAL
DATE:		TUESDAY, SEPTEMBER 1, 2015
PERIOD:		07:00 AM TO 09:00 AM
INTERSECTION	N/S	SAN DIMAS AVENUE
	E/W	ALLEN AVENUE
FILE NUMBER:		2-AM

15 MINUTE	1	2	3	4	5	6	7	8	9	10	11	12
TOTALS	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT
0700-0715	20	80	6	25	13	9	5	67	7	4	5	8
0715-0730	23	95	8	36	19	8	3	72	15	6	5	10
0730-0745	39	91	18	42	25	4	3	78	18	13	12	13
0745-0800	66	123	20	57	26	6	8	108	28	37	19	19
0800-0815	32	121	13	34	18	5	5	84	14	14	12	13
0815-0830	24	115	12	30	14	9	3	77	12	13	6	10
0830-0845	29	105	16	28	19	10	5	72	8	16	8	7
0845-0900	18	90	10	20	22	8	4	85	9	9	10	11

1 HOUR	1	2	3	4	5	6	7	8	9	10	11	12	
TOTALS	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTALS
0700-0800	148	389	52	160	83	27	19	325	68	60	41	50	1422
0715-0815	160	430	59	169	88	23	19	342	75	70	48	55	1538
0730-0830	161	450	63	163	83	24	19	347	72	77	49	55	1563
0745-0845	151	464	61	149	77	30	21	341	62	80	45	49	1530
0800-0900	103	431	51	112	73	32	17	318	43	52	36	41	1309

A.M. PEAK HOUR
0730-0830



THE TRAFFIC SOLUTION
329 DIAMOND STREET
ARCADIA, CALIFORNIA 91006
626.448.7978 PHONE
626.448.2877 FAX

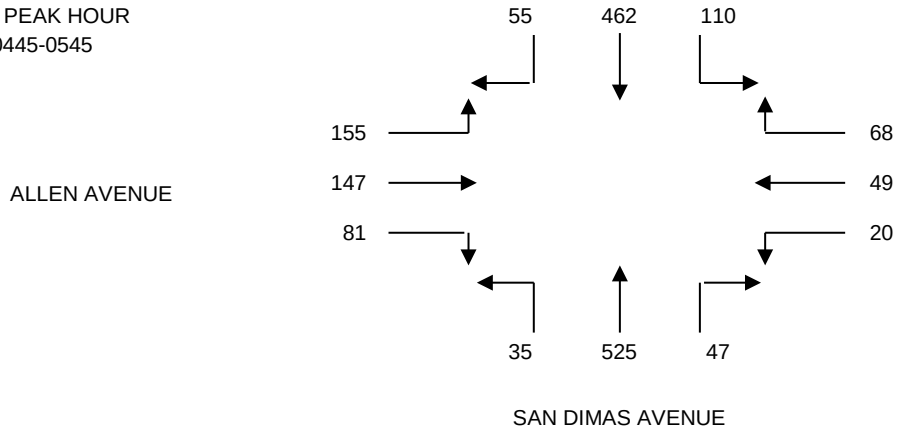
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT:		LINSCOTT LAW & GREENSPAN
PROJECT:		SAN DIMAS RESIDENTIAL
DATE:		TUESDAY, SEPTEMBER 1, 2015
PERIOD:		04:00 PM TO 06:00 PM
INTERSECTION	N/S	SAN DIMAS AVENUE
	E/W	ALLEN AVENUE
FILE NUMBER:		2-PM

15 MINUTE	1	2	3	4	5	6	7	8	9	10	11	12
TOTALS	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT
0400-0415	19	103	23	19	13	8	11	120	13	16	46	58
0415-0430	11	97	21	17	11	2	8	103	8	11	35	37
0430-0445	7	115	22	18	15	3	15	120	10	19	37	36
0445-0500	12	118	27	21	11	2	11	118	11	20	40	33
0500-0515	16	109	24	19	17	4	12	148	8	28	38	54
0515-0530	14	110	30	11	10	8	14	121	6	14	28	32
0530-0545	13	125	29	17	11	6	10	138	10	19	41	36
0545-0600	15	109	28	18	13	5	9	111	6	11	30	37

1 HOUR	1	2	3	4	5	6	7	8	9	10	11	12	
TOTALS	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTALS
0400-0500	49	433	93	75	50	15	45	461	42	66	158	164	1651
0415-0515	46	439	94	75	54	11	46	489	37	78	150	160	1679
0430-0530	49	452	103	69	53	17	52	507	35	81	143	155	1716
0445-0545	55	462	110	68	49	20	47	525	35	81	147	155	1754
0500-0600	58	453	111	65	51	23	45	518	30	72	137	159	1722

P.M. PEAK HOUR
0445-0545



THE TRAFFIC SOLUTION
329 DIAMOND STREET
ARCADIA, CALIFORNIA 91006
626.448.7978 PHONE
626.448.2877 FAX

PEDESTRIAN - BICYCLE COUNT SUMMARY

CLIENT: LLG ENGINEERS - PASADENA

PROJECT: SAN DIMAS RESIDENTIAL

DATE: TUESDAY, SEPTEMBER 01, 2015

PERIOD: 07:00 AM TO 09:00 AM

04:00 PM TO 06:00 PM

INTERSECTION: SAN DIMAS AVENUE / ALLEN AVENUE

FILE: 02-AM_PM

	PEDESTRIAN MOVEMENTS			
15-MINUTE PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D
0700-0715	1	0	0	0
0715-0730	1	0	0	0
0730-0745	1	0	0	0
0745-0800	2	4	1	4
0800-0815	0	0	2	0
0815-0830	0	0	0	1
0830-0845	0	2	0	2
0845-0900	0	2	0	0

	BICYCLIST MOVEMENTS			
15-MINUTE PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D
0700-0715	0	0	0	0
0715-0730	0	0	0	0
0730-0745	1	0	0	0
0745-0800	0	2	0	2
0800-0815	0	0	1	0
0815-0830	0	0	0	1
0830-0845	0	0	0	0
0845-0900	0	0	0	0

	PEDESTRIAN MOVEMENTS				
1-HOUR PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D	TOTALS
0700-0800	5	4	1	4	14
0715-0815	4	4	3	4	15
0730-0830	3	4	3	5	15
0745-0845	2	6	3	7	18
0800-0900	0	4	2	3	9

	BICYCLIST MOVEMENTS				
1-HOUR PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D	TOTALS
0700-0800	1	2	0	2	5
0715-0815	1	2	1	2	6
0730-0830	1	2	1	3	7
0745-0845	0	2	1	3	6
0800-0900	0	0	1	1	2

THE TRAFFIC SOLUTION
329 DIAMOND STREET
ARCADIA, CALIFORNIA 91006

PEDESTRIAN - BICYCLE COUNT SUMMARY

CLIENT: LLG ENGINEERS - PASADENA

PROJECT: SAN DIMAS RESIDENTIAL

DATE: TUESDAY, SEPTEMBER 01, 2015

PERIOD: 07:00 AM TO 09:00 AM

04:00 PM TO 06:00 PM

INTERSECTION: SAN DIMAS AVENUE / ALLEN AVENUE

FILE: 02-AM_PM

	PEDESTRIAN MOVEMENTS			
15-MINUTE PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D
0400-0415	0	0	0	0
0415-0430	0	0	1	1
0430-0445	0	1	0	0
0445-0500	0	0	0	1
0500-0515	3	0	0	0
0515-0530	0	1	1	0
0530-0545	0	0	0	0
0545-0600	0	0	0	0

	BICYCLIST MOVEMENTS			
15-MINUTE PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D
0400-0415	0	0	0	1
0415-0430	0	0	0	0
0430-0445	0	0	0	1
0445-0500	0	0	0	0
0500-0515	0	0	1	0
0515-0530	0	1	0	1
0530-0545	0	0	0	1
0545-0600	0	0	0	0

	PEDESTRIAN MOVEMENTS				
1-HOUR PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D	TOTALS
0400-0500	0	1	1	2	4
0415-0515	3	1	1	2	7
0430-0530	3	2	1	1	7
0445-0545	3	1	1	1	6
0500-0600	3	1	1	0	5

	BICYCLIST MOVEMENTS				
1-HOUR PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D	TOTALS
0400-0500	0	0	0	2	2
0415-0515	0	0	1	1	2
0430-0530	0	1	1	2	4
0445-0545	0	1	1	2	4
0500-0600	0	1	1	2	4

THE TRAFFIC SOLUTION
329 DIAMOND STREET
ARCADIA, CALIFORNIA 91006

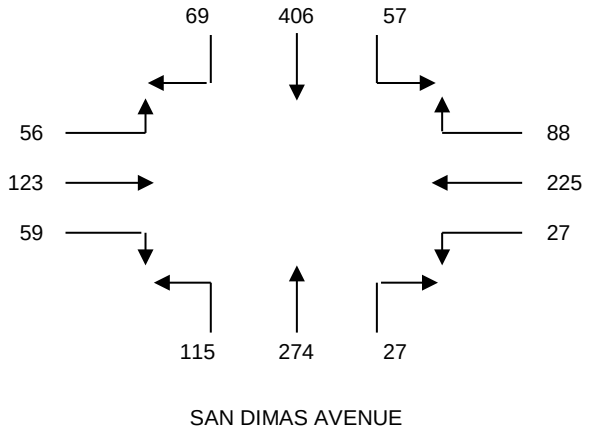
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT:		LINSCOTT LAW & GREENSPAN
PROJECT:		SAN DIMAS RESIDENTIAL
DATE:		TUESDAY, SEPTEMBER 01, 2015
PERIOD:		07:00 AM TO 09:00 AM
INTERSECTION	N/S	SAN DIMAS AVENUE
	E/W	GLADSTONE STREET
FILE NUMBER:		4-AM

15 MINUTE	1	2	3	4	5	6	7	8	9	10	11	12
TOTALS	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT
0700-0715	14	70	8	18	55	11	2	51	20	9	10	7
0715-0730	10	100	7	13	50	10	6	72	22	6	19	14
0730-0745	17	90	13	20	73	6	7	70	30	11	20	10
0745-0800	19	105	13	27	65	8	9	87	39	18	31	14
0800-0815	19	109	18	25	40	5	6	53	25	18	44	19
0815-0830	14	102	13	16	47	8	5	64	21	12	28	13
0830-0845	15	103	12	19	40	12	8	67	20	14	20	12
0845-0900	10	104	8	19	44	17	9	61	21	15	20	11

1 HOUR	1	2	3	4	5	6	7	8	9	10	11	12	
TOTALS	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTALS
0700-0800	60	365	41	78	243	35	24	280	111	44	80	45	1406
0715-0815	65	404	51	85	228	29	28	282	116	53	114	57	1512
0730-0830	69	406	57	88	225	27	27	274	115	59	123	56	1526
0745-0845	67	419	56	87	192	33	28	271	105	62	123	58	1501
0800-0900	58	418	51	79	171	42	28	245	87	59	112	55	1405

A.M. PEAK HOUR
0730-0830



THE TRAFFIC SOLUTION
329 DIAMOND STREET
ARCADIA, CALIFORNIA 91006
626.448.7978 PHONE
626.448.2877 FAX

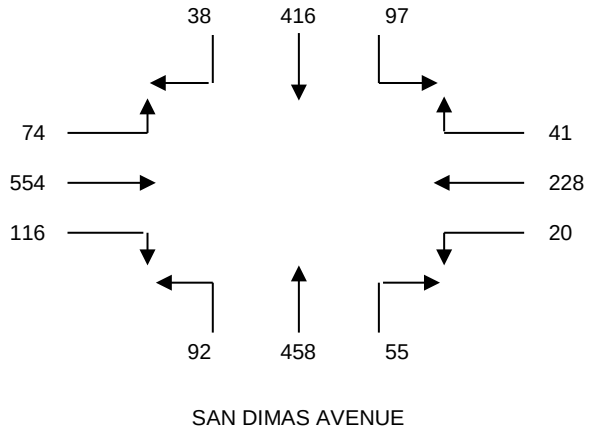
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT:		LINSCOTT LAW & GREENSPAN
PROJECT:		SAN DIMAS RESIDENTIAL
DATE:		TUESDAY, SEPTEMBER 01, 2015
PERIOD:		04:00 PM TO 06:00 PM
INTERSECTION	N/S	SAN DIMAS AVENUE
	E/W	GLADSTONE STREET
FILE NUMBER:		4-PM

15 MINUTE	1	2	3	4	5	6	7	8	9	10	11	12
TOTALS	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT
0400-0415	10	95	21	11	47	5	5	99	23	24	101	10
0415-0430	11	96	26	16	83	6	17	106	34	26	151	13
0430-0445	5	104	25	8	58	7	16	108	23	34	153	19
0445-0500	8	110	20	9	37	5	10	127	19	33	116	16
0500-0515	14	106	26	8	50	2	12	117	16	23	134	26
0515-0530	10	107	32	10	45	5	11	116	20	30	115	23
0530-0545	14	95	25	15	30	2	19	115	24	24	122	22
0545-0600	16	82	20	14	32	3	20	106	22	34	108	20

1 HOUR	1	2	3	4	5	6	7	8	9	10	11	12	
TOTALS	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTALS
0400-0500	34	405	92	44	225	23	48	440	99	117	521	58	2106
0415-0515	38	416	97	41	228	20	55	458	92	116	554	74	2189
0430-0530	37	427	103	35	190	19	49	468	78	120	518	84	2128
0445-0545	46	418	103	42	162	14	52	475	79	110	487	87	2075
0500-0600	54	390	103	47	157	12	62	454	82	111	479	91	2042

P.M. PEAK HOUR
0415-0515



THE TRAFFIC SOLUTION
329 DIAMOND STREET
ARCADIA, CALIFORNIA 91006
626.448.7978 PHONE
626.448.2877 FAX

PEDESTRIAN - BICYCLE COUNT SUMMARY

CLIENT: LLG ENGINEERS - PASADENA

PROJECT: SAN DIMAS RESIDENTIAL

DATE: TUESDAY, SEPTEMBER 01, 2015

PERIOD: 07:00 AM TO 09:00 AM

04:00 PM TO 06:00 PM

INTERSECTION: SAN DIMAS AVENUE / GLADSTONE STREET

FILE: 04-AM_PM

	PEDESTRIAN MOVEMENTS			
15-MINUTE PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D
0700-0715	1	1	1	0
0715-0730	0	0	1	0
0730-0745	0	0	0	4
0745-0800	0	1	0	1
0800-0815	0	2	0	0
0815-0830	0	1	0	2
0830-0845	1	2	3	0
0845-0900	1	2	2	1

	BICYCLIST MOVEMENTS			
15-MINUTE PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D
0700-0715	0	1	0	1
0715-0730	0	1	0	0
0730-0745	0	0	0	0
0745-0800	0	0	0	0
0800-0815	0	2	0	0
0815-0830	0	0	0	1
0830-0845	0	0	0	0
0845-0900	0	0	0	0

	PEDESTRIAN MOVEMENTS				
1-HOUR PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D	TOTALS
0700-0800	1	2	2	5	10
0715-0815	0	3	1	5	9
0730-0830	0	4	0	7	11
0745-0845	1	6	3	3	13
0800-0900	2	7	5	3	17

	BICYCLIST MOVEMENTS				
1-HOUR PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D	TOTALS
0700-0800	0	2	0	1	3
0715-0815	0	3	0	0	3
0730-0830	0	2	0	1	3
0745-0845	0	2	0	1	3
0800-0900	0	2	0	1	3

THE TRAFFIC SOLUTION
329 DIAMOND STREET
ARCADIA, CALIFORNIA 91006

PEDESTRIAN - BICYCLE COUNT SUMMARY

CLIENT: LLG ENGINEERS - PASADENA

PROJECT: SAN DIMAS RESIDENTIAL

DATE: TUESDAY, SEPTEMBER 01, 2015

PERIOD: 07:00 AM TO 09:00 AM

04:00 PM TO 06:00 PM

INTERSECTION: SAN DIMAS AVENUE / GLADSTONE STREET

FILE: 04-AM_PM

	PEDESTRIAN MOVEMENTS			
15-MINUTE PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D
0400-0415	0	2	1	0
0415-0430	0	2	0	0
0430-0445	0	0	0	1
0445-0500	1	1	1	1
0500-0515	0	0	0	0
0515-0530	1	1	0	1
0530-0545	0	1	0	0
0545-0600	0	0	0	0

	BICYCLIST MOVEMENTS			
15-MINUTE PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D
0400-0415	1	0	0	1
0415-0430	0	0	0	1
0430-0445	0	0	0	0
0445-0500	0	0	0	1
0500-0515	0	1	0	0
0515-0530	0	1	0	1
0530-0545	0	1	0	1
0545-0600	0	0	0	1

	PEDESTRIAN MOVEMENTS				
1-HOUR PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D	TOTALS
0400-0500	1	5	2	2	10
0415-0515	1	3	1	2	7
0430-0530	2	2	1	3	8
0445-0545	2	3	1	2	8
0500-0600	1	2	0	1	4

	BICYCLIST MOVEMENTS				
1-HOUR PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D	TOTALS
0400-0500	1	0	0	3	4
0415-0515	0	1	0	2	3
0430-0530	0	2	0	2	4
0445-0545	0	3	0	3	6
0500-0600	0	3	0	3	6

THE TRAFFIC SOLUTION
329 DIAMOND STREET
ARCADIA, CALIFORNIA 91006

APPENDIX C

ICU AND LEVELS OF SERVICE EXPLANATION
ICU DATA WORKSHEETS – WEEKDAY AM AND PM PEAK HOURS

HCM AND LEVELS OF SERVICE EXPLANATION
HCM DATA WORKSHEETS – WEEKDAY AM AND PM PEAK HOURS

INTERSECTION CAPACITY UTILIZATION (ICU) DESCRIPTION

Level of Service is a term used to describe prevailing conditions and their effect on traffic. Broadly interpreted, the Levels of Service concept denotes any one of a number of differing combinations of operating conditions which may occur as a roadway is accommodating various traffic volumes. Level of Service is a qualitative measure of the effect of such factors as travel speed, travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience.

Six Levels of Service, A through F, have been defined in the current version of the *Highway Capacity Manual*, published by the Transportation Research Board. Level of Service A describes a condition of free flow, with low traffic volumes and relatively high speeds, while Level of Service F describes forced traffic flow at low speeds with jammed conditions and queues which cannot clear during the green phases.

The Intersection Capacity Utilization (ICU) method of intersection capacity analysis has been used in our studies. It directly relates traffic demand and available capacity for key intersection movements, regardless of present signal timing, The capacity per hour of green time for each approach is calculated based on the methods of the *Highway Capacity Manual*. The proportion of total signal time needed by each key movement is determined and compared to the total time available (100 percent of the hour). The result of summing the requirements of the conflicting key movements plus an allowance for clearance times is expressed as a decimal fraction. Conflicting key traffic movements are those opposing movements whose combined green time requirements are greatest.

The resulting ICU represents the proportion of the total hour required to accommodate intersection demand volumes if the key conflicting traffic movements are operating at capacity. Other movements may be operating near capacity, or may be operating at significantly better levels. The ICU may be translated to a Level of Service as tabulated below.

The Levels of Service (abbreviated from the *Highway Capacity Manual*) are listed here with their corresponding ICU and Load Factor equivalents. Load Factor is that proportion of the signal cycles during the peak hour which are fully loaded; i.e. when all of the vehicles waiting at the beginning of green are not able to clear on that green phase.

Intersection Capacity Utilization Characteristics

Level of Service	Load Factor	Equivalent ICU
A	0.0	0.00 - 0.60
B	0.0 - 0.1	0.61 - 0.70
C	0.1 - 0.3	0.71 - 0.80
D	0.3 - 0.7	0.81 - 0.90
E	0.7 - 1.0	0.91 - 1.00
F	Not Applicable	Not Applicable

SERVICE LEVEL A
There are no loaded cycles and few are even close to loaded at this service level. No approach phase is fully utilized by traffic and no vehicle waits longer than one red indication.

SERVICE LEVEL B
This level represents stable operation where an occasional approach phase is fully utilized and a substantial number are approaching full use. Many drivers begin to feel restricted within platoons of vehicles.

SERVICE LEVEL C
At this level stable operation continues. Loading is still intermittent but more frequent than at Level B. Occasionally drivers may have to wait through more than one red signal indication and backups may develop behind turning vehicles. Most drivers feel somewhat restricted, but not objectionably so.

SERVICE LEVEL D
This level encompasses a zone of increasing restriction approaching instability at the intersection. Delays to approaching vehicles may be substantial during short peaks within the peak hour, but enough cycles with lower demand occur to permit periodic clearance of queues, thus preventing excessive backups. Drivers frequently have to wait through more than one red signal. This level is the lower limit of acceptable operation to most drivers.

SERVICE LEVEL E
This represents near capacity and capacity operation. At capacity (ICU = 1.0) it represents the most vehicles that the particular intersection can accommodate. However, full utilization of every signal cycle is seldom attained no matter how great the demand. At this level all drivers wait through more than one red signal, and frequently through several.

SERVICE LEVEL F
Jammed conditions. Traffic backed up from a downstream location on one of the street restricts or prevents movement of traffic through the intersection under consideration.

LEVEL OF SERVICE FOR UNSIGNALIZED INTERSECTIONS

In the *Highway Capacity Manual (HCM)*, published by the Transportation Research Board, 2010, level of service for unsignalized intersections is defined in terms of delay, which is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, geometrics, traffic, and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during base conditions, in the absence of incidents, control, traffic, or geometric delay. Only the portion of total delay attributed to the traffic control measures, either traffic signals or stop signs, is quantified. This delay is called *control delay*. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

Level of Service criteria for unsignalized intersections are stated in terms of the average control delay per vehicle. The level of service is determined by the computed or measured control delay and is defined for each minor movement. Average control delay for any particular minor movement is a function of the service time for the approach and the degree of utilization. (Level of service is not defined for the intersection as a whole for two-way stop controlled intersections.)

Level of Service Criteria for TWSC/AWSC Intersections

Level of Service	Average Control Delay (Sec/Veh)
A	≤ 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

Level of Service (LOS) values are used to describe intersection operations with service levels varying from LOS A (free flow) to LOS F (jammed condition). The following descriptions summarize *HCM* criteria for each level of service:

LOS A describes operations with very low control delay, up to 10 seconds per vehicle.

LOS B describes operations with control delay greater than 10 and up to 15 seconds per vehicle.

LOS C describes operations with control delay greater than 15 and up to 25 seconds per vehicle.

LOS D describes operations with control delay greater than 25 and up to 35 seconds per vehicle.

LOS E describes operations with control delay greater than 35 and up to 50 seconds per vehicle.

LOS F describes operations with control delay in excess of 50 seconds per vehicle. For two-way stop controlled intersections, LOS F exists when there are insufficient gaps of suitable size to allow side-street demand to safely cross through a major-street traffic stream. This level of service is generally evident from extremely long control delays experienced by side-street traffic and by queuing on the minor-street approaches.

LINSCOTT, LAW & GREENSPAN, ENGINEERS
600 S. Lake Avenue, Suite 500, Pasadena, CA 91106
(626) 796-2322 Fax (626) 792-0941

INTERSECTION CAPACITY UTILIZATION

Cataract Avenue @ Allen Avenue
Peak hr: AM
Annual Growth: 1.60%

N-S St: Cataract Avenue
E-W St: Allen Avenue
Project: Oak Valley Project/1-15-4133-1
File: ICU1

Date: 03/16/2016
Date of Count: 2016
Projection Year: 2018

	2016 EXIST. TRAFFIC			2018 W/AMBIENT GROWTH			2018 W/PROJECT SITE TRAFFIC				2018 W/PROJECT MITIGATION				2018 W/RELATED PROJECTS				2018 W/REGIONAL MITIGATION			
	1	2	V/C	Added	Total	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C
Movement	Volume	Capacity	Ratio	Volume	Volume	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio
Nb Left	2	0	0.001 *	0	2	0.001 *	8	10	0	0.006	0	10	0	0.006	0	10	0	0.006	0	10	0	0.006
Nb Thru	0	1600	0.006	0	0	0.006	0	0	1600	0.015 *	0	0	1600	0.015 *	0	0	1600	0.015 *	0	0	1600	0.015 *
Nb Right	7	0	-	0	7	-	6	13	0	-	0	13	0	-	0	13	0	-	0	13	0	-
Sb Left	11	0	0.007	0	12	0.007	0	12	0	0.007 *	0	12	0	0.007 *	0	12	0	0.007 *	0	12	0	0.007 *
Sb Thru	0	1600	0.013 *	0	0	0.013 *	0	0	1600	0.013	0	0	1600	0.013	0	0	1600	0.013	0	0	1600	0.013
Sb Right	9	0	-	0	9	-	0	9	0	-	0	9	0	-	0	9	0	-	0	9	0	-
Eb Left	26	0	0.017 *	1	27	0.017 *	0	27	0	0.017 *	0	27	0	0.017 *	0	27	0	0.017 *	0	27	0	0.017 *
Eb Thru	138	1600	0.107	4	143	0.110	1	144	1600	0.113	0	144	1600	0.113	7	151	1600	0.117	0	151	1600	0.117
Eb Right	6	0	-	0	6	-	3	9	0	-	0	9	0	-	0	9	0	-	0	9	0	-
Wb Left	4	0	0.003	0	4	0.003	2	6	0	0.004	0	6	0	0.004	0	6	0	0.004	0	6	0	0.004
Wb Thru	215	1600	0.159 *	7	222	0.164 *	2	224	1600	0.166 *	0	224	1600	0.166 *	11	235	1600	0.173 *	0	235	1600	0.173 *
Wb Right	35	0	-	1	36	-	0	36	0	-	0	36	0	-	0	36	0	-	0	36	0	-
Yellow Allowance:			0.100 *			0.100 *				0.100 *				0.100 *				0.100 *				0.100 *
ICU			0.289			0.295				0.305				0.305				0.312				0.312
LOS			A			A				A				A				A				A

03:09 PM

** Key conflicting movement as a part of ICU*
*1 Counts conducted by.*The Traffic Solution
2 Capacity expressed in veh/hour of green

LINSCOTT, LAW & GREENSPAN, ENGINEERS
600 S. Lake Avenue, Suite 500, Pasadena, CA 91106
(626) 796-2322 Fax (626) 792-0941

INTERSECTION CAPACITY UTILIZATION

Cataract Avenue @ Allen Avenue
Peak hr: PM
Annual Growth: 1.60%

N-S St: Cataract Avenue
E-W St: Allen Avenue
Project: Oak Valley Project/1-15-4133-1
File: ICU1

Date: 03/16/2016
Date of Count: 2016
Projection Year: 2018

	2016 EXIST. TRAFFIC			2018 W/AMBIENT GROWTH			2018 W/PROJECT SITE TRAFFIC				2018 W/PROJECT MITIGATION				2018 W/RELATED PROJECTS				2018 W/REGIONAL MITIGATION			
	1	2	V/C	Added	Total	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C
Movement	Volume	Capacity	Ratio	Volume	Volume	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio
Nb Left	4	0	0.003 *	0	4	0.003 *	5	9	0	0.006 *	0	9	0	0.006 *	0	9	0	0.006 *	0	9	0	0.006 *
Nb Thru	0	1600	0.006	0	0	0.006	0	0	1600	0.012	0	0	1600	0.012	0	0	1600	0.012	0	0	1600	0.012
Nb Right	5	0	-	0	5	-	4	9	0	-	0	9	0	-	0	9	0	-	0	9	0	-
Sb Left	27	0	0.017	1	28	0.018	0	28	0	0.018	0	28	0	0.018	0	28	0	0.018	0	28	0	0.018
Sb Thru	0	1600	0.035 *	0	0	0.036 *	0	0	1600	0.036 *	0	0	1600	0.036 *	0	0	1600	0.036 *	0	0	1600	0.036 *
Sb Right	28	0	-	1	29	-	0	29	0	-	0	29	0	-	0	29	0	-	0	29	0	-
Eb Left	6	0	0.004	0	6	0.004	0	6	0	0.004	0	6	0	0.004	0	6	0	0.004	0	6	0	0.004
Eb Thru	336	1600	0.218 *	11	347	0.225 *	2	349	1600	0.232 *	0	349	1600	0.232 *	32	381	1600	0.252 *	0	381	1600	0.252 *
Eb Right	6	0	-	0	6	-	9	15	0	-	0	15	0	-	0	15	0	-	0	15	0	-
Wb Left	3	0	0.002 *	0	3	0.002 *	7	10	0	0.006 *	0	10	0	0.006 *	0	10	0	0.006 *	0	10	0	0.006 *
Wb Thru	132	1600	0.093	4	136	0.096	1	137	1600	0.101	0	137	1600	0.101	30	167	1600	0.120	0	167	1600	0.120
Wb Right	14	0	-	0	15	-	0	15	0	-	0	15	0	-	0	15	0	-	0	15	0	-
Yellow Allowance:			0.100 *			0.100 *				0.100 *				0.100 *				0.100 *				0.100 *
ICU			0.357			0.365				0.380				0.380				0.400				0.400
LOS			A			A				A				A				A				A

03:09 PM

** Key conflicting movement as a part of ICU*
*1 Counts conducted by.*The Traffic Solution
2 Capacity expressed in veh/hour of green

HCS 2010 Two-Way Stop Control Summary Report

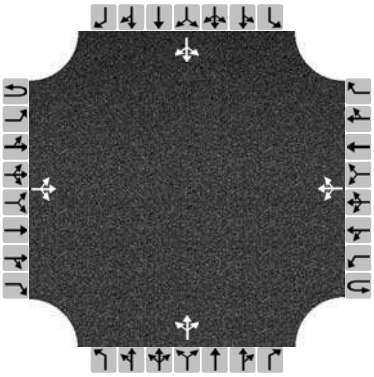
General Information

Analyst	DR
Agency/Co.	LLG Engineers
Date Performed	3/16/2016
Analysis Year	2016
Time Analyzed	Existing AM Peak Hour
Intersection Orientation	East-West
Project Description	Oak Valley Project/1-15-4133-1

Site Information

Intersection	Int-1
Jurisdiction	City of San Dimas
East/West Street	Allen Avenue
North/South Street	Cataract Avenue
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		26	138	6		4	215	35		2	0	7		11	0	9
Percent Heavy Vehicles		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		28				4					10				22	
Capacity		1284				1415					760				586	
v/c Ratio		0.02				0.00					0.01				0.04	
95% Queue Length		0.1				0.0					0.0				0.1	
Control Delay (s/veh)		7.9				7.6					9.8				11.4	
Level of Service (LOS)		A				A					A				B	
Approach Delay (s/veh)	1.4				0.1				9.8				11.4			
Approach LOS	A				A				A				B			

Copyright © 2016 University of Florida. All Rights Reserved.

HCS 2010 Two-Way Stop Control Summary Report

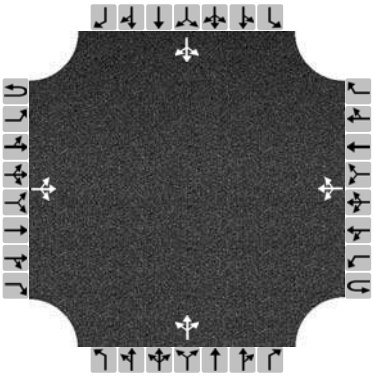
General Information

Analyst	DR
Agency/Co.	LLG Engineers
Date Performed	3/16/2016
Analysis Year	2016
Time Analyzed	Existing PM Peak Hour
Intersection Orientation	East-West
Project Description	Oak Valley Project/1-15-4133-1

Site Information

Intersection	Int-1
Jurisdiction	City of San Dimas
East/West Street	Allen Avenue
North/South Street	Cataract Avenue
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		6	336	6		3	132	14		4	0	5		27	0	28
Percent Heavy Vehicles		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		7				3					9				59	
Capacity		1414				1180					534				596	
v/c Ratio		0.00				0.00					0.02				0.10	
95% Queue Length		0.0				0.0					0.1				0.3	
Control Delay (s/veh)		7.6				8.1					11.9				11.7	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	0.2				0.2				11.9				11.7			
Approach LOS	A				A				B				B			

Copyright © 2016 University of Florida. All Rights Reserved.

HCS 2010 Two-Way Stop Control Summary Report

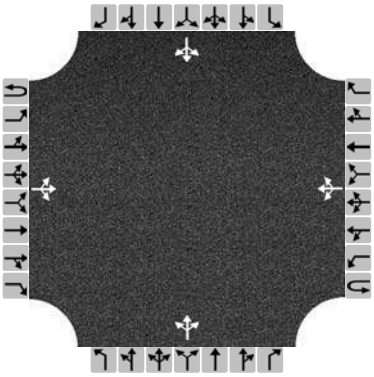
General Information

Analyst	DR
Agency/Co.	LLG Engineers
Date Performed	3/16/2016
Analysis Year	2018
Time Analyzed	A.G. AM Peak Hour
Intersection Orientation	East-West
Project Description	Oak Valley Project/1-15-4133-1

Site Information

Intersection	Int-1
Jurisdiction	City of San Dimas
East/West Street	Allen Avenue
North/South Street	Cataract Avenue
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		27	143	6		4	222	36		2	0	7		12	0	9
Percent Heavy Vehicles		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		29				4					10				23	
Capacity		1275				1409					752				569	
v/c Ratio		0.02				0.00					0.01				0.04	
95% Queue Length		0.1				0.0					0.0				0.1	
Control Delay (s/veh)		7.9				7.6					9.9				11.6	
Level of Service (LOS)		A				A					A				B	
Approach Delay (s/veh)	1.4				0.1				9.9				11.6			
Approach LOS	A				A				A				B			

Copyright © 2016 University of Florida. All Rights Reserved.

HCS 2010 Two-Way Stop Control Summary Report

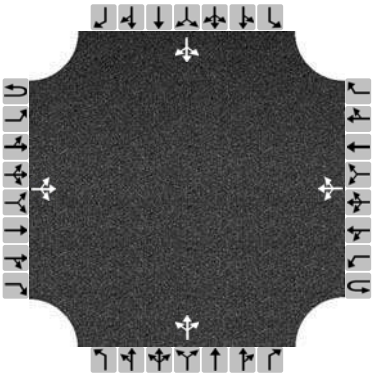
General Information

Analyst	DR
Agency/Co.	LLG Engineers
Date Performed	3/16/2016
Analysis Year	2018
Time Analyzed	A.G. PM Peak Hour
Intersection Orientation	East-West
Project Description	Oak Valley Project/1-15-4133-1

Site Information

Intersection	Int-1
Jurisdiction	City of San Dimas
East/West Street	Allen Avenue
North/South Street	Cataract Avenue
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		6	347	6		3	136	15		4	0	5		28	0	29
Percent Heavy Vehicles		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		7				3					9				62	
Capacity		1407				1168					521				587	
v/c Ratio		0.00				0.00					0.02				0.11	
95% Queue Length		0.0				0.0					0.1				0.4	
Control Delay (s/veh)		7.6				8.1					12.0				11.9	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	0.2				0.2				12.0				11.9			
Approach LOS	A				A				B				B			

Copyright © 2016 University of Florida. All Rights Reserved.

HCS 2010 Two-Way Stop Control Summary Report

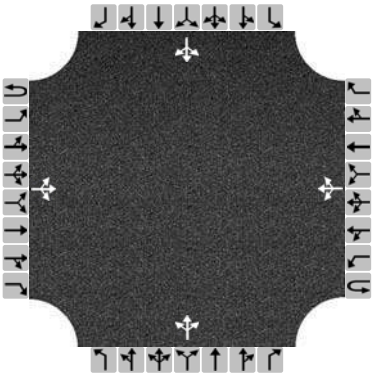
General Information

Analyst	DR
Agency/Co.	LLG Engineers
Date Performed	3/16/2016
Analysis Year	2018
Time Analyzed	W/Project AM Peak Hour
Intersection Orientation	East-West
Project Description	Oak Valley Project/1-15-4133-1

Site Information

Intersection	Int-1
Jurisdiction	City of San Dimas
East/West Street	Allen Avenue
North/South Street	Cataract Avenue
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		27	144	9		6	224	36		10	0	13		12	0	9
Percent Heavy Vehicles		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		29				7					25				23	
Capacity		1273				1403					628				557	
v/c Ratio		0.02				0.00					0.04				0.04	
95% Queue Length		0.1				0.0					0.1				0.1	
Control Delay (s/veh)		7.9				7.6					11.0				11.7	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	1.3				0.2				11.0				11.7			
Approach LOS	A				A				B				B			

Copyright © 2016 University of Florida. All Rights Reserved.

HCS 2010 Two-Way Stop Control Summary Report

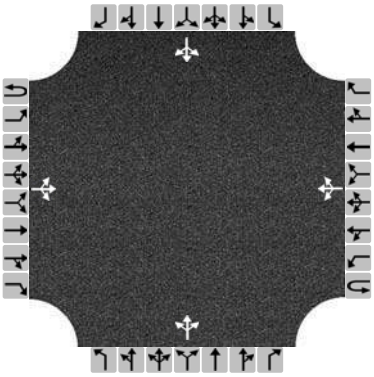
General Information

Analyst	DR
Agency/Co.	LLG Engineers
Date Performed	3/16/2016
Analysis Year	2018
Time Analyzed	W/Project PM Peak Hour
Intersection Orientation	East-West
Project Description	Oak Valley Project/1-15-4133-1

Site Information

Intersection	Int-1
Jurisdiction	City of San Dimas
East/West Street	Allen Avenue
North/South Street	Cataract Avenue
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		6	349	15		10	137	15		9	0	9		28	0	29
Percent Heavy Vehicles		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		7				11					20				62	
Capacity		1406				1157					493				566	
v/c Ratio		0.00				0.01					0.04				0.11	
95% Queue Length		0.0				0.0					0.1				0.4	
Control Delay (s/veh)		7.6				8.1					12.6				12.1	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	0.2				0.6				12.6				12.1			
Approach LOS	A				A				B				B			

Copyright © 2016 University of Florida. All Rights Reserved.

HCS 2010 Two-Way Stop Control Summary Report

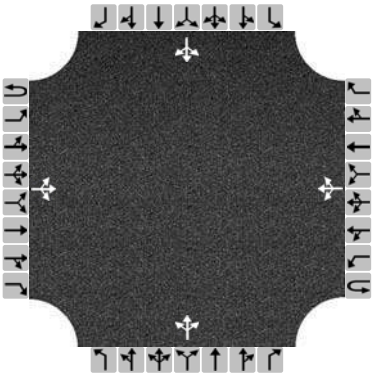
General Information

Analyst	DR
Agency/Co.	LLG Engineers
Date Performed	3/16/2016
Analysis Year	2018
Time Analyzed	W/Rel Projects AM PH
Intersection Orientation	East-West
Project Description	Oak Valley Project/1-15-4133-1

Site Information

Intersection	Int-1
Jurisdiction	City of San Dimas
East/West Street	Allen Avenue
North/South Street	Cataract Avenue
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		27	151	9		6	235	36		10	0	13		12	0	9
Percent Heavy Vehicles		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		29				7					25				23	
Capacity		1260				1395					615				543	
v/c Ratio		0.02				0.01					0.04				0.04	
95% Queue Length		0.1				0.0					0.1				0.1	
Control Delay (s/veh)		7.9				7.6					11.1				11.9	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	1.3				0.2				11.1				11.9			
Approach LOS	A				A				B				B			

Copyright © 2016 University of Florida. All Rights Reserved.

HCS 2010 Two-Way Stop Control Summary Report

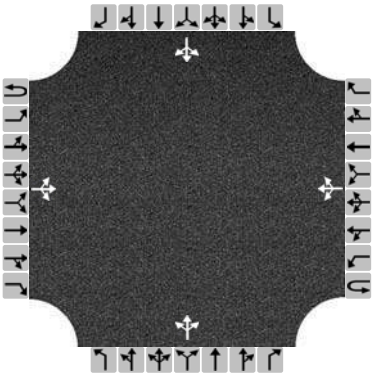
General Information

Analyst	DR
Agency/Co.	LLG Engineers
Date Performed	3/16/2016
Analysis Year	2018
Time Analyzed	W/Rel Projects PM PH
Intersection Orientation	East-West
Project Description	Oak Valley Project/1-15-4133-1

Site Information

Intersection	Int-1
Jurisdiction	City of San Dimas
East/West Street	Allen Avenue
North/South Street	Cataract Avenue
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		6	381	15		10	167	15		9	0	9		28	0	29
Percent Heavy Vehicles		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		7				11					20				62	
Capacity		1367				1123					453				520	
v/c Ratio		0.01				0.01					0.04				0.12	
95% Queue Length		0.0				0.0					0.1				0.4	
Control Delay (s/veh)		7.6				8.2					13.3				12.9	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	0.2				0.5				13.3				12.9			
Approach LOS	A				A				B				B			

Copyright © 2016 University of Florida. All Rights Reserved.

LINSCOTT, LAW & GREENSPAN, ENGINEERS
600 S. Lake Avenue, Suite 500, Pasadena, CA 91106
(626) 796-2322 Fax (626) 792-0941

INTERSECTION CAPACITY UTILIZATION

San Dimas Avenue @ Allen Avenue
Peak hr: AM
Annual Growth: 1.60%

N-S St: San Dimas Avenue
E-W St: Allen Avenue
Project: Oak Valley Project/1-15-4133-1
File: ICU2

Date: 03/16/2016
Date of Count: 2016
Projection Year: 2018

	2016 EXIST. TRAFFIC			2018 W/AMBIENT GROWTH			2018 W/PROJECT SITE TRAFFIC				2018 W/PROJECT MITIGATION				2018 W/RELATED PROJECTS				2018 W/REGIONAL MITIGATION			
	1	2	V/C	Added	Total	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C
Movement	Volume	Capacity	Ratio	Volume	Volume	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio
Nb Left	73	1600	0.046 *	2	75	0.047 *	2	77	1600	0.048 *	0	77	1600	0.048 *	3	80	1600	0.050 *	0	80	1600	0.050 *
Nb Thru	353	3200	0.116	11	364	0.120	10	374	3200	0.123	0	374	3200	0.123	3	377	3200	0.124	0	377	3200	0.124
Nb Right	19	0	-	1	20	-	1	21	0	-	0	21	0	-	0	21	0	-	0	21	0	-
Sb Left	64	1600	0.040	2	66	0.041	0	66	1600	0.041	0	66	1600	0.041	0	66	1600	0.041	0	66	1600	0.041
Sb Thru	457	3200	0.194 *	15	472	0.200 *	4	476	3200	0.202 *	0	476	3200	0.202 *	1	477	3200	0.204 *	0	477	3200	0.204 *
Sb Right	164	0	-	5	169	-	2	171	0	-	0	171	0	-	4	175	0	-	0	175	0	-
Eb Left	56	0	0.035 *	2	58	0.036 *	4	62	0	0.039 *	0	62	0	0.039 *	2	64	0	0.040 *	0	64	0	0.040 *
Eb Thru	50	1600	0.115	2	51	0.119	2	53	1600	0.123	0	53	1600	0.123	2	55	1600	0.127	0	55	1600	0.127
Eb Right	78	0	-	3	81	-	1	82	0	-	0	82	0	-	2	84	0	-	0	84	0	-
Wb Left	24	0	0.015	1	25	0.016	0	25	0	0.016	0	25	0	0.016	0	25	0	0.016	0	25	0	0.016
Wb Thru	84	1600	0.171 *	3	87	0.177 *	1	88	1600	0.178 *	0	88	1600	0.178 *	4	92	1600	0.180 *	0	92	1600	0.180 *
Wb Right	166	0	-	5	171	-	0	171	0	-	0	171	0	-	0	171	0	-	0	171	0	-
Yellow Allowance:			0.100 *			0.100 *				0.100 *				0.100 *				0.100 *				0.100 *
ICU			0.546			0.560				0.567				0.567				0.574				0.574
LOS			A			A				A				A				A				A

03:10 PM

** Key conflicting movement as a part of ICU*
*1 Counts conducted by.*The Traffic Solution
2 Capacity expressed in veh/hour of green

LINSCOTT, LAW & GREENSPAN, ENGINEERS
600 S. Lake Avenue, Suite 500, Pasadena, CA 91106
(626) 796-2322 Fax (626) 792-0941

INTERSECTION CAPACITY UTILIZATION

San Dimas Avenue @ Allen Avenue
Peak hr: PM
Annual Growth: 1.60%

N-S St: San Dimas Avenue
E-W St: Allen Avenue
Project: Oak Valley Project/1-15-4133-1
File: ICU2

Date: 03/16/2016
Date of Count: 2016
Projection Year: 2018

	2016 EXIST. TRAFFIC			2018 W/AMBIENT GROWTH			2018 W/PROJECT SITE TRAFFIC				2018 W/PROJECT MITIGATION				2018 W/RELATED PROJECTS				2018 W/REGIONAL MITIGATION			
	1	2	V/C	Added	Total	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C
Movement	Volume	Capacity	Ratio	Volume	Volume	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio
Nb Left	36	1600	0.022	1	37	0.023	1	38	1600	0.024	0	38	1600	0.024	10	48	1600	0.030	0	48	1600	0.030
Nb Thru	533	3200	0.182 *	17	550	0.187 *	7	557	3200	0.190 *	0	557	3200	0.190 *	2	559	3200	0.191 *	0	559	3200	0.191 *
Nb Right	48	0	-	2	49	-	1	50	0	-	0	50	0	-	0	50	0	-	0	50	0	-
Sb Left	112	1600	0.070 *	4	115	0.072 *	0	115	1600	0.072 *	0	115	1600	0.072 *	0	115	1600	0.072 *	0	115	1600	0.072 *
Sb Thru	469	3200	0.164	15	484	0.169	11	495	3200	0.174	0	495	3200	0.174	4	499	3200	0.179	0	499	3200	0.179
Sb Right	56	0	-	2	58	-	5	63	0	-	0	63	0	-	10	73	0	-	0	73	0	-
Eb Left	157	0	0.098	5	163	0.102	3	166	0	0.103	0	166	0	0.103	11	177	0	0.110	0	177	0	0.110
Eb Thru	149	1600	0.243 *	5	154	0.251 *	1	155	1600	0.255 *	0	155	1600	0.255 *	11	166	1600	0.275 *	0	166	1600	0.275 *
Eb Right	82	0	-	3	85	-	2	87	0	-	0	87	0	-	10	97	0	-	0	97	0	-
Wb Left	20	0	0.013 *	1	21	0.013 *	1	22	0	0.014 *	0	22	0	0.014 *	0	22	0	0.014 *	0	22	0	0.014 *
Wb Thru	50	1600	0.087	2	51	0.090	2	53	1600	0.092	0	53	1600	0.092	11	64	1600	0.099	0	64	1600	0.099
Wb Right	69	0	-	2	71	-	0	71	0	-	0	71	0	-	0	71	0	-	0	71	0	-
Yellow Allowance:			0.100 *			0.100 *				0.100 *				0.100 *				0.100 *				0.100 *
ICU			0.607			0.624				0.630				0.630				0.651				0.651
LOS			B			B				B				B				B				B

03:10 PM

** Key conflicting movement as a part of ICU*
*1 Counts conducted by.*The Traffic Solution
2 Capacity expressed in veh/hour of green

LINSCOTT, LAW & GREENSPAN, ENGINEERS
600 S. Lake Avenue, Suite 500, Pasadena, CA 91106
(626) 796-2322 Fax (626) 792-0941

INTERSECTION CAPACITY UTILIZATION

San Dimas Avenue @ Gladstone Street
Peak hr: AM
Annual Growth: 1.60%

N-S St: San Dimas Avenue
E-W St: Gladstone Street
Project: Oak Valley Project/1-15-4133-1
File: ICU3

Date: 03/17/2016
Date of Count: 2016
Projection Year: 2018

	2016 EXIST. TRAFFIC			2018 W/AMBIENT GROWTH			2018 W/PROJECT SITE TRAFFIC				2018 W/PROJECT MITIGATION [3]				2018 W/RELATED PROJECTS				2018 W/REGIONAL MITIGATION			
	1	2	V/C	Added	Total	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C
Movement	Volume	Capacity	Ratio	Volume	Volume	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio
Nb Left	117	1600	0.073 *	4	121	0.075 *	0	121	1600	0.075 *	0	121	1600	0.075 *	3	124	1600	0.077 *	0	124	1600	0.077 *
Nb Thru	278	1600	0.191	9	287	0.197	2	289	1600	0.199	0	289	1600	0.199	6	295	1600	0.202	0	295	1600	0.202
Nb Right	27	0	-	1	28	-	0	28	0	-	0	28	0	-	0	28	0	-	0	28	0	-
Sb Left	58	1600	0.036	2	60	0.037	9	69	1600	0.043	0	69	1600	0.043	0	69	1600	0.043	0	69	1600	0.043
Sb Thru	412	1600	0.258 *	13	426	0.266 *	5	431	1600	0.269 *	0	431	1600	0.269 *	4	435	1600	0.272 *	0	435	1600	0.272 *
Sb Right	70	1600	0.044	2	72	0.045	3	75	1600	0.047	0	75	1600	0.047	1	76	1600	0.048	0	76	1600	0.048
Eb Left	57	0	0.036 *	2	59	0.037 *	2	61	0	0.038 *	0	61	0	0.038 *	1	62	0	0.039 *	0	62	0	0.039 *
Eb Thru	125	1600	0.151	4	129	0.156	0	129	1600	0.157	0	129	1600	0.119	2	131	1600	0.120	0	131	1600	0.120
Eb Right	60	0	-	2	62	-	0	62	0	-	0	62	1600	0.039	2	64	1600	0.040	0	64	1600	0.040
Wb Left	27	0	0.017	1	28	0.018	0	28	0	0.018	0	28	0	0.018	0	28	0	0.018	0	28	0	0.018
Wb Thru	229	1600	0.160 *	7	236	0.165 *	0	236	1600	0.165 *	0	236	1600	0.165 *	3	239	1600	0.167 *	0	239	1600	0.167 *
Wb Right	89	1600	0.056	3	92	0.058	3	95	1600	0.060	0	95	1600	0.060	0	95	1600	0.060	0	95	1600	0.060
Yellow Allowance:			0.100 *			0.100 *				0.100 *				0.100 *				0.100 *				0.100 *
ICU			0.626			0.643				0.648				0.648				0.655				0.655
LOS			B			B				B				B				B				B

10:43 AM

** Key conflicting movement as a part of ICU*
1 Counts conducted by The Traffic Solution
2 Capacity expressed in veh/hour of green
3 Project mitigation measure consists of modifying the eastbound approach to provide one shared left/through lane and one right-turn only lane.

LINSCOTT, LAW & GREENSPAN, ENGINEERS
600 S. Lake Avenue, Suite 500, Pasadena, CA 91106
(626) 796-2322 Fax (626) 792-0941

INTERSECTION CAPACITY UTILIZATION

San Dimas Avenue @ Gladstone Street
Peak hr: PM
Annual Growth: 1.60%

N-S St: San Dimas Avenue
E-W St: Gladstone Street
Project: Oak Valley Project/1-15-4133-1
File: ICU3

Date: 03/17/2016
Date of Count: 2016
Projection Year: 2018

	2016 EXIST. TRAFFIC			2018 W/AMBIENT GROWTH			2018 W/PROJECT SITE TRAFFIC				2018 W/PROJECT MITIGATION [3]				2018 W/RELATED PROJECTS				2018 W/REGIONAL MITIGATION			
	1	2	V/C	Added	Total	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C
Movement	Volume	Capacity	Ratio	Volume	Volume	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio
Nb Left	93	1600	0.058	3	96	0.060	0	96	1600	0.060	0	96	1600	0.060	10	106	1600	0.067	0	106	1600	0.067
Nb Thru	465	1600	0.326 *	15	480	0.336 *	5	485	1600	0.339 *	0	485	1600	0.339 *	13	498	1600	0.347 *	0	498	1600	0.347 *
Nb Right	56	0	-	2	58	-	0	58	0	-	0	58	0	-	0	58	0	-	0	58	0	-
Sb Left	99	1600	0.062 *	3	102	0.064 *	6	108	1600	0.067 *	0	108	1600	0.067 *	0	108	1600	0.067 *	0	108	1600	0.067 *
Sb Thru	423	1600	0.264	14	436	0.273	3	439	1600	0.274	0	439	1600	0.274	14	453	1600	0.283	0	453	1600	0.283
Sb Right	39	1600	0.024	1	40	0.025	3	43	1600	0.027	0	43	1600	0.027	2	45	1600	0.028	0	45	1600	0.028
Eb Left	75	0	0.047	2	78	0.048	5	83	0	0.052	0	83	0	0.052	1	84	0	0.052	0	84	0	0.052
Eb Thru	563	1600	0.472 *	18	581	0.488 *	0	581	1600	0.491 *	0	581	1600	0.415 *	10	591	1600	0.422 *	0	591	1600	0.422 *
Eb Right	118	0	-	4	122	-	0	122	0	-	0	122	1600	0.076	10	132	1600	0.082	0	132	1600	0.082
Wb Left	20	0	0.013 *	1	21	0.013 *	0	21	0	0.013 *	0	21	0	0.013 *	0	21	0	0.013 *	0	21	0	0.013 *
Wb Thru	232	1600	0.157	7	239	0.163	0	239	1600	0.163	0	239	1600	0.163	11	250	1600	0.169	0	250	1600	0.169
Wb Right	42	1600	0.026	1	43	0.027	10	53	1600	0.033	0	53	1600	0.033	0	53	1600	0.033	0	53	1600	0.033
Yellow Allowance:			0.100 *			0.100 *				0.100 *				0.100 *				0.100 *				0.100 *
ICU			0.972			1.000				1.010				0.934				0.949				0.949
LOS			E			E				F				E				E				E

10:43 AM

** Key conflicting movement as a part of ICU*
1 Counts conducted by The Traffic Solution
2 Capacity expressed in veh/hour of green
3 Project mitigation measure consists of modifying the eastbound approach to provide one shared left/through lane and one right-turn only lane.

LINSCOTT, LAW & GREENSPAN, ENGINEERS
600 S. Lake Avenue, Suite 500, Pasadena, CA 91106
(626) 796-2322 Fax (626) 792-0941

INTERSECTION CAPACITY UTILIZATION

Cataract Avenue @ Allen Avenue
Peak hr: AM
Annual Growth: 0.84%

N-S St: Cataract Avenue
E-W St: Allen Avenue
Project: Oak Valley Project/1-15-4133-1
File: ICU1

Date: 03/17/2016
Date of Count: 2016
Projection Year: 2035

	2016 EXIST. TRAFFIC			2035 W/AMBIENT GROWTH			2035 W/PROJECT SITE TRAFFIC				2035 W/PROJECT MITIGATION				2035 W/RELATED PROJECTS				2035 W/REGIONAL MITIGATION			
	1	2	V/C	Added	Total	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C
Movement	Volume	Capacity	Ratio	Volume	Volume	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio
Nb Left	2	0	0.001 *	0	2	0.001 *	8	10	0	0.006	0	10	0	0.006	0	10	0	0.006	0	10	0	0.006
Nb Thru	0	1600	0.006	0	0	0.007	0	0	1600	0.015 *	0	0	1600	0.015 *	0	0	1600	0.015 *	0	0	1600	0.015 *
Nb Right	7	0	-	1	8	-	6	14	0	-	0	14	0	-	0	14	0	-	0	14	0	-
Sb Left	11	0	0.007	2	13	0.008	0	13	0	0.008 *	0	13	0	0.008 *	0	13	0	0.008 *	0	13	0	0.008 *
Sb Thru	0	1600	0.013 *	0	0	0.015 *	0	0	1600	0.015	0	0	1600	0.015	0	0	1600	0.015	0	0	1600	0.015
Sb Right	9	0	-	1	11	-	0	11	0	-	0	11	0	-	0	11	0	-	0	11	0	-
Eb Left	26	0	0.017 *	4	31	0.019 *	0	31	0	0.019 *	0	31	0	0.019 *	0	31	0	0.019 *	0	31	0	0.019 *
Eb Thru	138	1600	0.107	22	160	0.124	1	161	1600	0.126	0	161	1600	0.126	7	168	1600	0.131	0	168	1600	0.131
Eb Right	6	0	-	1	7	-	3	10	0	-	0	10	0	-	0	10	0	-	0	10	0	-
Wb Left	4	0	0.003	1	5	0.003	2	7	0	0.004	0	7	0	0.004	0	7	0	0.004	0	7	0	0.004
Wb Thru	215	1600	0.159 *	34	250	0.184 *	2	252	1600	0.187 *	0	252	1600	0.187 *	11	263	1600	0.193 *	0	263	1600	0.193 *
Wb Right	35	0	-	6	40	-	0	40	0	-	0	40	0	-	0	40	0	-	0	40	0	-
Yellow Allowance:			0.100 *			0.100 *				0.100 *				0.100 *				0.100 *				0.100 *
ICU			0.289			0.319				0.329				0.329				0.336				0.336
LOS			A			A				A				A				A				A

11:20 AM

** Key conflicting movement as a part of ICU*
1 Counts conducted by The Traffic Solution
2 Capacity expressed in veh/hour of green

LINSCOTT, LAW & GREENSPAN, ENGINEERS
600 S. Lake Avenue, Suite 500, Pasadena, CA 91106
(626) 796-2322 Fax (626) 792-0941

INTERSECTION CAPACITY UTILIZATION

Cataract Avenue @ Allen Avenue
Peak hr: PM
Annual Growth: 0.84%

N-S St: Cataract Avenue
E-W St: Allen Avenue
Project: Oak Valley Project/1-15-4133-1
File: ICU1

Date: 03/17/2016
Date of Count: 2016
Projection Year: 2035

	2016 EXIST. TRAFFIC			2035 W/AMBIENT GROWTH			2035 W/PROJECT SITE TRAFFIC				2035 W/PROJECT MITIGATION				2035 W/RELATED PROJECTS				2035 W/REGIONAL MITIGATION			
	1	2	V/C	Added	Total	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C
Movement	Volume	Capacity	Ratio	Volume	Volume	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio
Nb Left	4	0	0.003 *	1	5	0.003 *	5	10	0	0.006 *	0	10	0	0.006 *	0	10	0	0.006 *	0	10	0	0.006 *
Nb Thru	0	1600	0.006	0	0	0.007	0	0	1600	0.012	0	0	1600	0.012	0	0	1600	0.012	0	0	1600	0.012
Nb Right	5	0	-	1	6	-	4	10	0	-	0	10	0	-	0	10	0	-	0	10	0	-
Sb Left	27	0	0.017	4	32	0.020	0	32	0	0.020	0	32	0	0.020	0	32	0	0.020	0	32	0	0.020
Sb Thru	0	1600	0.035 *	0	0	0.040 *	0	0	1600	0.040 *	0	0	1600	0.040 *	0	0	1600	0.040 *	0	0	1600	0.040 *
Sb Right	28	0	-	5	33	-	0	33	0	-	0	33	0	-	0	33	0	-	0	33	0	-
Eb Left	6	0	0.004	1	7	0.004	0	7	0	0.004	0	7	0	0.004	0	7	0	0.004	0	7	0	0.004
Eb Thru	336	1600	0.218 *	54	390	0.253 *	2	392	1600	0.259 *	0	392	1600	0.259 *	32	424	1600	0.279 *	0	424	1600	0.279 *
Eb Right	6	0	-	1	7	-	9	16	0	-	0	16	0	-	0	16	0	-	0	16	0	-
Wb Left	3	0	0.002 *	0	4	0.002 *	7	11	0	0.007 *	0	11	0	0.007 *	0	11	0	0.007 *	0	11	0	0.007 *
Wb Thru	132	1600	0.093	21	153	0.108	1	154	1600	0.113	0	154	1600	0.113	30	184	1600	0.132	0	184	1600	0.132
Wb Right	14	0	-	2	16	-	0	16	0	-	0	16	0	-	0	16	0	-	0	16	0	-
Yellow Allowance:			0.100 *			0.100 *				0.100 *				0.100 *				0.100 *				0.100 *
ICU			0.357			0.398				0.413				0.413				0.433				0.433
LOS			A			A				A				A				A				A

11:20 AM

** Key conflicting movement as a part of ICU*
1 Counts conducted by The Traffic Solution
2 Capacity expressed in veh/hour of green

HCS 2010 Two-Way Stop Control Summary Report

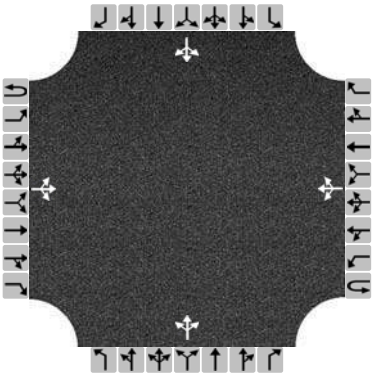
General Information

Analyst	DR
Agency/Co.	LLG Engineers
Date Performed	3/16/2016
Analysis Year	2016
Time Analyzed	Existing AM Peak Hour
Intersection Orientation	East-West
Project Description	Oak Valley Project/1-15-4133-1

Site Information

Intersection	Int-1
Jurisdiction	City of San Dimas
East/West Street	Allen Avenue
North/South Street	Cataract Avenue
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		26	138	6		4	215	35		2	0	7		11	0	9
Percent Heavy Vehicles		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		28				4					10				22	
Capacity		1284				1415					760				586	
v/c Ratio		0.02				0.00					0.01				0.04	
95% Queue Length		0.1				0.0					0.0				0.1	
Control Delay (s/veh)		7.9				7.6					9.8				11.4	
Level of Service (LOS)		A				A					A				B	
Approach Delay (s/veh)	1.4				0.1				9.8				11.4			
Approach LOS	A				A				A				B			

Copyright © 2016 University of Florida. All Rights Reserved.

HCS 2010 Two-Way Stop Control Summary Report

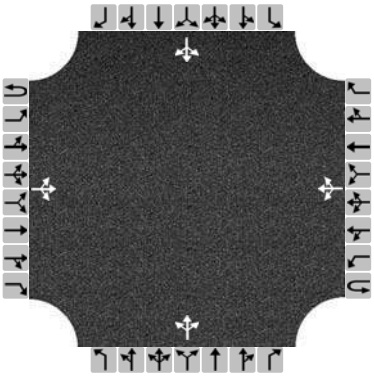
General Information

Analyst	DR
Agency/Co.	LLG Engineers
Date Performed	3/16/2016
Analysis Year	2016
Time Analyzed	Existing PM Peak Hour
Intersection Orientation	East-West
Project Description	Oak Valley Project/1-15-4133-1

Site Information

Intersection	Int-1
Jurisdiction	City of San Dimas
East/West Street	Allen Avenue
North/South Street	Cataract Avenue
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		6	336	6		3	132	14		4	0	5		27	0	28
Percent Heavy Vehicles		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		7				3					9				59	
Capacity		1414				1180					534				596	
v/c Ratio		0.00				0.00					0.02				0.10	
95% Queue Length		0.0				0.0					0.1				0.3	
Control Delay (s/veh)		7.6				8.1					11.9				11.7	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	0.2				0.2				11.9				11.7			
Approach LOS	A				A				B				B			

Copyright © 2016 University of Florida. All Rights Reserved.

HCS 2010 Two-Way Stop Control Summary Report

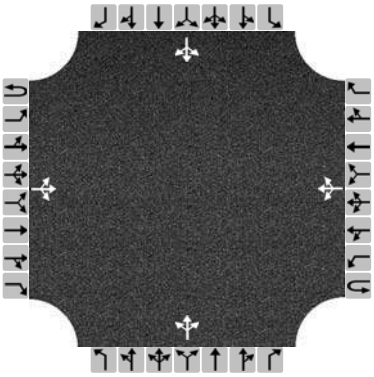
General Information

Analyst	DR
Agency/Co.	LLG Engineers
Date Performed	3/16/2016
Analysis Year	2035
Time Analyzed	A.G. AM Peak Hour
Intersection Orientation	East-West
Project Description	Oak Valley Project/1-15-4133-1

Site Information

Intersection	Int-1
Jurisdiction	City of San Dimas
East/West Street	Allen Avenue
North/South Street	Cataract Avenue
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		31	160	7		5	250	40		2	0	8		13	0	11
Percent Heavy Vehicles		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		34				5					11				26	
Capacity		1238				1386					724				530	
v/c Ratio		0.03				0.00					0.02				0.05	
95% Queue Length		0.1				0.0					0.0				0.2	
Control Delay (s/veh)		8.0				7.6					10.0				12.1	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	1.5				0.2				10.0				12.1			
Approach LOS	A				A				B				B			

Copyright © 2016 University of Florida. All Rights Reserved.

HCS 2010 Two-Way Stop Control Summary Report

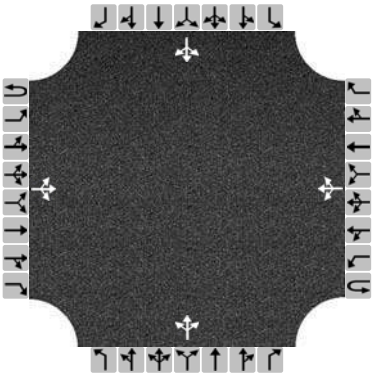
General Information

Analyst	DR
Agency/Co.	LLG Engineers
Date Performed	3/16/2016
Analysis Year	2035
Time Analyzed	A.G. PM Peak Hour
Intersection Orientation	East-West
Project Description	Oak Valley Project/1-15-4133-1

Site Information

Intersection	Int-1
Jurisdiction	City of San Dimas
East/West Street	Allen Avenue
North/South Street	Cataract Avenue
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		7	390	7		4	153	16		5	0	6		32	0	33
Percent Heavy Vehicles		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		8				4					12				71	
Capacity		1384				1121					482				536	
v/c Ratio		0.01				0.00					0.02				0.13	
95% Queue Length		0.0				0.0					0.1				0.5	
Control Delay (s/veh)		7.6				8.2					12.7				12.7	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	0.2				0.2				12.7				12.7			
Approach LOS	A				A				B				B			

Copyright © 2016 University of Florida. All Rights Reserved.

HCS 2010 Two-Way Stop Control Summary Report

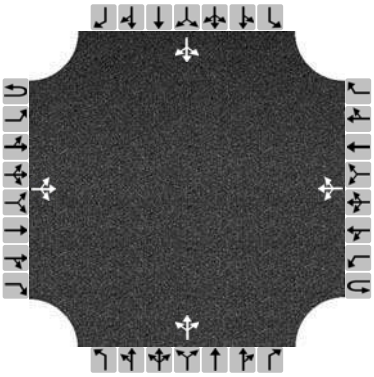
General Information

Analyst	DR
Agency/Co.	LLG Engineers
Date Performed	3/16/2016
Analysis Year	2035
Time Analyzed	W/Project AM Peak Hour
Intersection Orientation	East-West
Project Description	Oak Valley Project/1-15-4133-1

Site Information

Intersection	Int-1
Jurisdiction	City of San Dimas
East/West Street	Allen Avenue
North/South Street	Cataract Avenue
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		31	161	10		7	252	40		10	0	14		13	0	11
Percent Heavy Vehicles		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		34				8					26				26	
Capacity		1236				1381					591				518	
v/c Ratio		0.03				0.01					0.04				0.05	
95% Queue Length		0.1				0.0					0.1				0.2	
Control Delay (s/veh)		8.0				7.6					11.4				12.3	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	1.4				0.2				11.4				12.3			
Approach LOS	A				A				B				B			

Copyright © 2016 University of Florida. All Rights Reserved.

HCS 2010 Two-Way Stop Control Summary Report

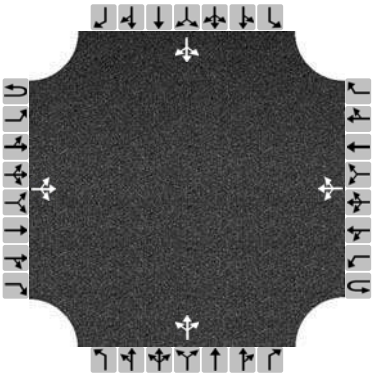
General Information

Analyst	DR
Agency/Co.	LLG Engineers
Date Performed	3/16/2016
Analysis Year	2035
Time Analyzed	W/Project PM Peak Hour
Intersection Orientation	East-West
Project Description	Oak Valley Project/1-15-4133-1

Site Information

Intersection	Int-1
Jurisdiction	City of San Dimas
East/West Street	Allen Avenue
North/South Street	Cataract Avenue
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		7	392	16		11	154	16		10	0	10		32	0	33
Percent Heavy Vehicles		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		8				12					22				71	
Capacity		1383				1111					447				516	
v/c Ratio		0.01				0.01					0.05				0.14	
95% Queue Length		0.0				0.0					0.2				0.5	
Control Delay (s/veh)		7.6				8.3					13.5				13.1	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	0.2				0.6				13.5				13.1			
Approach LOS	A				A				B				B			

Copyright © 2016 University of Florida. All Rights Reserved.

HCS 2010 Two-Way Stop Control Summary Report

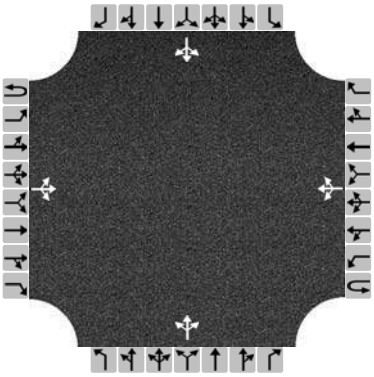
General Information

Analyst	DR
Agency/Co.	LLG Engineers
Date Performed	3/16/2016
Analysis Year	2035
Time Analyzed	W/Rel Projects AM PH
Intersection Orientation	East-West
Project Description	Oak Valley Project/1-15-4133-1

Site Information

Intersection	Int-1
Jurisdiction	City of San Dimas
East/West Street	Allen Avenue
North/South Street	Cataract Avenue
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		31	168	10		7	263	40		10	0	14		13	0	11
Percent Heavy Vehicles		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		34				8					26				26	
Capacity		1224				1372					577				505	
v/c Ratio		0.03				0.01					0.05				0.05	
95% Queue Length		0.1				0.0					0.1				0.2	
Control Delay (s/veh)		8.0				7.6					11.5				12.5	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	1.4				0.2				11.5				12.5			
Approach LOS	A				A				B				B			

Copyright © 2016 University of Florida. All Rights Reserved.

HCS 2010 Two-Way Stop Control Summary Report

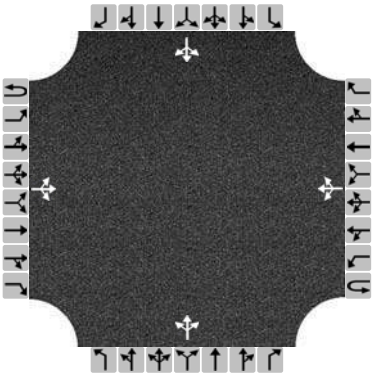
General Information

Analyst	DR
Agency/Co.	LLG Engineers
Date Performed	3/16/2016
Analysis Year	2035
Time Analyzed	W/Rel Projects PM PH
Intersection Orientation	East-West
Project Description	Oak Valley Project/1-15-4133-1

Site Information

Intersection	Int-1
Jurisdiction	City of San Dimas
East/West Street	Allen Avenue
North/South Street	Cataract Avenue
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		7	424	16		11	184	16		10	0	10		32	0	33
Percent Heavy Vehicles		3				3				3	3	3		3	3	3
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		8				12					22				71	
Capacity		1345				1078					410				473	
v/c Ratio		0.01				0.01					0.05				0.15	
95% Queue Length		0.0				0.0					0.2				0.5	
Control Delay (s/veh)		7.7				8.4					14.3				14.0	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	0.2				0.5				14.3				14.0			
Approach LOS	A				A				B				B			

Copyright © 2016 University of Florida. All Rights Reserved.

LINSCOTT, LAW & GREENSPAN, ENGINEERS
600 S. Lake Avenue, Suite 500, Pasadena, CA 91106
(626) 796-2322 Fax (626) 792-0941

INTERSECTION CAPACITY UTILIZATION

San Dimas Avenue @ Allen Avenue
Peak hr: AM
Annual Growth: 0.84%

N-S St: San Dimas Avenue
E-W St: Allen Avenue
Project: Oak Valley Project/1-15-4133-1
File: ICU2

Date: 03/17/2016
Date of Count: 2016
Projection Year: 2035

	2016 EXIST. TRAFFIC			2035 W/AMBIENT GROWTH			2035 W/PROJECT SITE TRAFFIC				2035 W/PROJECT MITIGATION				2035 W/RELATED PROJECTS				2035 W/REGIONAL MITIGATION			
	1	2	V/C	Added	Total	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C
Movement	Volume	Capacity	Ratio	Volume	Volume	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio
Nb Left	73	1600	0.046 *	12	85	0.053 *	2	87	1600	0.054 *	0	87	1600	0.054 *	3	90	1600	0.056 *	0	90	1600	0.056 *
Nb Thru	353	3200	0.116	56	409	0.135	10	419	3200	0.138	0	419	3200	0.138	3	422	3200	0.139	0	422	3200	0.139
Nb Right	19	0	-	3	22	-	1	23	0	-	0	23	0	-	0	23	0	-	0	23	0	-
Sb Left	64	1600	0.040	10	74	0.046	0	74	1600	0.046	0	74	1600	0.046	0	74	1600	0.046	0	74	1600	0.046
Sb Thru	457	3200	0.194 *	73	530	0.225 *	4	534	3200	0.227 *	0	534	3200	0.227 *	1	535	3200	0.228 *	0	535	3200	0.228 *
Sb Right	164	0	-	26	190	-	2	192	0	-	0	192	0	-	4	196	0	-	0	196	0	-
Eb Left	56	0	0.035 *	9	65	0.040 *	4	69	0	0.043 *	0	69	0	0.043 *	2	71	0	0.044 *	0	71	0	0.044 *
Eb Thru	50	1600	0.115	8	58	0.133	2	60	1600	0.138	0	60	1600	0.138	2	62	1600	0.141	0	62	1600	0.141
Eb Right	78	0	-	12	91	-	1	92	0	-	0	92	0	-	2	94	0	-	0	94	0	-
Wb Left	24	0	0.015	4	28	0.018	0	28	0	0.018	0	28	0	0.018	0	28	0	0.018	0	28	0	0.018
Wb Thru	84	1600	0.171 *	13	98	0.199 *	1	99	1600	0.199 *	0	99	1600	0.199 *	4	103	1600	0.202 *	0	103	1600	0.202 *
Wb Right	166	0	-	26	192	-	0	192	0	-	0	192	0	-	0	192	0	-	0	192	0	-
Yellow Allowance:			0.100 *			0.100 *				0.100 *				0.100 *				0.100 *				0.100 *
ICU			0.546			0.617				0.624				0.624				0.631				0.631
LOS			A			B				B				B				B				B

11:26 AM

** Key conflicting movement as a part of ICU*
1 Counts conducted by The Traffic Solution
2 Capacity expressed in veh/hour of green

LINSCOTT, LAW & GREENSPAN, ENGINEERS
600 S. Lake Avenue, Suite 500, Pasadena, CA 91106
(626) 796-2322 Fax (626) 792-0941

INTERSECTION CAPACITY UTILIZATION

San Dimas Avenue @ Allen Avenue
Peak hr: PM
Annual Growth: 0.84%

N-S St: San Dimas Avenue
E-W St: Allen Avenue
Project: Oak Valley Project/1-15-4133-1
File: ICU2

Date: 03/17/2016
Date of Count: 2016
Projection Year: 2035

	2016 EXIST. TRAFFIC			2035 W/AMBIENT GROWTH			2035 W/PROJECT SITE TRAFFIC				2035 W/PROJECT MITIGATION				2035 W/RELATED PROJECTS				2035 W/REGIONAL MITIGATION			
	1	2	V/C	Added	Total	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C
Movement	Volume	Capacity	Ratio	Volume	Volume	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio
Nb Left	36	1600	0.022	6	41	0.026	1	42	1600	0.026	0	42	1600	0.026	10	52	1600	0.033	0	52	1600	0.033
Nb Thru	533	3200	0.182 *	85	619	0.211 *	7	626	3200	0.213 *	0	626	3200	0.213 *	2	628	3200	0.214 *	0	628	3200	0.214 *
Nb Right	48	0	-	8	55	-	1	56	0	-	0	56	0	-	0	56	0	-	0	56	0	-
Sb Left	112	1600	0.070 *	18	130	0.081 *	0	130	1600	0.081 *	0	130	1600	0.081 *	0	130	1600	0.081 *	0	130	1600	0.081 *
Sb Thru	469	3200	0.164	75	544	0.190	11	555	3200	0.195	0	555	3200	0.195	4	559	3200	0.200	0	559	3200	0.200
Sb Right	56	0	-	9	65	-	5	70	0	-	0	70	0	-	10	80	0	-	0	80	0	-
Eb Left	157	0	0.098	25	183	0.114	3	186	0	0.116	0	186	0	0.116	11	197	0	0.123	0	197	0	0.123
Eb Thru	149	1600	0.243 *	24	173	0.282 *	1	174	1600	0.286 *	0	174	1600	0.286 *	11	185	1600	0.306 *	0	185	1600	0.306 *
Eb Right	82	0	-	13	95	-	2	97	0	-	0	97	0	-	10	107	0	-	0	107	0	-
Wb Left	20	0	0.013 *	3	24	0.015 *	1	25	0	0.015 *	0	25	0	0.015 *	0	25	0	0.015 *	0	25	0	0.015 *
Wb Thru	50	1600	0.087	8	58	0.101	2	60	1600	0.103	0	60	1600	0.103	11	71	1600	0.110	0	71	1600	0.110
Wb Right	69	0	-	11	80	-	0	80	0	-	0	80	0	-	0	80	0	-	0	80	0	-
Yellow Allowance:			0.100 *			0.100 *				0.100 *				0.100 *				0.100 *				0.100 *
ICU			0.607			0.688				0.695				0.695				0.716				0.716
LOS			B			B				B				B				C				C

11:26 AM

** Key conflicting movement as a part of ICU*
1 Counts conducted by The Traffic Solution
2 Capacity expressed in veh/hour of green

LINSCOTT, LAW & GREENSPAN, ENGINEERS
600 S. Lake Avenue, Suite 500, Pasadena, CA 91106
(626) 796-2322 Fax (626) 792-0941

INTERSECTION CAPACITY UTILIZATION

San Dimas Avenue @ Gladstone Street
Peak hr: AM
Annual Growth: 0.84%

N-S St: San Dimas Avenue
E-W St: Gladstone Street
Project: Oak Valley Project/1-15-4133-1
File: ICU3

Date: 03/17/2016
Date of Count: 2016
Projection Year: 2035

	2016 EXIST. TRAFFIC			2035 W/AMBIENT GROWTH			2035 W/PROJECT SITE TRAFFIC				2035 W/PROJECT MITIGATION				2035 W/RELATED PROJECTS				2035 W/REGIONAL MITIGATION [3]			
	1	2	V/C	Added	Total	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C
Movement	Volume	Capacity	Ratio	Volume	Volume	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio
Nb Left	117	1600	0.073 *	19	135	0.085 *	0	135	1600	0.085 *	0	135	1600	0.085 *	3	138	1600	0.087 *	0	138	1600	0.087 *
Nb Thru	278	1600	0.191	44	323	0.222	2	325	1600	0.223	0	325	1600	0.223	6	331	1600	0.227	0	331	1600	0.227
Nb Right	27	0	-	4	32	-	0	32	0	-	0	32	0	-	0	32	0	-	0	32	0	-
Sb Left	58	1600	0.036	9	67	0.042	9	76	1600	0.048	0	76	1600	0.048	0	76	1600	0.048	0	76	1600	0.048
Sb Thru	412	1600	0.258 *	66	478	0.299 *	5	483	1600	0.302 *	0	483	1600	0.302 *	4	487	1600	0.305 *	0	487	1600	0.305 *
Sb Right	70	1600	0.044	11	81	0.051	3	84	1600	0.053	0	84	1600	0.053	1	85	1600	0.053	0	85	1600	0.053
Eb Left	57	0	0.036 *	9	66	0.041 *	2	68	0	0.042 *	0	68	0	0.042 *	1	69	0	0.043 *	0	69	0	0.043 *
Eb Thru	125	1600	0.151	20	145	0.175	0	145	1600	0.177	0	145	1600	0.133	2	147	1600	0.135	0	147	1600	0.135
Eb Right	60	0	-	10	70	-	0	70	0	-	0	70	1600	0.043	2	72	1600	0.045	0	72	1600	0.045
Wb Left	27	0	0.017	4	32	0.020	0	32	0	0.020	0	32	0	0.020	0	32	0	0.020	0	32	0	0.020
Wb Thru	229	1600	0.160 *	36	265	0.186 *	0	265	1600	0.186 *	0	265	1600	0.186 *	3	268	1600	0.187 *	0	268	1600	0.187 *
Wb Right	89	1600	0.056	14	104	0.065	3	107	1600	0.067	0	107	1600	0.067	0	107	1600	0.067	0	107	1600	0.067
Yellow Allowance:			0.100 *			0.100 *				0.100 *				0.100 *				0.100 *				0.100 *
ICU			0.626			0.710				0.715				0.715				0.722				0.722
LOS			B			C				C				C				C				C

11:27 AM

** Key conflicting movement as a part of ICU*
1 Counts conducted by The Traffic Solution
2 Capacity expressed in veh/hour of green
3 Project mitigation measure consists of modifying the eastbound approach to provide one shared left/through lane and one right-turn only lane.

LINSCOTT, LAW & GREENSPAN, ENGINEERS
600 S. Lake Avenue, Suite 500, Pasadena, CA 91106
(626) 796-2322 Fax (626) 792-0941

INTERSECTION CAPACITY UTILIZATION

San Dimas Avenue @ Gladstone Street
Peak hr: PM
Annual Growth: 0.84%

N-S St: San Dimas Avenue
E-W St: Gladstone Street
Project: Oak Valley Project/1-15-4133-1
File: ICU3

Date: 03/17/2016
Date of Count: 2016
Projection Year: 2035

	2016 EXIST. TRAFFIC			2035 W/AMBIENT GROWTH			2035 W/PROJECT SITE TRAFFIC				2035 W/PROJECT MITIGATION				2035 W/RELATED PROJECTS				2035 W/REGIONAL MITIGATION [3]			
	1	2	V/C	Added	Total	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C
Movement	Volume	Capacity	Ratio	Volume	Volume	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio
Nb Left	93	1600	0.058	15	108	0.068	0	108	1600	0.068	0	108	1600	0.068	10	118	1600	0.074	0	118	1600	0.074
Nb Thru	465	1600	0.326 *	74	540	0.378 *	5	545	1600	0.381 *	0	545	1600	0.381 *	13	558	1600	0.389 *	0	558	1600	0.389 *
Nb Right	56	0	-	9	65	-	0	65	0	-	0	65	0	-	0	65	0	-	0	65	0	-
Sb Left	99	1600	0.062 *	16	114	0.071 *	6	120	1600	0.075 *	0	120	1600	0.075 *	0	120	1600	0.075 *	0	120	1600	0.075 *
Sb Thru	423	1600	0.264	67	490	0.306	3	493	1600	0.308	0	493	1600	0.308	14	507	1600	0.317	0	507	1600	0.317
Sb Right	39	1600	0.024	6	45	0.028	3	48	1600	0.030	0	48	1600	0.030	2	50	1600	0.031	0	50	1600	0.031
Eb Left	75	0	0.047	12	87	0.054	5	92	0	0.058	0	92	0	0.058	1	93	0	0.058	0	93	0	0.058
Eb Thru	563	1600	0.472 *	90	653	0.548 *	0	653	1600	0.551 *	0	653	1600	0.466 *	10	663	1600	0.472 *	0	663	1600	0.472 *
Eb Right	118	0	-	19	137	-	0	137	0	-	0	137	1600	0.085	10	147	1600	0.092	0	147	1600	0.092
Wb Left	20	0	0.013 *	3	24	0.015 *	0	24	0	0.015 *	0	24	0	0.015 *	0	24	0	0.015 *	0	24	0	0.015 *
Wb Thru	232	1600	0.157	37	269	0.183	0	269	1600	0.183	0	269	1600	0.183	11	280	1600	0.189	0	280	1600	0.189
Wb Right	42	1600	0.026	7	48	0.030	10	58	1600	0.036	0	58	1600	0.036	0	58	1600	0.036	0	58	1600	0.036
Yellow Allowance:			0.100 *			0.100 *				0.100 *				0.100 *				0.100 *				0.100 *
ICU			0.972			1.112				1.122				1.036				1.051				1.051
LOS			E			F				F				F				F				F

11:27 AM

** Key conflicting movement as a part of ICU*
1 Counts conducted by The Traffic Solution
2 Capacity expressed in veh/hour of green
3 Project mitigation measure consists of modifying the eastbound approach to provide one shared left/through lane and one right-turn only lane.

LINSCOTT
LAW &
GREENSPAN
engineers

Engineers & Planners
Traffic
Transportation
Parking

Linscott, Law & Greenspan, Engineers
600 S. Lake Avenue
Suite 500
Pasadena, CA 91106
626.796.2322 T
626.792.0941 F
www.llgengineers.com

Pasadena
Irvine
San Diego
Woodland Hills

MEMORANDUM

To:	Mr. Luis Torrico City of San Dimas, Development Services Department	Date:	December 2, 2015
From:	Clare M. Look-Jaeger, P.E. CL-Jaeger Chin S. Taing, PTP CST Linscott, Law & Greenspan, Engineers	LLG Ref:	1-15-4133-1
Subject:	**Supplemental Traffic Study Addendum for the Oak Valley Project, City of San Dimas, California**		

This memorandum has been prepared by Linscott, Law & Greenspan, Engineers (LLG) to respond to Item No. 2 of the City's Incompleteness Letter, dated November 20, 2015, with regard to the comments on the Traffic Impact Study (dated October 15, 2015). Pursuant to our coordination with the project applicant representative, the following summarizes each of the comments under Item No. 2 in italics and the corresponding responses to those comments.

Item No. 2. (a), page 2

"Traffic study for development for current (2 years with completion of proposed project) and future conditions (20 years after completion) is acceptable with two minor revisions that need to be addressed. The Traffic Study should analyze east/west split phase signal operation at the intersection of Gladstone and San Dimas Avenue as a potential mitigation for traffic impacts at this intersection. The intersection of San Dimas Avenue and "A" Street should be reviewed for signal warrants for the ultimate build out of the surrounding area not just the 28 lots. If a signal is warranted, the development should pay their contributory percentage."

As indicated in Section 10.0 of the Traffic Impact Study, the proposed cumulative mitigation measure that is expected to reduce the forecast significant impact to less than significant levels consists of restriping the eastbound approach on Gladstone Street to provide one shared through/left-turn lane and an exclusive right-turn only lane. LLG has reviewed the City-recommended measure of providing east/west split phase signal operation alone and determined that it would <u>not</u> be sufficient to mitigate the significant cumulative impact at this location for both future 2018 and 2035 cumulative with project conditions. It should also be noted that the proposed east/west split phase signal operation modification in combination with the proposed eastbound right-turn only lane would also <u>not</u> be sufficient to mitigate this significant cumulative impact to a less than significant level for both future 2018 and 2035 cumulative with project conditions. For informational purposes, the ICU calculation worksheets for both scenarios (i.e., [a] with the proposed east/west split phase signal operation only, or [b] with the proposed east/west split phase signal operation and eastbound right-turn only lane) for future (2018 and 2035) conditions are included in ***Attachment A***.

RECEIVED
DEC - 4 2015
CITY OF SAN DIMAS
DEVELOPMENT SERVICES

Traffic signal warrant analyses have also been prepared to determine whether a traffic signal installation is warranted for the San Dimas Avenue/Project Driveway ("A" Street) intersection upon completion of the proposed Oak Valley project and build-out of the adjacent parcel to the west. The determination of whether the installation of a traffic signal is warranted was based on criteria set forth in Chapter 4C of the California Manual on Uniform Traffic Control Devices (MUTCD)[1]. Specifically, Warrant No. 3 (Peak Hour Volume) and Warrant No. 6 (Coordinated Signal System) traffic signal warrants were prepared. The traffic signal warrant calculations were based on the forecast future year 2018 and 2035 cumulative with project traffic volumes contained in the Traffic Study (refer to *Figures 9-5* and *9-6* as well as *Figures 9-11* and *9-12*). The traffic signal warrant worksheets are contained in ***Attachment B***.

In reviewing the traffic signal warrant analysis, it is important to note the following:

- The San Dimas Avenue/Project Driveway ("A" Street) intersection was assumed to be a two-way stop controlled intersection with the stop sign facing the "A" Street eastbound approach.
- For the signal warrant analyses, the minor street approach volumes consist of the eastbound volumes for "A" Street. The major street approach volumes consist of the northbound and southbound volumes on San Dimas Avenue.
- The following lane configurations have been assumed for the intersection:
  - Southbound approach (San Dimas Avenue): one through lane, one combination through/right-turn shared lane
  - Northbound approach (San Dimas Avenue): one left-turn lane, two through lanes
  - Eastbound approach (Project Driveway/"A" Street): one left-through-right shared lane.

The following paragraphs provide detailed discussions of the traffic signal warrants prepared for the subject location.

Warrant 3: Peak Hour Volume

The Peak Hour Volume Warrant consists of Part A and Part B and is intended for application where traffic conditions are such that for one hour of the day minor street traffic suffers undue delay in entering or crossing the major street. The Peak Hour Volume Warrant applies when either Part A or Part B of the following criteria is satisfied:

[1] *California Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways,* State of California Business, Transportation and Housing Agency, Department of Transportation, 2014.

- Part A. If all three of the following conditions exist for the same one hour (any four consecutive 15-minute periods) of an average day:
    - The total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equals or exceeds 4 vehicle-hours for a one-lane approach, or 5 vehicle-hours for a two-lane approach, and
    - The volume on the same minor-street approach (one direction only) equals or exceeds 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes, and
    - The total entering volume serviced during the hour equals or exceeds 650 vehicles per hour for intersections with three approaches or 800 vehicles per hour for intersections with four or more approaches.
- Part B of Warrant No. 3 is satisfied when the plotted point, representing the vehicles per hour on the major street (northbound and southbound approaches) and the corresponding vehicles per hour on the higher volume minor street approach (eastbound approach only) for one hour of an average day, falls above the curve in Figure 4C-3 for the applicable number of approach lanes. The lower threshold for a minor street approach with one lane is 100 vehicles per hour while a minor street with two or more lanes is 150 vehicles per hour. The signal warrant is met when the plotted point falls above the appropriate curve.

As shown on the attached Figure 4C-3 provided in *Attachment B*, the plotted point for the peak hour falls below the applicable curve for the San Dimas Avenue/Project Driveway ("A" Street) intersection. Therefore, Warrant No. 3-Peak Hour is not met for the future cumulative (2018 and 2035) with project conditions for the San Dimas Avenue/Project Driveway ("A" Street) intersection.

<u>Warrant 6: Coordinated Signal System</u>

The Coordinated Signal System warrant applies when all of the following criteria are satisfied:

- The distance to the nearest traffic signal is greater than 1,000 feet, and
- On an isolated one-way street or street with one way traffic, the adjacent signals are so far apart that necessary platooning and speed control would be lost; or

- On a two-way street, where the adjacent signals do not provide the necessary degree of platooning and speed control, proposed signals could constitute a progressive signal system.

Warrant 6 is satisfied if the distance to the nearest traffic signal is greater than 1,000 feet; if the adjacent signals do not provide the necessary degree of platooning and the proposed and adjacent signals could constitute a progressive signal system. For the San Dimas Avenue/Project Driveway ("A" Street) intersection, the distance to the nearest traffic signal to the north (at San Dimas Avenue/Allen Avenue) and south (at San Dimas Avenue/Gladstone Street) is approximately 475 feet and 830 feet, respectively. Thus, there are signalized intersections to the north and south on San Dimas Avenue that are less than the 1,000-foot threshold for the subject intersection. Thus, Warrant 6 is not satisfied for the subject intersection.

In summary, the following conclusions are reached for the subject intersection (i.e., San Dimas Avenue/Project Driveway ["A" Street]) based on the traffic signal warrant analyses. The above traffic signal warrant analyses indicate that both warrants (Warrant Nos. 3 and 6) are not satisfied based on the future (2018 and 2035) cumulative with project traffic conditions at the subject intersection. Therefore, it is not recommended that the installation of a traffic signal at this location be considered at this time.

Item No. 2. (b), page 2

"The traffic study shall include plans for projected opening for the project that includes closure of existing median access to the existing driveway. Of concern, is the length of the new left turn pocket taking into account future development of master plan that includes development of adjacent area."

As shown in Figure 2-1, Site Plan, page 9 of the Traffic Impact Study, the site plan illustrates the project driveway design which includes the median modification that would restrict access to the existing four single family residential units on the east side of San Dimas Avenue south of the proposed project driveway ("A" Street).

Also as indicated on page 30 of the Traffic Impact Study, for the proposed Oak Valley project (i.e., 28 single-family residential units) in combination with the development of the adjacent parcel (i.e., 50 single-family residential units), it is estimated that the northbound left-turn volume into the project driveway ("A" Street), would total approximately seven (7) vehicles during the AM peak hour and 20 vehicles during the PM peak hour. The AM and PM peak hour inbound vehicle trips were then divided into 60 to determine the expected average number of inbound vehicles on a per minute basis during the peak hour. It was determined that an arrival rate of roughly one vehicle every 8 minutes during the AM peak hour and

approximately one vehicle every three minutes during the PM peak hour could be expected.

In order to account for potential peak arrival periods, the inbound arrival rate was multiplied by an entry peaking factor of 2.0. An average vehicle length of 20 feet (which includes the bumper to bumper length of a vehicle plus the distance between queued vehicles) is then applied to develop the storage length forecast to be necessary in order to accommodate peak arrival conditions. Based on these factors, a northbound left-turn storage length of 40 feet would be needed in order to accommodate the peak inbound arrival conditions at the driveway. The proposed northbound left-turn pocket storage length on San Dimas Avenue at the project driveway ("A" Street) is approximately 120 feet. Thus, sufficient storage length is anticipated to accommodate the peak inbound arrival conditions.

Item No. 2. (c), page 2-3

"Provide details on safe access for private drive at 722 N. San Dimas Avenue, taking into account that the intersection at San Dimas Avenue and Gladstone Street do not meet the minimum requirements for a U-turn."

As you have confirmed, the reference to the 722 N. San Dimas Avenue site relates to the existing four single family residential units on the east side of San Dimas Avenue, with its driveway currently opposite the existing Equestrian Center driveway. In the current project site plan, the proposed project driveway ("A" Street) alignment would require the modification of the landscaped median such that the southbound left-turn access to the east side residential driveway would be precluded. As shown in the existing traffic count data conducted in September 2015 and contained in ***Attachment C***, the existing southbound left-turn volumes (i.e., motorists turning into the east side residential driveway) consist of two (2) vehicles and three (3) vehicles during the AM and PM peak hours, respectively. One (1) outbound vehicle was observed to turn left from the existing driveway to proceed southbound on San Dimas Avenue during the PM peak hour. With the median modification, these turning movements are expected to be affected as some current inbound and outbound routes/circulation patterns would be diverted to other roadways since u-turn maneuvers are not permitted at San Dimas Avenue/Gladstone Street. While it is recognized that there are grading issues with the relocation of the proposed project driveway in order to align with the east side residential driveway, doing so would continue to permit full access for the east side residential driveway as well as the project driveway ("A" Street).

Another option for consideration would require that the proposed landscaped median on San Dimas Avenue be reduced in length between the project driveway ("A" Street) and the east side residential driveway. This would allow for the installation of both a northbound and southbound left-turn pockets with storage lengths of approximately 40 feet each with appropriate transitions (approximately 60 feet) in

LINSCOTT LAW & GREENSPAN engineers

between. This option would shorten the northbound and southbound left-turn pocket lengths on San Dimas Avenue for both driveways (i.e., project driveway ["A" Street] and the east side residential driveway), but would retain full access to both driveways.

If a portion of the landscaped median could be removed, another option to consider is the installation of a two-way left-turn lane along this portion of San Dimas Avenue. As indicated on page 8 of the Traffic Impact Study, "...in order to maintain full access (i.e., left-turn and right-turn ingress and egress turning movements) for the existing east side residential driveway and provide adequate sight distances for both driveways (i.e., project driveway and the east side residential driveway) as well as motorists on San Dimas Avenue, a portion of the raised median could be removed to allow the installation of a two-way left-turn lane along San Dimas Avenue for left-turn access into both the proposed project driveway and the east side residential driveway."

Please feel free to contact us should you have any questions regarding this addendum memorandum to the Oak Valley Project Traffic Impact Study.

cc: File
Stan Stringfellow, Development 1 Group, Inc.

ATTACHMENT A

ICU DATA WORKSHEETS – WEEKDAY AM AND PM PEAK HOURS

((FUTURE 2018 AND 2035 CONDITIONS – WITH CUMULATIVE MITIGATION MEASURES)

LINSCOTT, LAW & GREENSPAN, ENGINEERS
600 S. Lake Avenue, Suite 500, Pasadena, CA 91106
(626) 796-2322 Fax (626) 792-0941

INTERSECTION CAPACITY UTILIZATION

San Dimas Avenue @ Gladstone Street
Peak hr: AM
Annual Growth: 1.60%

N-S St: San Dimas Avenue
E-W St: Gladstone Street
Project: Oak Valley Project/1-15-4133-1
File: ICU3

Date: 12/01/2015
Date of Count: 2015
Projection Year: 2018

	2015 EXIST. TRAFFIC			2018 W/AMBIENT GROWTH			2018 W/PROJECT SITE TRAFFIC				2018 W/PROJECT MITIGATION				2018 W/RELATED PROJECTS				2018 W/REGIONAL MITIGATION [3]			
	1	2	V/C	Added	Total	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C
Movement	Volume	Capacity	Ratio	Volume	Volume	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio
Nb Left	115	1600	0.072 *	6	121	0.075 *	0	121	1600	0.075 *	0	121	1600	0.075 *	3	124	1600	0.077 *	0	124	1600	0.077 *
Nb Thru	274	1600	0.188	13	287	0.197	1	288	1600	0.198	0	288	1600	0.198	7	295	1600	0.202	0	295	1600	0.202
Nb Right	27	0	-	1	28	-	0	28	0	-	0	28	0	-	0	28	0	-	0	28	0	-
Sb Left	57	1600	0.036	3	60	0.037	3	63	1600	0.039	0	63	1600	0.039	6	69	1600	0.043	0	69	1600	0.043
Sb Thru	406	1600	0.254 *	19	425	0.266 *	2	427	1600	0.267 *	0	427	1600	0.267 *	7	434	1600	0.272 *	0	434	1600	0.272 *
Sb Right	69	1600	0.043	3	72	0.045	2	74	1600	0.046	0	74	1600	0.046	2	76	1600	0.048	0	76	1600	0.048
Eb Left	56	0	0.035 *	3	59	0.037 *	1	60	0	0.037 *	0	60	0	0.037 *	2	62	0	0.039 *	0	62	0	0.039
Eb Thru	123	1600	0.149	6	129	0.156	0	129	1600	0.157	0	129	1600	0.157	2	131	1600	0.160	0	131	1600	0.160 *
Eb Right	59	0	-	3	62	-	0	62	0	-	0	62	0	-	2	64	0	-	0	64	0	-
Wb Left	27	0	0.017	1	28	0.018	0	28	0	0.018	0	28	0	0.018	0	28	0	0.018	0	28	0	0.018
Wb Thru	225	1600	0.158 *	11	236	0.165 *	0	236	1600	0.165 *	0	236	1600	0.165 *	3	239	1600	0.167 *	0	239	1600	0.167 *
Wb Right	88	1600	0.055	4	92	0.058	1	93	1600	0.058	0	93	1600	0.058	2	95	1600	0.060	0	95	1600	0.060
Yellow Allowance:			0.100 *			0.100 *				0.100 *				0.100 *				0.100 *				0.100 *
ICU			0.618			0.643				0.645				0.645				0.654				0.776
LOS			B			B				B				B				B				C

09:33 AM

* *Key conflicting movement as a part of ICU*
1 *Counts conducted by* The Traffic Solution
2 *Capacity expressed in veh/hour of green*
3 *Cumulative mitigation measure consists of providing an east-west split phase operation.*

LINSCOTT, LAW & GREENSPAN, ENGINEERS
600 S. Lake Avenue, Suite 500, Pasadena, CA 91106
(626) 796-2322 Fax (626) 792-0941

INTERSECTION CAPACITY UTILIZATION

San Dimas Avenue @ Gladstone Street
Peak hr: PM
Annual Growth: 1.60%

N-S St: San Dimas Avenue
E-W St: Gladstone Street
Project: Oak Valley Project/1-15-4133-1
File: ICU3

Date: 12/01/2015
Date of Count: 2015
Projection Year: 2018

	2015 EXIST. TRAFFIC			2018 W/AMBIENT GROWTH			2018 W/PROJECT SITE TRAFFIC				2018 W/PROJECT MITIGATION				2018 W/RELATED PROJECTS				2018 W/REGIONAL MITIGATION [3]			
	1	2	V/C	Added	Total	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C
Movement	Volume	Capacity	Ratio	Volume	Volume	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio
Nb Left	92	1600	0.058	4	96	0.060	0	96	1600	0.060	0	96	1600	0.060	10	106	1600	0.067	0	106	1600	0.067
Nb Thru	458	1600	0.321 *	22	480	0.336 *	2	482	1600	0.337 *	0	482	1600	0.337 *	16	498	1600	0.347 *	0	498	1600	0.347 *
Nb Right	55	0	-	3	58	-	0	58	0	-	0	58	0	-	0	58	0	-	0	58	0	-
Sb Left	97	1600	0.061 *	5	102	0.064 *	2	104	1600	0.065 *	0	104	1600	0.065 *	4	108	1600	0.067 *	0	108	1600	0.067 *
Sb Thru	416	1600	0.260	20	436	0.272	1	437	1600	0.273	0	437	1600	0.273	16	453	1600	0.283	0	453	1600	0.283
Sb Right	38	1600	0.024	2	40	0.025	2	42	1600	0.026	0	42	1600	0.026	3	45	1600	0.028	0	45	1600	0.028
Eb Left	74	0	0.046	4	78	0.048	3	81	0	0.050	0	81	0	0.050	3	84	0	0.052	0	84	0	0.052
Eb Thru	554	1600	0.465 *	27	581	0.487 *	0	581	1600	0.489 *	0	581	1600	0.489 *	10	591	1600	0.504 *	0	591	1600	0.504 *
Eb Right	116	0	-	6	122	-	0	122	0	-	0	122	0	-	10	132	0	-	0	132	0	-
Wb Left	20	0	0.013 *	1	21	0.013 *	0	21	0	0.013 *	0	21	0	0.013 *	0	21	0	0.013 *	0	21	0	0.013
Wb Thru	228	1600	0.155	11	239	0.162	0	239	1600	0.162	0	239	1600	0.162	11	250	1600	0.169	0	250	1600	0.169 *
Wb Right	41	1600	0.026	2	43	0.027	4	47	1600	0.029	0	47	1600	0.029	6	53	1600	0.033	0	53	1600	0.033
Yellow Allowance:			0.100 *			0.100 *				0.100 *				0.100 *				0.100 *				0.100 *
ICU			0.959			1.000				1.004				1.004				1.031				1.187
LOS			E			E				F				F				F				F

09:33 AM

* *Key conflicting movement as a part of ICU*
1 *Counts conducted by* The Traffic Solution
2 *Capacity expressed in veh/hour of green*
3 *Cumulative mitigation measure consists of providing an east-west split phase operation.*

LINSCOTT, LAW & GREENSPAN, ENGINEERS
600 S. Lake Avenue, Suite 500, Pasadena, CA 91106
(626) 796-2322 Fax (626) 792-0941

INTERSECTION CAPACITY UTILIZATION

San Dimas Avenue @ Gladstone Street
Peak hr: AM
Annual Growth: 1.60%

N-S St: San Dimas Avenue
E-W St: Gladstone Street
Project: Oak Valley Project/1-15-4133-1
File: ICU3

Date: 12/01/2015
Date of Count: 2015
Projection Year: 2018

	2015 EXIST. TRAFFIC			2018 W/AMBIENT GROWTH			2018 W/PROJECT SITE TRAFFIC				2018 W/PROJECT MITIGATION				2018 W/RELATED PROJECTS				2018 W/REGIONAL MITIGATION [3]			
	1	2	V/C	Added	Total	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C
Movement	Volume	Capacity	Ratio	Volume	Volume	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio
Nb Left	115	1600	0.072 *	6	121	0.075 *	0	121	1600	0.075 *	0	121	1600	0.075 *	3	124	1600	0.077 *	0	124	1600	0.077 *
Nb Thru	274	1600	0.188	13	287	0.197	1	288	1600	0.198	0	288	1600	0.198	7	295	1600	0.202	0	295	1600	0.202
Nb Right	27	0	-	1	28	-	0	28	0	-	0	28	0	-	0	28	0	-	0	28	0	-
Sb Left	57	1600	0.036	3	60	0.037	3	63	1600	0.039	0	63	1600	0.039	6	69	1600	0.043	0	69	1600	0.043
Sb Thru	406	1600	0.254 *	19	425	0.266 *	2	427	1600	0.267 *	0	427	1600	0.267 *	7	434	1600	0.272 *	0	434	1600	0.272 *
Sb Right	69	1600	0.043	3	72	0.045	2	74	1600	0.046	0	74	1600	0.046	2	76	1600	0.048	0	76	1600	0.048
Eb Left	56	0	0.035 *	3	59	0.037 *	1	60	0	0.037 *	0	60	0	0.037 *	2	62	0	0.039 *	0	62	0	0.039
Eb Thru	123	1600	0.149	6	129	0.156	0	129	1600	0.157	0	129	1600	0.157	2	131	1600	0.160	0	131	1600	0.120 *
Eb Right	59	0	-	3	62	-	0	62	0	-	0	62	0	-	2	64	0	-	0	64	1600	0.040
Wb Left	27	0	0.017	1	28	0.018	0	28	0	0.018	0	28	0	0.018	0	28	0	0.018	0	28	0	0.018
Wb Thru	225	1600	0.158 *	11	236	0.165 *	0	236	1600	0.165 *	0	236	1600	0.165 *	3	239	1600	0.167 *	0	239	1600	0.167 *
Wb Right	88	1600	0.055	4	92	0.058	1	93	1600	0.058	0	93	1600	0.058	2	95	1600	0.060	0	95	1600	0.060
Yellow Allowance:			0.100 *			0.100 *				0.100 *				0.100 *				0.100 *				0.100 *
ICU			0.618			0.643				0.645				0.645				0.654				0.736
LOS			B			B				B				B				B				C

08:41 AM

* *Key conflicting movement as a part of ICU*
1 *Counts conducted by* The Traffic Solution
2 *Capacity expressed in veh/hour of green*
3 *Cumulative mitigation measure consists of modifying the eastbound approach to provide one shared left/through lane and one right-turn only lane and providing an east-west split phase operation.*

LINSCOTT, LAW & GREENSPAN, ENGINEERS
600 S. Lake Avenue, Suite 500, Pasadena, CA 91106
(626) 796-2322 Fax (626) 792-0941

INTERSECTION CAPACITY UTILIZATION

San Dimas Avenue @ Gladstone Street
Peak hr: PM
Annual Growth: 1.60%

N-S St: San Dimas Avenue
E-W St: Gladstone Street
Project: Oak Valley Project/1-15-4133-1
File: ICU3

Date: 12/01/2015
Date of Count: 2015
Projection Year: 2018

	2015 EXIST. TRAFFIC			2018 W/AMBIENT GROWTH			2018 W/PROJECT SITE TRAFFIC				2018 W/PROJECT MITIGATION				2018 W/RELATED PROJECTS				2018 W/REGIONAL MITIGATION [3]			
	1	2	V/C	Added	Total	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C
Movement	Volume	Capacity	Ratio	Volume	Volume	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio
Nb Left	92	1600	0.058	4	96	0.060	0	96	1600	0.060	0	96	1600	0.060	10	106	1600	0.067	0	106	1600	0.067
Nb Thru	458	1600	0.321 *	22	480	0.336 *	2	482	1600	0.337 *	0	482	1600	0.337 *	16	498	1600	0.347 *	0	498	1600	0.347 *
Nb Right	55	0	-	3	58	-	0	58	0	-	0	58	0	-	0	58	0	-	0	58	0	-
Sb Left	97	1600	0.061 *	5	102	0.064 *	2	104	1600	0.065 *	0	104	1600	0.065 *	4	108	1600	0.067 *	0	108	1600	0.067 *
Sb Thru	416	1600	0.260	20	436	0.272	1	437	1600	0.273	0	437	1600	0.273	16	453	1600	0.283	0	453	1600	0.283
Sb Right	38	1600	0.024	2	40	0.025	2	42	1600	0.026	0	42	1600	0.026	3	45	1600	0.028	0	45	1600	0.028
Eb Left	74	0	0.046	4	78	0.048	3	81	0	0.050	0	81	0	0.050	3	84	0	0.052	0	84	0	0.052
Eb Thru	554	1600	0.465 *	27	581	0.487 *	0	581	1600	0.489 *	0	581	1600	0.489 *	10	591	1600	0.504 *	0	591	1600	0.421 *
Eb Right	116	0	-	6	122	-	0	122	0	-	0	122	0	-	10	132	0	-	0	132	1600	0.082
Wb Left	20	0	0.013 *	1	21	0.013 *	0	21	0	0.013 *	0	21	0	0.013 *	0	21	0	0.013 *	0	21	0	0.013
Wb Thru	228	1600	0.155	11	239	0.162	0	239	1600	0.162	0	239	1600	0.162	11	250	1600	0.169	0	250	1600	0.169 *
Wb Right	41	1600	0.026	2	43	0.027	4	47	1600	0.029	0	47	1600	0.029	6	53	1600	0.033	0	53	1600	0.033
Yellow Allowance:			0.100 *			0.100 *				0.100 *				0.100 *				0.100 *				0.100 *
ICU			0.959			1.000				1.004				1.004				1.031				1.105
LOS			E			E				F				F				F				F

08:41 AM

* *Key conflicting movement as a part of ICU*
1 *Counts conducted by* The Traffic Solution
2 *Capacity expressed in veh/hour of green*
3 *Cumulative mitigation measure consists of modifying the eastbound approach to provide one shared left/through lane and one right-turn only lane and providing an east-west split phase operation.*

LINSCOTT, LAW & GREENSPAN, ENGINEERS
600 S. Lake Avenue, Suite 500, Pasadena, CA 91106
(626) 796-2322 Fax (626) 792-0941

INTERSECTION CAPACITY UTILIZATION

San Dimas Avenue @ Gladstone Street
Peak hr: AM
Annual Growth: 0.84%

N-S St: San Dimas Avenue
E-W St: Gladstone Street
Project: Oak Valley Project/1-15-4133-1
File: ICU3

Date: 12/01/2015
Date of Count: 2015
Projection Year: 2035

	2015 EXIST. TRAFFIC			2035 W/AMBIENT GROWTH			2035 W/PROJECT SITE TRAFFIC				2035 W/PROJECT MITIGATION				2035 W/RELATED PROJECTS				2035 W/REGIONAL MITIGATION [3]			
	1	2	V/C	Added	Total	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C
Movement	Volume	Capacity	Ratio	Volume	Volume	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio
Nb Left	115	1600	0.072 *	19	134	0.084 *	0	134	1600	0.084 *	0	134	1600	0.084 *	3	137	1600	0.086 *	0	137	1600	0.086 *
Nb Thru	274	1600	0.188	46	320	0.220	1	321	1600	0.220	0	321	1600	0.220	7	328	1600	0.225	0	328	1600	0.225
Nb Right	27	0	-	5	32	-	0	32	0	-	0	32	0	-	0	32	0	-	0	32	0	-
Sb Left	57	1600	0.036	10	67	0.042	3	70	1600	0.043	0	70	1600	0.043	6	76	1600	0.047	0	76	1600	0.047
Sb Thru	406	1600	0.254 *	68	474	0.296 *	2	476	1600	0.298 *	0	476	1600	0.298 *	7	483	1600	0.302 *	0	483	1600	0.302 *
Sb Right	69	1600	0.043	12	81	0.050	2	83	1600	0.052	0	83	1600	0.052	2	85	1600	0.053	0	85	1600	0.053
Eb Left	56	0	0.035 *	9	65	0.041 *	1	66	0	0.042 *	0	66	0	0.042 *	2	68	0	0.043 *	0	68	0	0.043
Eb Thru	123	1600	0.149	21	144	0.174	0	144	1600	0.174	0	144	1600	0.174	2	146	1600	0.178	0	146	1600	0.178 *
Eb Right	59	0	-	10	69	-	0	69	0	-	0	69	0	-	2	71	0	-	0	71	0	-
Wb Left	27	0	0.017	5	32	0.020	0	32	0	0.020	0	32	0	0.020	0	32	0	0.020	0	32	0	0.020
Wb Thru	225	1600	0.158 *	38	263	0.184 *	0	263	1600	0.184 *	0	263	1600	0.184 *	3	266	1600	0.186 *	0	266	1600	0.186 *
Wb Right	88	1600	0.055	15	103	0.064	1	104	1600	0.065	0	104	1600	0.065	2	106	1600	0.066	0	106	1600	0.066
Yellow Allowance:			0.100 *			0.100 *				0.100 *				0.100 *				0.100 *				0.100 *
ICU			0.618			0.705				0.707				0.707				0.716				0.852
LOS			B			C				C				C				C				D

09:37 AM

** Key conflicting movement as a part of ICU*
1 Counts conducted by The Traffic Solution
2 Capacity expressed in veh/hour of green
3 Cumulative mitigation measure consists of providing an east-west split phase operation.

LINSCOTT, LAW & GREENSPAN, ENGINEERS
600 S. Lake Avenue, Suite 500, Pasadena, CA 91106
(626) 796-2322 Fax (626) 792-0941

INTERSECTION CAPACITY UTILIZATION

San Dimas Avenue @ Gladstone Street
Peak hr: PM
Annual Growth: 0.84%

N-S St: San Dimas Avenue
E-W St: Gladstone Street
Project: Oak Valley Project/1-15-4133-1
File: ICU3

Date: 12/01/2015
Date of Count: 2015
Projection Year: 2035

	2015 EXIST. TRAFFIC			2035 W/AMBIENT GROWTH			2035 W/PROJECT SITE TRAFFIC				2035 W/PROJECT MITIGATION				2035 W/RELATED PROJECTS				2035 W/REGIONAL MITIGATION [3]			
	1	2	V/C	Added	Total	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C
Movement	Volume	Capacity	Ratio	Volume	Volume	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio
Nb Left	92	1600	0.058	15	107	0.067	0	107	1600	0.067	0	107	1600	0.067	10	117	1600	0.073	0	117	1600	0.073
Nb Thru	458	1600	0.321 *	77	535	0.374 *	2	537	1600	0.376 *	0	537	1600	0.376 *	16	553	1600	0.386 *	0	553	1600	0.386 *
Nb Right	55	0	-	9	64	-	0	64	0	-	0	64	0	-	0	64	0	-	0	64	0	-
Sb Left	97	1600	0.061 *	16	113	0.071 *	2	115	1600	0.072 *	0	115	1600	0.072 *	4	119	1600	0.075 *	0	119	1600	0.075 *
Sb Thru	416	1600	0.260	70	486	0.304	1	487	1600	0.304	0	487	1600	0.304	16	503	1600	0.314	0	503	1600	0.314
Sb Right	38	1600	0.024	6	44	0.028	2	46	1600	0.029	0	46	1600	0.029	3	49	1600	0.031	0	49	1600	0.031
Eb Left	74	0	0.046	12	86	0.054	3	89	0	0.056	0	89	0	0.056	3	92	0	0.058	0	92	0	0.058
Eb Thru	554	1600	0.465 *	93	647	0.543 *	0	647	1600	0.545 *	0	647	1600	0.545 *	10	657	1600	0.559 *	0	657	1600	0.559 *
Eb Right	116	0	-	19	135	-	0	135	0	-	0	135	0	-	10	145	0	-	0	145	0	-
Wb Left	20	0	0.013 *	3	23	0.015 *	0	23	0	0.015 *	0	23	0	0.015 *	0	23	0	0.015 *	0	23	0	0.015
Wb Thru	228	1600	0.155	38	266	0.181	0	266	1600	0.181	0	266	1600	0.181	11	277	1600	0.188	0	277	1600	0.188 *
Wb Right	41	1600	0.026	7	48	0.030	4	52	1600	0.032	0	52	1600	0.032	6	58	1600	0.036	0	58	1600	0.036
Yellow Allowance:			0.100 *			0.100 *				0.100 *				0.100 *				0.100 *				0.100 *
ICU			0.959			1.103				1.107				1.107				1.134				1.308
LOS			E			F				F				F				F				F

09:37 AM

* *Key conflicting movement as a part of ICU*
1 *Counts conducted by* The Traffic Solution
2 *Capacity expressed in veh/hour of green*
3 *Cumulative mitigation measure consists of providing an east-west split phase operation.*

LINSCOTT, LAW & GREENSPAN, ENGINEERS
600 S. Lake Avenue, Suite 500, Pasadena, CA 91106
(626) 796-2322 Fax (626) 792-0941

INTERSECTION CAPACITY UTILIZATION

San Dimas Avenue @ Gladstone Street
Peak hr: AM
Annual Growth: 0.84%

N-S St: San Dimas Avenue
E-W St: Gladstone Street
Project: Oak Valley Project/1-15-4133-1
File: ICU3

Date: 12/01/2015
Date of Count: 2015
Projection Year: 2035

	2015 EXIST. TRAFFIC			2035 W/AMBIENT GROWTH			2035 W/PROJECT SITE TRAFFIC				2035 W/PROJECT MITIGATION				2035 W/RELATED PROJECTS				2035 W/REGIONAL MITIGATION [3]			
	1	2	V/C	Added	Total	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C
Movement	Volume	Capacity	Ratio	Volume	Volume	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio
Nb Left	115	1600	0.072 *	19	134	0.084 *	0	134	1600	0.084 *	0	134	1600	0.084 *	3	137	1600	0.086 *	0	137	1600	0.086 *
Nb Thru	274	1600	0.188	46	320	0.220	1	321	1600	0.220	0	321	1600	0.220	7	328	1600	0.225	0	328	1600	0.225
Nb Right	27	0	-	5	32	-	0	32	0	-	0	32	0	-	0	32	0	-	0	32	0	-
Sb Left	57	1600	0.036	10	67	0.042	3	70	1600	0.043	0	70	1600	0.043	6	76	1600	0.047	0	76	1600	0.047
Sb Thru	406	1600	0.254 *	68	474	0.296 *	2	476	1600	0.298 *	0	476	1600	0.298 *	7	483	1600	0.302 *	0	483	1600	0.302 *
Sb Right	69	1600	0.043	12	81	0.050	2	83	1600	0.052	0	83	1600	0.052	2	85	1600	0.053	0	85	1600	0.053
Eb Left	56	0	0.035 *	9	65	0.041 *	1	66	0	0.042 *	0	66	0	0.042 *	2	68	0	0.043 *	0	68	0	0.043
Eb Thru	123	1600	0.149	21	144	0.174	0	144	1600	0.174	0	144	1600	0.174	2	146	1600	0.178	0	146	1600	0.134 *
Eb Right	59	0	-	10	69	-	0	69	0	-	0	69	0	-	2	71	0	-	0	71	1600	0.044
Wb Left	27	0	0.017	5	32	0.020	0	32	0	0.020	0	32	0	0.020	0	32	0	0.020	0	32	0	0.020
Wb Thru	225	1600	0.158 *	38	263	0.184 *	0	263	1600	0.184 *	0	263	1600	0.184 *	3	266	1600	0.186 *	0	266	1600	0.186 *
Wb Right	88	1600	0.055	15	103	0.064	1	104	1600	0.065	0	104	1600	0.065	2	106	1600	0.066	0	106	1600	0.066
Yellow Allowance:			0.100 *			0.100 *				0.100 *				0.100 *				0.100 *				0.100 *
ICU			0.618			0.705				0.707				0.707				0.716				0.807
LOS			B			C				C				C				C				D

09:36 AM

* *Key conflicting movement as a part of ICU*
1 *Counts conducted by* The Traffic Solution
2 *Capacity expressed in veh/hour of green*
3 *Cumulative mitigation measure consists of modifying the eastbound approach to provide one shared left/through lane and one right-turn only lane and providing an east-west split phase operation.*

LINSCOTT, LAW & GREENSPAN, ENGINEERS
600 S. Lake Avenue, Suite 500, Pasadena, CA 91106
(626) 796-2322 Fax (626) 792-0941

INTERSECTION CAPACITY UTILIZATION

San Dimas Avenue @ Gladstone Street
Peak hr: PM
Annual Growth: 0.84%

N-S St: San Dimas Avenue
E-W St: Gladstone Street
Project: Oak Valley Project/1-15-4133-1
File: ICU3

Date: 12/01/2015
Date of Count: 2015
Projection Year: 2035

	2015 EXIST. TRAFFIC			2035 W/AMBIENT GROWTH			2035 W/PROJECT SITE TRAFFIC				2035 W/PROJECT MITIGATION				2035 W/RELATED PROJECTS				2035 W/REGIONAL MITIGATION [3]			
	1	2	V/C	Added	Total	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C	Added	Total	2	V/C
Movement	Volume	Capacity	Ratio	Volume	Volume	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio	Volume	Volume	Capacity	Ratio
Nb Left	92	1600	0.058	15	107	0.067	0	107	1600	0.067	0	107	1600	0.067	10	117	1600	0.073	0	117	1600	0.073
Nb Thru	458	1600	0.321 *	77	535	0.374 *	2	537	1600	0.376 *	0	537	1600	0.376 *	16	553	1600	0.386 *	0	553	1600	0.386 *
Nb Right	55	0	-	9	64	-	0	64	0	-	0	64	0	-	0	64	0	-	0	64	0	-
Sb Left	97	1600	0.061 *	16	113	0.071 *	2	115	1600	0.072 *	0	115	1600	0.072 *	4	119	1600	0.075 *	0	119	1600	0.075 *
Sb Thru	416	1600	0.260	70	486	0.304	1	487	1600	0.304	0	487	1600	0.304	16	503	1600	0.314	0	503	1600	0.314
Sb Right	38	1600	0.024	6	44	0.028	2	46	1600	0.029	0	46	1600	0.029	3	49	1600	0.031	0	49	1600	0.031
Eb Left	74	0	0.046	12	86	0.054	3	89	0	0.056	0	89	0	0.056	3	92	0	0.058	0	92	0	0.058
Eb Thru	554	1600	0.465 *	93	647	0.543 *	0	647	1600	0.545 *	0	647	1600	0.545 *	10	657	1600	0.559 *	0	657	1600	0.468 *
Eb Right	116	0	-	19	135	-	0	135	0	-	0	135	0	-	10	145	0	-	0	145	1600	0.091
Wb Left	20	0	0.013 *	3	23	0.015 *	0	23	0	0.015 *	0	23	0	0.015 *	0	23	0	0.015 *	0	23	0	0.015
Wb Thru	228	1600	0.155	38	266	0.181	0	266	1600	0.181	0	266	1600	0.181	11	277	1600	0.188	0	277	1600	0.188 *
Wb Right	41	1600	0.026	7	48	0.030	4	52	1600	0.032	0	52	1600	0.032	6	58	1600	0.036	0	58	1600	0.036
Yellow Allowance:			0.100 *			0.100 *				0.100 *				0.100 *				0.100 *				0.100 *
ICU			0.959			1.103				1.107				1.107				1.134				1.217
LOS			E			F				F				F				F				F

09:36 AM

* *Key conflicting movement as a part of ICU*
1 *Counts conducted by* The Traffic Solution
2 *Capacity expressed in veh/hour of green*
3 *Cumulative mitigation measure consists of modifying the eastbound approach to provide one shared left/through lane and one right-turn only lane and providing an east-west split phase operation.*

ATTACHMENT B

TRAFFIC SIGNAL WARRANTS

SAN DIMAS AVENUE/PROJECT DRIVEWAY ("A" STREET)
FUTURE 2018 AND 2035 CUMULATIVE WITH PROJECT CONDITIONS

San Dimas Avenue/Project Driveway ("A" Street)

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 1 of 5)

COUNT DATE 9/1/15
CALC _____ DATE 12/1/15
CHK _____ DATE _____

DIST ____ CO ____ RTE ____ PM ____

Major St: San Dimas Avenue
Minor St: Project Driveway ("A" Street)

Critical Approach Speed 40 mph
Critical Approach Speed _____ mph

Speed limit or critical speed on major street traffic > 40 mph..... ☐ or
In built up area of isolated community of < 10,000 population..... ☐ } **RURAL (R)**
☑ **URBAN (U)**

WARRANT 1 - Eight Hour Vehicular Volume **SATISFIED YES ☐ NO ☐**
(Condition A or Condition B or combination of A and B must be satisfied)

Condition A - Minimum Vehicle Volume **100% SATISFIED YES ☐ NO ☐**
80% SATISFIED YES ☐ NO ☐

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)												Hour
	U	R	U	R									
APPROACH LANES	1		2 or More										
Both Approaches Major Street	500 (400)	350 (280)	600 (480)	420 (336)									
Highest Approach Minor Street	150 (120)	105 (84)	200 (160)	140 (112)									

Condition B - Interruption of Continuous Traffic **100% SATISFIED YES ☐ NO ☐**
80% SATISFIED YES ☐ NO ☐

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)												Hour
	U	R	U	R									
APPROACH LANES	1		2 or More										
Both Approaches Major Street	750 (600)	525 (420)	900 (720)	630 (504)									
Highest Approach Minor Street	75 (60)	53 (42)	100 (80)	70 (56)									

Combination of Conditions A & B **SATISFIED YES ☐ NO ☐**

REQUIREMENT	CONDITION	✓	FULFILLED
TWO CONDITIONS SATISFIED 80%	A. MINIMUM VEHICULAR VOLUME		Yes ☐ No ☐
	AND, B. INTERRUPTION OF CONTINUOUS TRAFFIC		
AND, AN ADEQUATE TRIAL OF OTHER ALTERNATIVES THAT COULD CAUSE LESS DELAY AND INCONVENIENCE TO TRAFFIC HAS FAILED TO SOLVE THE TRAFFIC PROBLEMS			Yes ☐ No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

San Dimas Avenue/Project Driveway ("A" Street)

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 5)

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED* YES ☐ NO ☐**

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One	2 or More					Hour
Both Approaches - Major Street							
Higher Approach - Minor Street							

*All plotted points fall above the applicable curve in Figure 4C-1. (URBAN AREAS)	Yes ☐ No ☐
OR, All plotted points fall above the applicable curve in Figure 4C-2. (RURAL AREAS)	Yes ☐ No ☐

WARRANT 3 - Peak Hour
(Part A or Part B must be satisfied) **SATISFIED YES ☐ NO ☑**

PART A **SATISFIED YES ☐ NO ☑**

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND (30 veh)*(12.6 sec/veh)/(3600 sec/hr) = 0.105 veh-hrs	Yes ☐ No ☑
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	Yes ☐ No ☑
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	Yes ☑ No ☐

PART B **SATISFIED YES ☐ NO ☑**

APPROACH LANES	One	2 or More	AM Peak Hour	Hour
Both Approaches - Major Street		✓	1038	
Higher Approach - Minor Street	✓		30	

The plotted point falls above the applicable curve in Figure 4C-3. (URBAN AREAS)	Yes ☐ No ☑
OR, The plotted point falls above the applicable curve in Figure 4C-4. (RURAL AREAS)	Yes ☐ No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

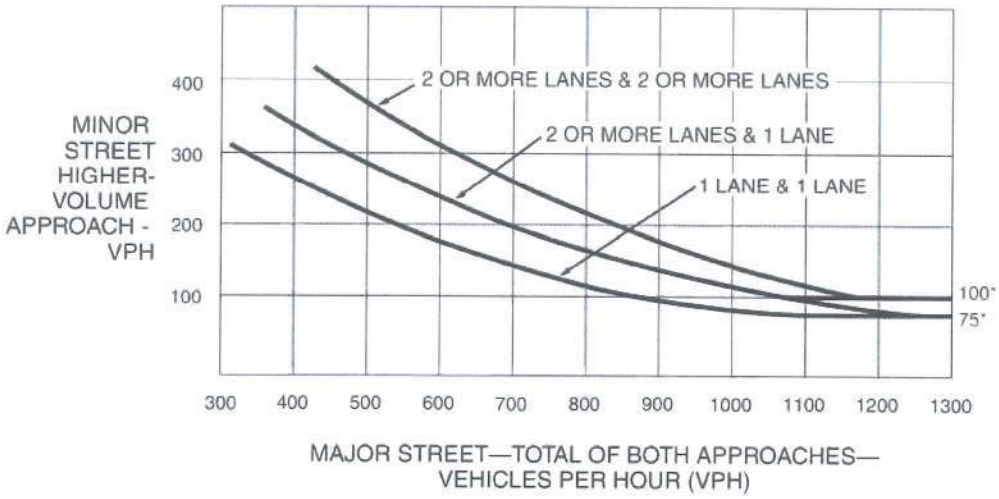
San Dimas Avenue/Project Driveway ("A" Street)

Figure 4C-3. Warrant 3, Peak Hour

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

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



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

San Dimas Avenue/Project Driveway ("A" Street)

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 4 of 5)

WARRANT 6 - Coordinated Signal System (All Parts Must Be Satisfied) **SATISFIED YES ☐ NO ☑**

MINIMUM REQUIREMENTS	DISTANCE TO NEAREST SIGNAL	
≥ 1000 ft	N 475 ft, S 830 ft, E n/a ft, W n/a ft	Yes ☐ No ☑
On a one-way street or a street that has traffic predominantly in one direction, the adjacent traffic control signals are so far apart that they do not provide the necessary degree of vehicular platooning.		Yes ☐ No ☑
OR, On a two-way street, adjacent traffic control signals do not provide the necessary degree of platooning and the proposed and adjacent traffic control signals will collectively provide a progressive operation.		

WARRANT 7 - Crash Experience Warrant (All Parts Must Be Satisfied) **SATISFIED YES ☐ NO ☐**

Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce the crash frequency.			Yes ☐ No ☐
REQUIREMENTS	Number of crashes reported within a 12 month period susceptible to correction by a traffic signal, and involving injury or damage exceeding the requirements for a reportable crash.		Yes ☐ No ☐
5 OR MORE			
REQUIREMENTS	CONDITIONS	✓	
ONE CONDITION SATISFIED 80%	Warrant 1, Condition A - Minimum Vehicular Volume		Yes ☐ No ☐
	OR, Warrant 1, Condition B - Interruption of Continuous Traffic		
	OR, Warrant 4, Pedestrian Volume Condition Ped Vol ≥ 80% of Figure 4C-5 through Figure 4C-8		

WARRANT 8 - Roadway Network (All Parts Must Be Satisfied) **SATISFIED YES ☐ NO ☐**

MINIMUM VOLUME REQUIREMENTS	ENTERING VOLUMES - ALL APPROACHES	✓	FULFILLED
1000 Veh/Hr	During Typical Weekday Peak Hour _____ Veh/Hr and has 5-year projected traffic volumes that meet one or more of Warrants 1, 2, and 3 during an average weekday.		Yes ☐ No ☐
	OR During Each of Any 5 Hrs. of a Sat. or Sun _____ Veh/Hr		

CHARACTERISTICS OF MAJOR ROUTES	MAJOR ROUTE A	MAJOR ROUTE B	
Hwy. System Serving as Principal Network for Through Traffic			
Rural or Suburban Highway Outside Of, Entering, or Traversing a City			
Appears as Major Route on an Official Plan			
Any Major Route Characteristics Met, Both Streets			Yes ☐ No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

San Dimas Avenue/Project Driveway ("A" Street)

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 1 of 5)

COUNT DATE 9/1/15
CALC _____ DATE 12/1/15
CHK _____ DATE _____

DIST ____ CO ____ RTE ____ PM ____

Major St: San Dimas Avenue
Minor St: Project Driveway ("A" Street)

Critical Approach Speed 40 mph
Critical Approach Speed _____ mph

Speed limit or critical speed on major street traffic > 40 mph..... ☐ or
In built up area of isolated community of < 10,000 population..... ☐ } **RURAL (R)**
☑ **URBAN (U)**

WARRANT 1 - Eight Hour Vehicular Volume **SATISFIED YES ☐ NO ☐**
(Condition A or Condition B or combination of A and B must be satisfied)

Condition A - Minimum Vehicle Volume **100% SATISFIED YES ☐ NO ☐**
80% SATISFIED YES ☐ NO ☐

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)												Hour
	U	R	U	R									
APPROACH LANES	1		2 or More										
Both Approaches Major Street	500 (400)	350 (280)	600 (480)	420 (336)									
Highest Approach Minor Street	150 (120)	105 (84)	200 (160)	140 (112)									

Condition B - Interruption of Continuous Traffic **100% SATISFIED YES ☐ NO ☐**
80% SATISFIED YES ☐ NO ☐

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)												Hour
	U	R	U	R									
APPROACH LANES	1		2 or More										
Both Approaches Major Street	750 (600)	525 (420)	900 (720)	630 (504)									
Highest Approach Minor Street	75 (60)	53 (42)	100 (80)	70 (56)									

Combination of Conditions A & B **SATISFIED YES ☐ NO ☐**

REQUIREMENT	CONDITION	✓	FULFILLED
TWO CONDITIONS SATISFIED 80%	A. MINIMUM VEHICULAR VOLUME		Yes ☐ No ☐
	AND, B. INTERRUPTION OF CONTINUOUS TRAFFIC		
AND, AN ADEQUATE TRIAL OF OTHER ALTERNATIVES THAT COULD CAUSE LESS DELAY AND INCONVENIENCE TO TRAFFIC HAS FAILED TO SOLVE THE TRAFFIC PROBLEMS			Yes ☐ No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

San Dimas Avenue/Project Driveway ("A" Street)

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 5)

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED* YES ☐ NO ☐**

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One	2 or More					Hour
Both Approaches - Major Street							
Higher Approach - Minor Street							

*All plotted points fall above the applicable curve in Figure 4C-1. (URBAN AREAS)	Yes ☐ No ☐
OR, All plotted points fall above the applicable curve in Figure 4C-2. (RURAL AREAS)	Yes ☐ No ☐

WARRANT 3 - Peak Hour **SATISFIED YES ☐ NO ☑**
(Part A or Part B must be satisfied)

PART A **SATISFIED YES ☐ NO ☑**

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND (30 veh)*(13.2 sec/veh)/(3600 sec/hr) = 0.11 veh-hrs	Yes ☐ No ☑
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	Yes ☐ No ☑
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	Yes ☑ No ☐

PART B **SATISFIED YES ☐ NO ☑**

APPROACH LANES	One	2 or More	AM Peak Hour	Hour
Both Approaches - Major Street		✓	1154	
Higher Approach - Minor Street	✓		30	

The plotted point falls above the applicable curve in Figure 4C-3. (URBAN AREAS)	Yes ☐ No ☑
OR, The plotted point falls above the applicable curve in Figure 4C-4. (RURAL AREAS)	Yes ☐ No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

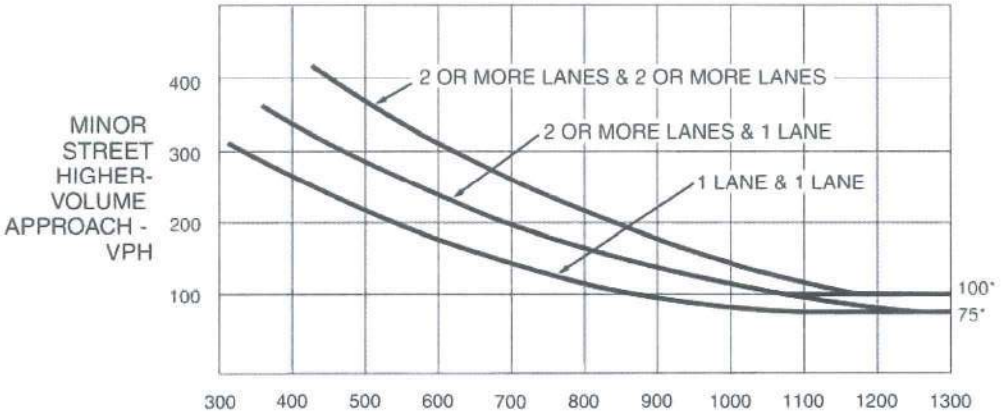
San Dimas Avenue/Project Driveway ("A" Street)

Figure 4C-3. Warrant 3, Peak Hour

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

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



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

San Dimas Avenue/Project Driveway ("A" Street)

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 4 of 5)

WARRANT 6 - Coordinated Signal System (All Parts Must Be Satisfied) **SATISFIED YES ☐ NO ☑**

MINIMUM REQUIREMENTS	DISTANCE TO NEAREST SIGNAL	
≥ 1000 ft	N 475 ft, S 830 ft, E n/a ft, W n/a ft	Yes ☐ No ☑
On a one-way street or a street that has traffic predominantly in one direction, the adjacent traffic control signals are so far apart that they do not provide the necessary degree of vehicular platooning.		Yes ☐ No ☑
OR, On a two-way street, adjacent traffic control signals do not provide the necessary degree of platooning and the proposed and adjacent traffic control signals will collectively provide a progressive operation.		

WARRANT 7 - Crash Experience Warrant (All Parts Must Be Satisfied) **SATISFIED YES ☐ NO ☐**

Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce the crash frequency.			Yes ☐ No ☐
REQUIREMENTS	Number of crashes reported within a 12 month period susceptible to correction by a traffic signal, and involving injury or damage exceeding the requirements for a reportable crash.		Yes ☐ No ☐
5 OR MORE			
REQUIREMENTS	CONDITIONS	✓	
ONE CONDITION SATISFIED 80%	Warrant 1, Condition A - Minimum Vehicular Volume		Yes ☐ No ☐
	OR, Warrant 1, Condition B - Interruption of Continuous Traffic		
	OR, Warrant 4, Pedestrian Volume Condition Ped Vol ≥ 80% of Figure 4C-5 through Figure 4C-8		

WARRANT 8 - Roadway Network (All Parts Must Be Satisfied) **SATISFIED YES ☐ NO ☐**

MINIMUM VOLUME REQUIREMENTS	ENTERING VOLUMES - ALL APPROACHES		✓	FULFILLED
1000 Veh/Hr	During Typical Weekday Peak Hour _____ Veh/Hr and has 5-year projected traffic volumes that meet one or more of Warrants 1, 2, and 3 during an average weekday.			Yes ☐ No ☐
	OR During Each of Any 5 Hrs. of a Sat. or Sun _____ Veh/Hr			
CHARACTERISTICS OF MAJOR ROUTES		MAJOR ROUTE A	MAJOR ROUTE B	
Hwy. System Serving as Principal Network for Through Traffic				
Rural or Suburban Highway Outside Of, Entering, or Traversing a City				
Appears as Major Route on an Official Plan				
Any Major Route Characteristics Met, Both Streets				Yes ☐ No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

ATTACHMENT C

MANUAL INTERSECTION TRAFFIC COUNT DATA – WEEKDAY AM AND PM PEAK PERIODS

SAN DIMAS AVENUE/EAST SIDE RESIDENTIAL DRIVEWAY

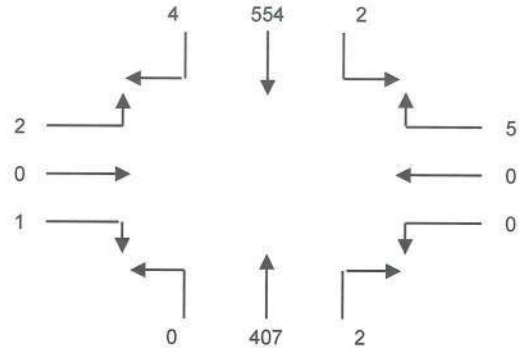
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: LINSCOTT LAW & GREENSPAN
PROJECT: SAN DIMAS RESIDENTIAL
DATE: TUESDAY, SEPTEMBER 1, 2015
PERIOD: 07:00 AM TO 09:00 AM
INTERSECTION N/S SAN DIMAS AVENUE
E/W EQUESTRIAN CENTER / RESIDENTIAL DRWYS
FILE NUMBER: 3-AM

15 MINUTE TOTALS	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT
0700-0715	1	92	1	0	0	0	0	76	0	0	0	0
0715-0730	0	109	0	0	0	0	0	83	0	0	0	0
0730-0745	0	105	0	0	0	0	0	104	0	0	0	1
0745-0800	0	152	0	2	0	0	1	134	0	0	0	0
0800-0815	2	146	1	0	0	0	0	106	0	1	0	0
0815-0830	2	131	1	2	0	0	0	82	0	0	0	0
0830-0845	0	125	0	1	0	0	1	85	0	0	0	2
0845-0900	0	113	1	0	0	0	0	94	0	1	0	0

1 HOUR TOTALS	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTALS
0700-0800	1	458	1	2	0	0	1	397	0	0	0	1	861
0715-0815	2	512	1	2	0	0	1	427	0	1	0	1	947
0730-0830	4	534	2	4	0	0	1	426	0	1	0	1	973
0745-0845	4	554	2	5	0	0	2	407	0	1	0	2	977
0800-0900	4	515	3	3	0	0	1	367	0	2	0	2	897

A.M. PEAK HOUR
0745-0845



EQUESTRIAN CENTER / RESIDENTIAL DRWYS

SAN DIMAS AVENUE

THE TRAFFIC SOLUTION
329 DIAMOND STREET
ARCADIA, CALIFORNIA 91006
626.448.7978 PHONE
626.448.2877 FAX

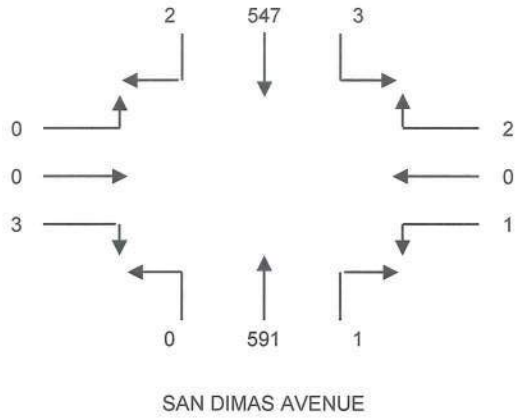
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT:		LINSCOTT LAW & GREENSPAN
PROJECT:		SAN DIMAS RESIDENTIAL
DATE:		TUESDAY, SEPTEMBER 1, 2015
PERIOD:		04:00 PM TO 06:00 PM
INTERSECTION	N/S	SAN DIMAS AVENUE
	E/W	EQUESTRIAN CENTER / RESIDENTIAL DRWYS
FILE NUMBER:		3-PM

15 MINUTE	1	2	3	4	5	6	7	8	9	10	11	12
TOTALS	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT
0400-0415	0	124	1	0	0	0	0	134	0	2	0	1
0415-0430	2	116	0	0	0	0	1	123	0	0	0	0
0430-0445	2	138	1	0	0	0	0	133	0	1	0	0
0445-0500	0	136	0	1	0	0	0	140	0	2	0	0
0500-0515	0	141	1	0	0	0	0	169	0	0	0	0
0515-0530	1	138	2	1	0	1	1	131	0	0	0	0
0530-0545	1	132	0	0	0	0	0	151	0	1	0	0
0545-0600	3	117	1	1	0	0	0	124	0	1	0	0

1 HOUR	1	2	3	4	5	6	7	8	9	10	11	12	
TOTALS	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTALS
0400-0500	4	514	2	1	0	0	1	530	0	5	0	1	1058
0415-0515	4	531	2	1	0	0	1	565	0	3	0	0	1107
0430-0530	3	553	4	2	0	1	1	573	0	3	0	0	1140
0445-0545	2	547	3	2	0	1	1	591	0	3	0	0	1150
0500-0600	5	528	4	2	0	1	1	575	0	2	0	0	1118

P.M. PEAK HOUR
0445-0545



EQUESTRIAN CENTER / RESIDENTIAL DRWYS

THE TRAFFIC SOLUTION
329 DIAMOND STREET
ARCADIA, CALIFORNIA 91006
626.448.7978 PHONE
626.448.2877 FAX

PEDESTRIAN - BICYCLE COUNT SUMMARY

CLIENT: LLG ENGINEERS - PASADENA
PROJECT: SAN DIMAS RESIDENTIAL
DATE: TUESDAY, SEPTEMBER 01, 2015
PERIOD: 07:00 AM TO 09:00 AM
04:00 PM TO 06:00 PM
INTERSECTION: SAN DIMAS AVENUE / EQUESTRIAN - RESIDENTIAL DRWYS

FILE: 03-AM_PM

	PEDESTRIAN MOVEMENTS			
15-MINUTE PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D
0700-0715	0	1	0	1
0715-0730	0	0	0	0
0730-0745	0	3	0	0
0745-0800	0	3	0	1
0800-0815	0	0	0	2
0815-0830	0	3	0	2
0830-0845	0	0	0	4
0845-0900	0	1	0	3

	BICYCLIST MOVEMENTS			
15-MINUTE PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D
0700-0715	0	1	0	1
0715-0730	0	0	0	1
0730-0745	0	0	0	0
0745-0800	0	2	0	0
0800-0815	0	0	0	2
0815-0830	0	1	0	0
0830-0845	0	0	0	0
0845-0900	0	0	0	0

	PEDESTRIAN MOVEMENTS				
1-HOUR PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D	TOTALS
0700-0800	0	7	0	2	9
0715-0815	0	6	0	3	9
0730-0830	0	9	0	5	14
0745-0845	0	6	0	9	15
0800-0900	0	4	0	11	15

	BICYCLIST MOVEMENTS				
1-HOUR PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D	TOTALS
0700-0800	0	3	0	2	5
0715-0815	0	2	0	3	5
0730-0830	0	3	0	2	5
0745-0845	0	3	0	2	5
0800-0900	0	1	0	2	3

THE TRAFFIC SOLUTION
329 DIAMOND STREET
ARCADIA, CALIFORNIA 91006

PEDESTRIAN - BICYCLE COUNT SUMMARY

CLIENT: LLG ENGINEERS - PASADENA

PROJECT: SAN DIMAS RESIDENTIAL

DATE: TUESDAY, SEPTEMBER 01, 2015

PERIOD: 07:00 AM TO 09:00 AM

04:00 PM TO 06:00 PM

INTERSECTION: SAN DIMAS AVENUE / EQUESTRIAN - RESIDENTIAL DRWYS

FILE: 03-AM_PM

	PEDESTRIAN MOVEMENTS			
15-MINUTE PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D
0400-0415	0	0	0	1
0415-0430	0	1	0	0
0430-0445	0	1	0	1
0445-0500	0	0	0	1
0500-0515	0	1	0	1
0515-0530	0	1	0	1
0530-0545	0	0	0	0
0545-0600	0	0	0	0

	BICYCLIST MOVEMENTS			
15-MINUTE PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D
0400-0415	0	1	0	0
0415-0430	0	0	0	0
0430-0445	0	1	0	0
0445-0500	0	0	0	1
0500-0515	0	1	0	1
0515-0530	0	0	0	1
0530-0545	0	2	0	0
0545-0600	0	0	0	0

	PEDESTRIAN MOVEMENTS				
1-HOUR PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D	TOTALS
0400-0500	0	2	0	3	5
0415-0515	0	3	0	3	6
0430-0530	0	3	0	4	7
0445-0545	0	2	0	3	5
0500-0600	0	2	0	2	4

	BICYCLIST MOVEMENTS				
1-HOUR PERIOD	NORTH LEG A	EAST LEG B	SOUTH LEG C	WEST LEG D	TOTALS
0400-0500	0	2	0	1	3
0415-0515	0	2	0	2	4
0430-0530	0	2	0	3	5
0445-0545	0	3	0	3	6
0500-0600	0	3	0	2	5

THE TRAFFIC SOLUTION
329 DIAMOND STREET
ARCADIA, CALIFORNIA 91006