3L. Transportation/Traffic

INTRODUCTION

This chapter presents the results of the traffic and circulation study prepared for the proposed project in May 2001 by RK Engineering Group, and updated in July 2003 by George Dunn Engineering (see Appendix E). The original traffic study relies on traffic counts taken in February 2001, then estimates the additional trips expected to be generated by the proposed project and evaluates the potential impacts to local and regional roadway systems. The July 2003 update includes traffic counts taken in June 2002 at two of the previously counted intersections (Lone Hill Avenue at Gladstone Street and Lone Hill Avenue at Arrow Highway), and compares them (taking into account known development) to February 2001 counts to estimate the potential change in traffic volume over the one-year period. A total of eight key intersections in the project study area were analyzed. The July 2003 update also applies a two-percent per year growth factor to traffic count data collected in February 2001 (total four percent growth factor) and June 2002 (total two percent growth factor) to reflect existing Year 2003 conditions. Additionally, the July 2003 analysis updates roadway geometry data (to include improvements that have occurred since 2001) and the cumulative project list. Some of the projects on the cumulative projects list in the original May 2001 traffic study have since been completed and new projects have been identified.

SETTING

The proposed project site consists of 22.83 acres spread over 47 separate parcels, ranging in level of development from undeveloped and single family residential to commercial/light industrial. West 5th Street, to be removed as part of the proposed project, extends through the southern portion of the project site east of Lone Hill Avenue. The proposed project site is currently occupied by the following: an open land with scattered trees and vegetation; vacant lots; twenty single-family residences; one mobile home trailer; and, several light industrial businesses. The proposed project site is generally unimproved and generates minimal traffic.[1]

Existing Area Transit Network

57 Freeway (former Interstate 210) is a major freeway that traverses the Los Angeles metropolitan area. Interstate 210 was recently extended from its previous terminus at Interstate 10 and State Route 57 and now extends eastward to Interstate 15. The portion of this freeway that is located approximately ¼-mile east of the proposed project site is now known as the 57 Freeway. The former eastern terminus of State Route 210 is now a northern extension of the 57 Freeway. The 57 Freeway is generally a north-south freeway that extends from Interstate 5 from the south and terminates at State Route 210 to the north. Freeway interchanges in the

[1] RK Engineering Group, Costco *Traffic and Circulation Study (Revised), San Dimas, California*, May 29, 2001.

project vicinity are located at Covina Boulevard southeast of the proposed project site and at West Arrow Highway and Auto Center Drive.

Interstate 210 is an eight-lane east-west freeway that connects Interstate 15 to the east with Interstate 5 to the west. Interstate 210 has a freeway interchange north of the proposed project site at Via Verde and Lone Hill Avenue. Interstate 210 is located approximately one mile north of the proposed project site.

Interstate 10 is a transcontinental freeway located approximately 3 miles south of the proposed project site. Interstate 10 provides regional access to the proposed project site from the Cities of West Covina, Covina, Walnut, Pomona, Chino and Ontario.

Lone Hill Avenue is a four-lane north arterial roadway in the proposed project vicinity. The two nearest signalized intersections are Gladstone Street north of the proposed project site and Arrow Highway south of the proposed project site. Lone Hill Avenue terminates as an arterial roadway at Covina Boulevard to the south and at Alosta Avenue to the north. Lone Hill Avenue has a full interchange with Interstate 210 north of the proposed project site.

Gladstone Street is generally a four-lane east-west roadway located north of the proposed project site. Gladstone Street traverses the Cities of Azusa, Glendora and San Dimas. The intersection of Gladstone Street with Lone Hill Avenue northwest of the proposed project site is currently controlled by a traffic signal that provides east-west protected left-turn phasing.

Arrow Highway is an east-west arterial roadway located approximately ½-mile south of the proposed project site. Arrow Highway begins when its name is changed from Live Oak Avenue in the City of Monrovia to the west and continues eastward to the San Bernardino County line. The intersection of Lone Hill Avenue with Arrow Highway is controlled by a traffic signal that provides protected left-turn phasing in all directions.

Existing Traffic Conditions

LOS Definitions. The efficiency of traffic operations at a location is measured in terms of LOS, which is a description of traffic performance at intersections. The level of service concept is a measure of average operating conditions at intersections during an hour. It is based on volume-to-capacity (V/C) ratio with the ability to carry (the capacity) compared to the level of traffic during the peak hours (volume). This method is also known as the Intersection Capacity Utilization (ICU) technique. Levels range from A to F with A representing excellent (free-flow) conditions and F representing extreme congestion. Table 3L-1 describes the level of service concept and the operating conditions expected under each level of service for signalized intersections.

Figure 3L-1 shows the study area intersection locations and Figure 3L-2 shows the existing number of through lanes and intersection controls. Figure 3L-3 shows the existing average daily traffic.

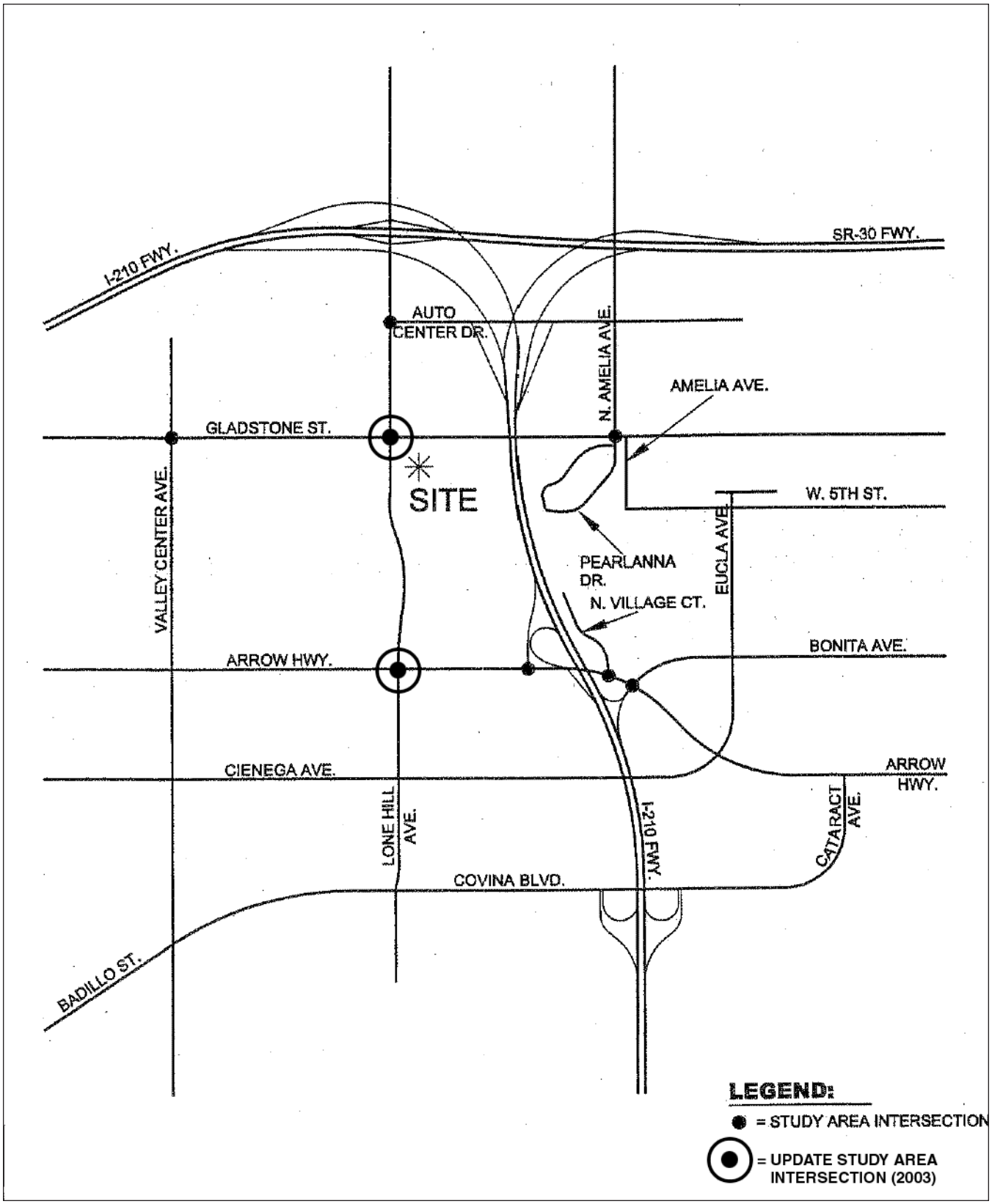
Project Area LOS. A field inventory was conducted of all study intersection locations. The inventory included review of intersection geometric layout, traffic control, lane configuration,

TABLE 3L-1: INTERSECTION LEVEL OF SERVICE DEFINITIONS

LOS	Interpretation	Signalized Intersection Volume to Capacity Ratio (ICU/CMA)	Stop-Controlled Intersection Average Stop Delay (HCM)
A	Excellent operation. All approaches to the intersection appear quite open, turning movements are easily made, and nearly all drivers find freedom of operation.	0.000 - 0.600	$\leq$ 10 seconds
B	Very good operation. Many drivers begin to feel somewhat restricted within platoons of vehicles. This represents stable flow. An approach to an intersection may occasionally be fully utilized and traffic queues start to form.	0.601 - 0.700	> 10 and $\leq$ 15 seconds
C	Good operation. Occasionally backups may develop behind turning vehicles. Most drivers felt somewhat restricted.	0.701 – 0.800	> 15 and $\leq$ 25 seconds
D	Fair operation. There are no long-standing traffic queues. This level is typically associated with design practice for peak periods.	0.801 - 0.900	> 25 and $\leq$ 35 seconds
E	Poor Operations. Some long-standing vehicular queues develop on critical approaches.	0.901 – 1.000	> 35 and $\leq$ 50 seconds
F	Forced flow. Represents jammed conditions. Backups from locations downstream or on the cross street may restrict or prevent movements of vehicles out of the intersection approach lanes; therefore, volumes carried are not predictable. Potential for stop and go type traffic flow.	Over 1.000	> 50 seconds

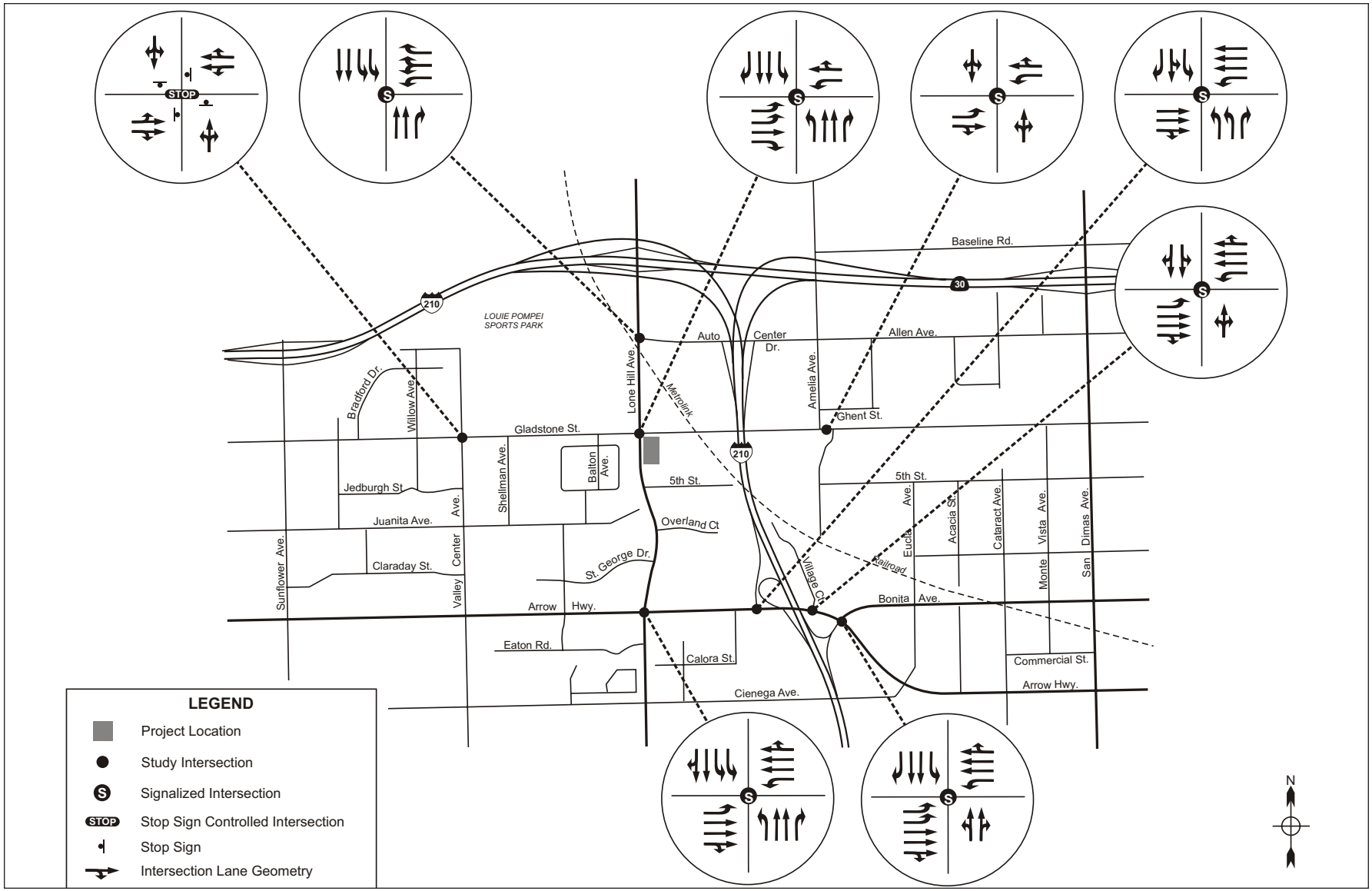
Source: Highway Capacity Manual (HCM), Special Report 209. Transportation Research Board, Washington D.C., 1997.

posted speed limits, land use and parking. This information is required for the subsequent traffic impact analysis. Figure 3L-2 includes the existing number of through lanes and intersection controls. Traffic volumes for the AM and PM peak hours were obtained from traffic counts taken in February and March 2001. Supplemental traffic counts were taken in June 2002 at the Lone Hill Avenue intersections with Gladstone Street and Arrow Highway. Counts were conducted weekdays from 7:00 AM to 9:00 AM, and 4:00 PM to 6:00 PM with the highest single hour traffic volumes at each location used for purposes of the impact analysis. Analysis of additional time periods outside the traditional AM and PM peak hours is generally not required since other time periods usually have lesser traffic volumes than during the typical weekday commute periods.



SOURCE: RK Engineering Group, Inc., 2001

Figure 3L-1
Traffic Study Intersections



SOURCE: George Dunn Engineering, July 2003.

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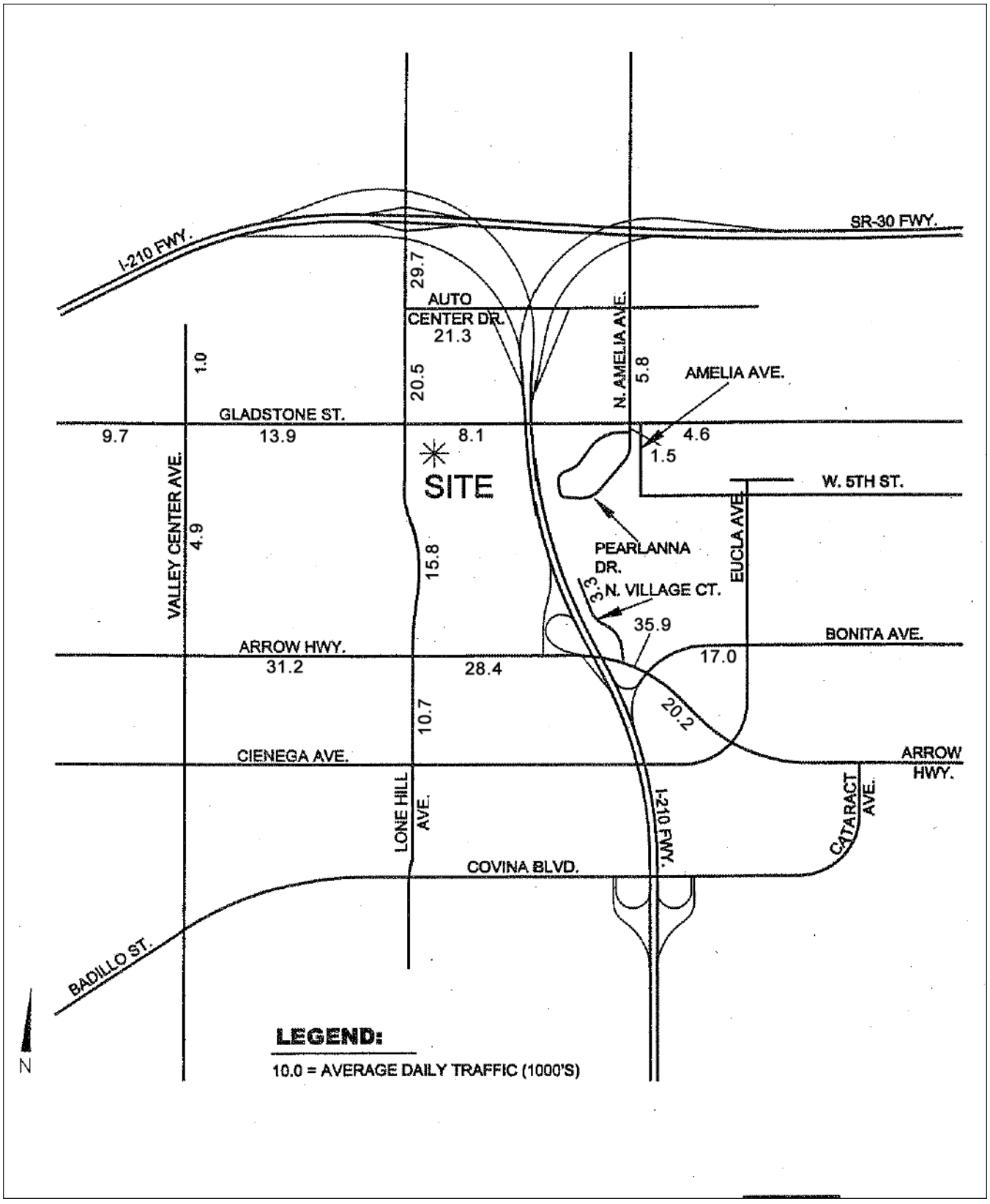
Figure 3L-2

Number of Through Lanes and Intersection Controls



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SOURCE: RK Engineering Group, Inc., 2001
Updated by George Dunn Engineering, 2003 using a 2% growth factor per year

Figure 3L-3
Existing Average Daily Traffic

The original traffic study identified a background traffic growth rate of two percent per year. The 2003 traffic update utilized the same two percent per year growth rate. To grow traffic count data to reflect existing 2003 conditions, traffic counts collected in 2001 at all but the Lone Hill Avenue intersections with Gladstone Street and Arrow Highway were multiplied by 1.04, an increase of four percent (two percent per year). The traffic counts collected in 2002 at the Lone Hill Avenue intersections with Gladstone Street and Arrow Highway were multiplied by 1.02, an increase of two percent (two percent for one year), to reflect existing 2003 conditions. Figure 3L-4 shows the existing weekday AM peak hour traffic volumes at the eight study intersections. Figure 3L-5 shows the existing weekday PM peak hour traffic volumes at the eight study intersections.

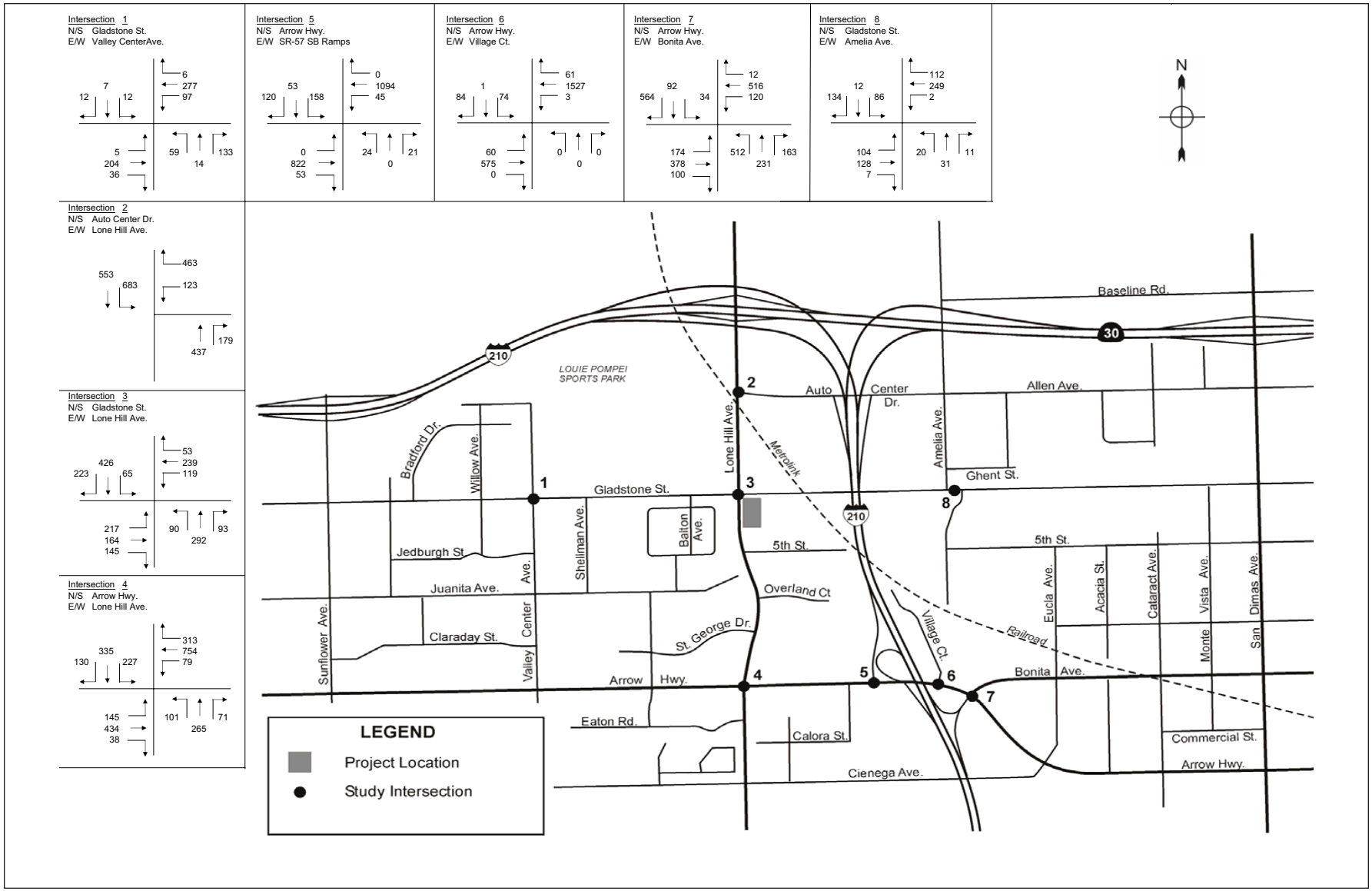
Level of service D is generally considered to be the lowest acceptable LOS in an urban or suburban area. Level of service E and F are considered to be unacceptable operating conditions, which warrant mitigation. The V/C and LOS results of the study area intersections are summarized below in Table 3L-2. As shown in Table 3L-2, except for the intersection of the 57

TABLE 3L-2: EXISTING LEVELS OF SERVICE DURING THE AM/PM PEAK HOUR (2003)

INTERSECTION	PEAK HOUR	V/C	LOS
1. Valley Center Avenue/Gladstone Street[a]	AM	10.0 sec	-A
	PM	11.3 sec	-B
2. Lone Hill Avenue/Auto Center Drive	AM	0.595	A
	PM	0.699	B
3. Lone Hill Avenue/Gladstone Street[b]	AM	0.546	A
	PM	0.678	B
4. Lone Hill Avenue/Arrow Highway[b]	AM	0.621	B
	PM	0.720	C
5. 57 Freeway Southbound Off-Ramp/Arrow Highway	AM	0.598	A
	PM	0.772	C
6. 57 Freeway Northbound On/Off-Ramp (Bonita Avenue)/Arrow Highway	AM	0.892	D
	PM	0.997	E
7. Amelia Avenue/Gladstone Street	AM	0.484	A
	PM	0.485	A
8. Village Court/Arrow Highway	AM	0.521	A
	PM	0.612	B

a. Level of Service is calculated at the unsignalized intersection based on delay.
b. At the request of the City of Glendora, the volumes at the Lone Hill Avenue/Gladstone Street and Lone Hill Avenue/Arrow Highway intersections were recalculated as part of the 2003 update using the TRAFFIX software and ICU methodology. The same software was used to analyze both Year 2001 and Year 2002 volumes at these intersections to ensure consistency in the updated analysis. The comparison shows that no change in the AM peak hour analysis is expected due to differences between February 2001 and June 2002 traffic volumes. Since the new traffic counts show new traffic volumes that are generally the same as the volumes previously analyzed, no further AM peak hour analysis was deemed necessary as part of the 2003 Traffic Study Update. Further PM peak hour analysis was deemed necessary since the June 2002 volumes increase the level of services by almost one letter grade.

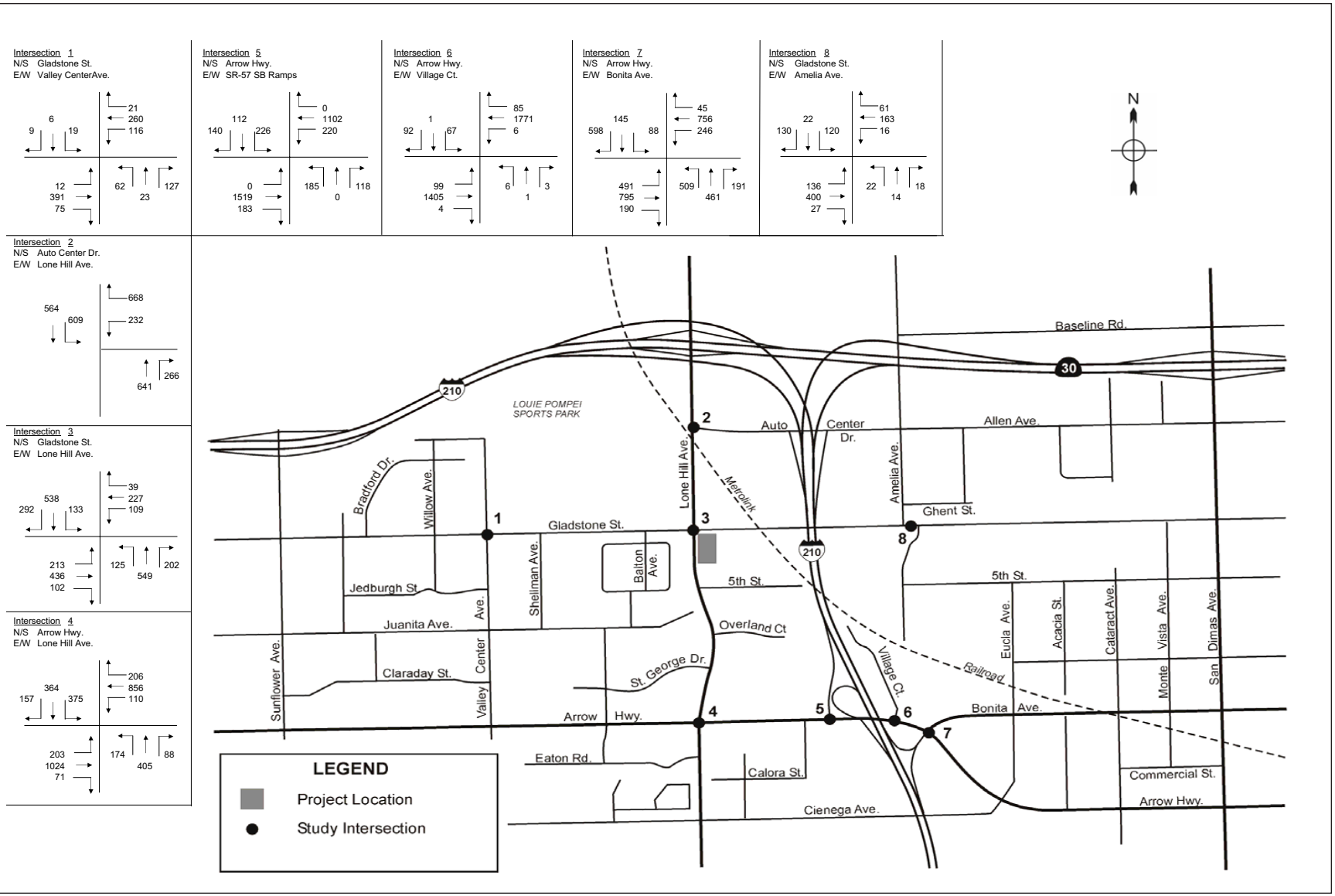
Sources: RK Engineering Group, *Costco Traffic and Circulation Study (Revised), San Dimas, California*, May 29, 2001.
George Dunn Engineering, *Traffic Study Update for the Costco Commercial Complex, San Dimas, California*, July 29, 2003.



SOURCE: George Dunn Engineering, July 2003.

Figure 3L-4

Existing Weekday AM Peak Hour Traffic Volumes



SOURCE: George Dunn Engineering, July 2003.

Figure 3L-5

Existing Weekday PM Peak Hour Traffic Volumes

Freeway northbound on/off ramp (Bonita Avenue) and Arrow Highway during the PM peak hour, all intersections operate at acceptable levels of service during the AM and PM peak. The calculation results are consistent with those from the original traffic study.

There are two school sites located in the vicinity of the proposed project site. The closest school is Gladstone Elementary School located a little over ¼-mile west of the proposed project site, south of Gladstone Street. This elementary school serves residential areas located primarily to the west of the proposed project site. The other school site is located at the southwest corner of Auto Center Drive and Allen Avenue at Amelia Avenue. This site is anticipated to have limited impact from the proposed project since proposed project traffic is generally not expected to transverse Amelia Avenue south of Auto Center Drive.

The Gladstone Elementary School, located west of Lone Hill Avenue, and south of Gladstone Street, is expected to experience an increase in traffic on Gladstone Street as a result of growth, cumulative development and the proposed project. Much of the traffic increase is attributed to approved projects in the vicinity of the proposed project site. The proposed project is expected to contribute approximately 800 to 900 ADT to Gladstone Street adjacent to the school. Other approved projects and ambient growth in the San Dimas and Glendora areas would increase traffic volumes on Lone Hill Avenue and Gladstone Street in the vicinity of Gladstone Elementary School. There are existing controlled crossings at the intersection of Lone Hill Avenue and Gladstone Street (traffic signal) and an all-way stop control at Valley Center Avenue and Gladstone Street intersection. However, the inadequate width of Gladstone Street and substandard conditions along the south side of Gladstone Street, in the vicinity of Gladstone Elementary School, could pose safety concerns for students that are dropped off and picked up in the front of the school. The intersection of Valley Center Avenue and Gladstone Street currently meets traffic signal warrants for existing conditions. Although, increases in traffic are anticipated in the vicinity of the Gladstone Elementary School, the existing/proposed traffic controls would facilitate movements into and out of the school. Previous projects in the City of Glendora, including the Glendora Marketplace, provided several improvements at the school site. These improvements included an improved drop-off/pick-up area.

The 2001 traffic study analyzed seven area projects as part of their cumulative impacts analysis. These projects included the following: 1) Lowe's Improvement Center; 2) Glendora Retail Center (part of the Glendora Marketplace); 3) Albertsons Market; 4) Kaiser Property; 5) Ice Plex; 6) 17-acre residential subdivision on Amelia Avenue (north of I-210); and, 7) 9.2-acre residential subdivision on Lone Hill Avenue (north of I-210). All of these area projects, with the exception of the two residential developments and the Kaiser Property, no longer appear as proposed or on-going projects on the cumulative area projects list provided by the Cities of San Dimas, Glendora and Covina, and Los Angeles County (see Chapter 2, Table 2-2). According to these Cities, the Lowe's Improvement Center, Glendora Retail Center and the Albertsons Market have already been constructed and are currently in operation. According to the City of San Dimas, the Kaiser Property project is currently under construction and the Ice Plex project is no longer being considered for construction. However, other area projects have since been added as shown in Chapter 2, Table 2-2. The 2003 update includes an analysis of cumulative impacts that considers these new area projects.

APPLICABLE REGULATIONS

County of Los Angeles

New projects within the County must comply with the Congestion Management Program (CMP) for Los Angeles County, which was adopted by the Los Angeles County Metropolitan Transportation Authority (LACMTA) in November 1995 pursuant to state law. The CMP involves monitoring traffic conditions on the designated transportation network, performance measures, analysis of the impact of land use decisions on the transportation network, and mitigation to reduce impacts of the network.

Appendix D of the CMP includes Transportation Impact Assessment (TIA) guidelines. The TIA guidelines require analysis at monitored street intersections and segments, including freeway on- or off-ramp intersections, at which a project is expected to add 50 or more peak hour vehicle trips, and mainline freeway or ramp monitoring locations where the project will add 150 or more peak hour trips. If a project does not add, but merely shifts trips at a given monitoring location, the CMP analysis is not required.

An evaluation of transit impacts is required by the CMP for all projects for which an EIR will otherwise be prepared. The CMP also requires that transit system operators receive the NOP for all EIRs to evaluate the potential impacts on existing transit systems, and establishes evaluation procedures. Transit corridors and centers subject to CMP requirements are identified in Appendix F of the CMP.[2]

City of San Dimas

The City of San Dimas Planning Department is responsible for transportation issues within the City boundaries. The proposed project would comply with the goals, objectives and policies outlined in the City of San Dimas General Plan's Circulation Element.[3] The Circulation Element identifies the general location and extent of the existing and proposed major roads, highways, trails, railroads, public transit routes and stations, and other public utilities and public facilities.

IMPACTS AND MITIGATION

Methodology

The intersection analysis was performed utilizing the Intersection Capacity Utilization (ICU) Methodology for signalized intersections. The Institute of Traffic Engineer's *Trip Generation Manual, Sixth Edition* was used to estimate project-generated trips.

[2] City of Los Angeles, *Congestion Management Plan*, 1998.

[3] City of San Dimas, *General Plan – Circulation Element*, 1991.

The intersections studied are listed below. These intersections were selected in consultation with City of San Dimas. They were analyzed for the weekday AM and PM peak hours.

1. Valley Center Avenue (NS)/Gladstone Street (EW)
2. Lone Hill Avenue (NS)/Auto Center Drive (EW)
3. Lone Hill Avenue (NS)/Gladstone Street (EW)
4. Lone Hill Avenue (NS)/Arrow Highway (EW)
5. I-210 Freeway (now known as the 57 Freeway) Southbound Off-Ramp (NS)/Arrow Highway (EW)
6. I-210 Freeway (now known as the 57 Freeway) Northbound On/Off Ramps (NS)/Arrow Highway (EW)
7. Amelia Avenue (NS)/Gladstone Street (EW)
8. Village Court (NS)/Arrow Highway (EW)

The analysis of peak hour intersection Level of Service (LOS) is the primary indicator of circulation system performance. The level of service during the peak hour at intersections ranges from LOS A (optimal conditions, little congestion) to LOS F (stop-and-go traffic, very heavy congestion). Traffic operating conditions at intersections near the proposed project site were analyzed using the Intersection Capacity Utilization (ICU) method. The ICU method for evaluating signalized intersection involves the computation of volume-to-capacity (V/C) ratios for each critical movement. Capacity, or saturation flow rate, is defined as the maximum rate of flow that can pass through a given intersection approach under prevailing traffic and roadway conditions. The sum of all critical movement V/C ratios, plus an efficiency lost factor of 0.1 to account for the effect of change intervals, is used to determine the total intersection capacity utilization and corresponding level of service from Table 3L-1.

Criteria for Determining Significant Impacts

The City of San Dimas' significance criteria were used to determine significant transportation impacts at a study intersection. According to the City of San Dimas, the limit of acceptable traffic operations is at LOS D or better.

Study Hours of Analysis

The analysis focuses on the weekday AM and PM peak hour conditions in the study area. In order to capture the peak hours during the peak periods, traffic counts were performed for the following times at the study intersections:

Weekday	AM Period	7 AM to 9AM
	PM Period	4 PM to 6 PM

Project Impacts

Impact 3L1: The proposed project could impact the existing load and capacity of local intersections and exceed significance criteria established by the City of San Dimas.

Proposed Project Only Traffic Conditions

The proposed development is projected to generate a net total of 8,978 trips per day with 241 vehicles per hour during AM peak hour and 779 vehicles per hour during the PM peak hour.

Trip distribution represents the directional orientation of traffic to and from the proposed project site. Trip distribution is influenced by the geographical location of the site, the location of employment, commercial, residential, and recreational facilities; and the proximity of the regional freeway system. The directional orientation of area traffic was determined by evaluating the existing and proposed land uses within the community and existing traffic volumes. Trip distribution for the traffic study was based upon near-term conditions, based upon those highway facilities that were in place at the time the study was conducted. The trip distribution patterns for the proposed project area are depicted in Figure 3L-6 and Figure 3L-7. The City Engineer reviewed the trip distribution patterns. The assignment of traffic from the proposed project site to the adjoining roadway system was based on the proposed project site's trip generation, trip distributions, and existing arterial highway and local street systems. Based on identified project trip generation and distribution, the average daily traffic volume attributable to the proposed project only is shown in Figure 3L-8. The AM and PM peak hour proposed project only traffic are depicted on Figures 3L-9 and 3L-10, respectively.

Existing Plus Proposed Project Traffic Conditions

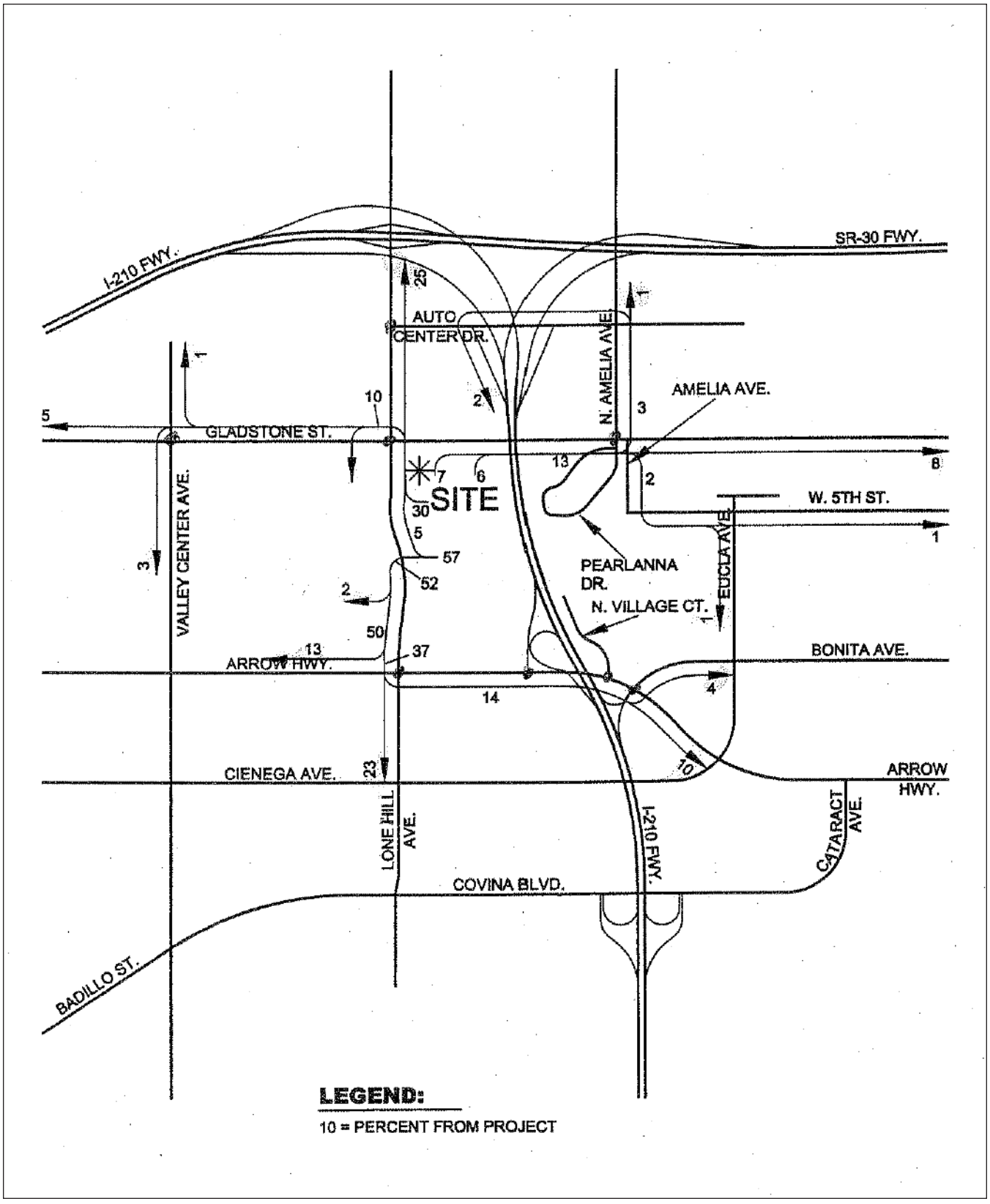
In order to assess the existing (Year 2003) plus proposed project traffic conditions, proposed project traffic was combined with existing traffic volumes. According to the 2001 traffic analysis, with the exception of the intersection of the I-210 Freeway (now known as the 57 Freeway) northbound ramps and Arrow Highway, all study intersections are projected to operate at LOS C or better during peak hours. Figures 3L-11 and 3L-12 show existing plus proposed project AM and PM peak hour intersection volumes.

As shown in Figure 3L-3, assuming a two percent growth factor per year for two years (2001 to existing 2003 conditions), the average daily traffic volumes have not significantly increased since 2001. Therefore, all study intersections are anticipated to operate at levels above significance criteria established by the City of San Dimas.

Table 3L-3 shows the results of the weekday peak hour analysis. As shown in Table 3L-3, with the exception of the intersection of the 57 Freeway northbound on/off ramp (Bonita Avenue) and Arrow Highway during the PM peak hour, all intersections operate at acceptable levels of service during the AM and PM peak hours. The calculation results are consistent with those from the original traffic study, with one exception. The four percent growth in traffic between 2001, when the counts were originally taken, and the forecast 2003 volumes at the 57 Freeway northbound on/off ramp (Bonita Avenue) and Arrow Highway intersection degrade intersection level of service from LOS E to LOS F.

Traffic Conditions With Cumulative Development Only

Trip distribution for the identified cumulative projects (see Chapter 2, Table 2-2) used assumptions developed for the original traffic study and local area knowledge. The cumulative



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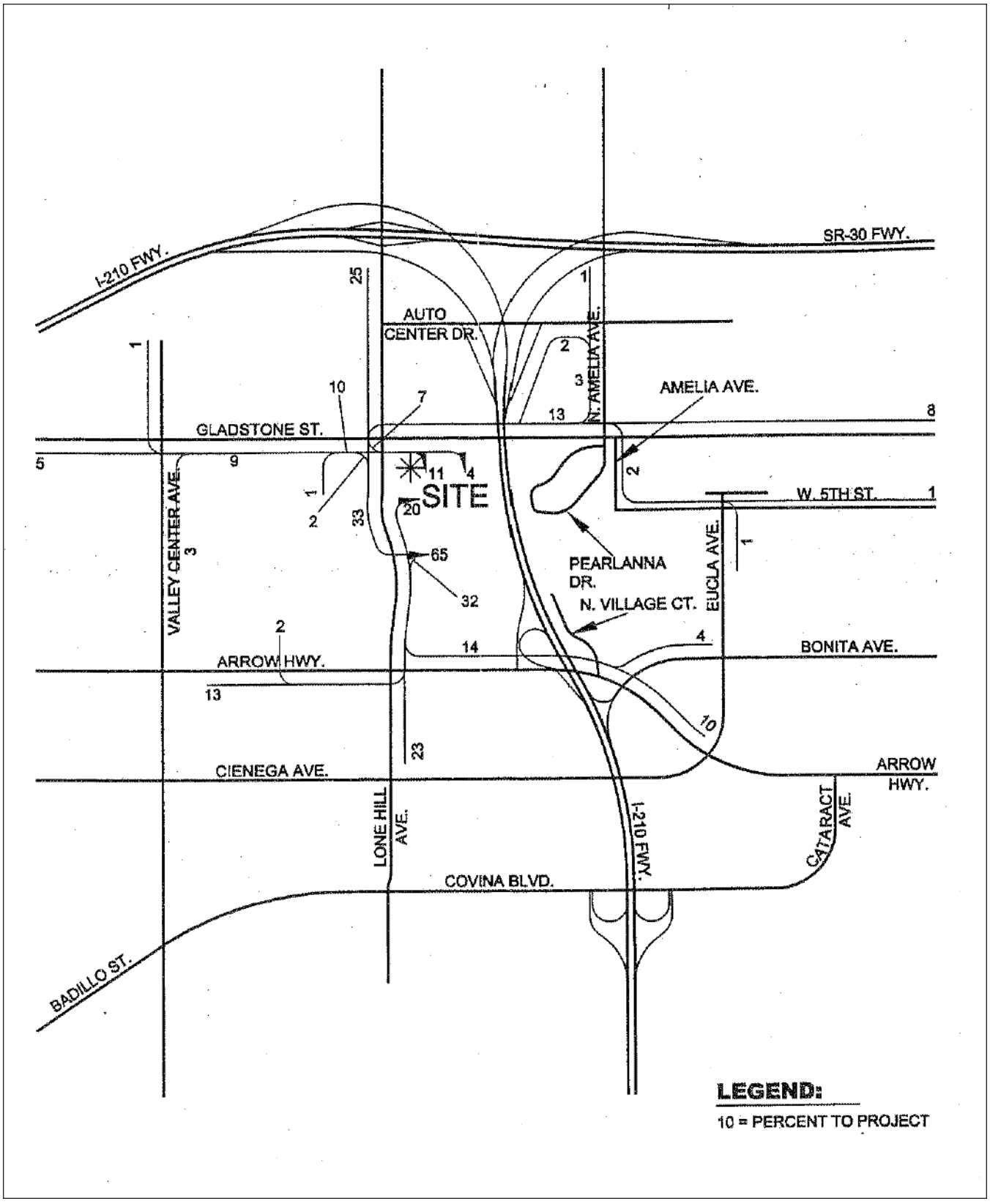
SOURCE: RK Engineering Group, Inc., 2001

Figure 3L-6
Proposed Project Outbound Trip Distribution



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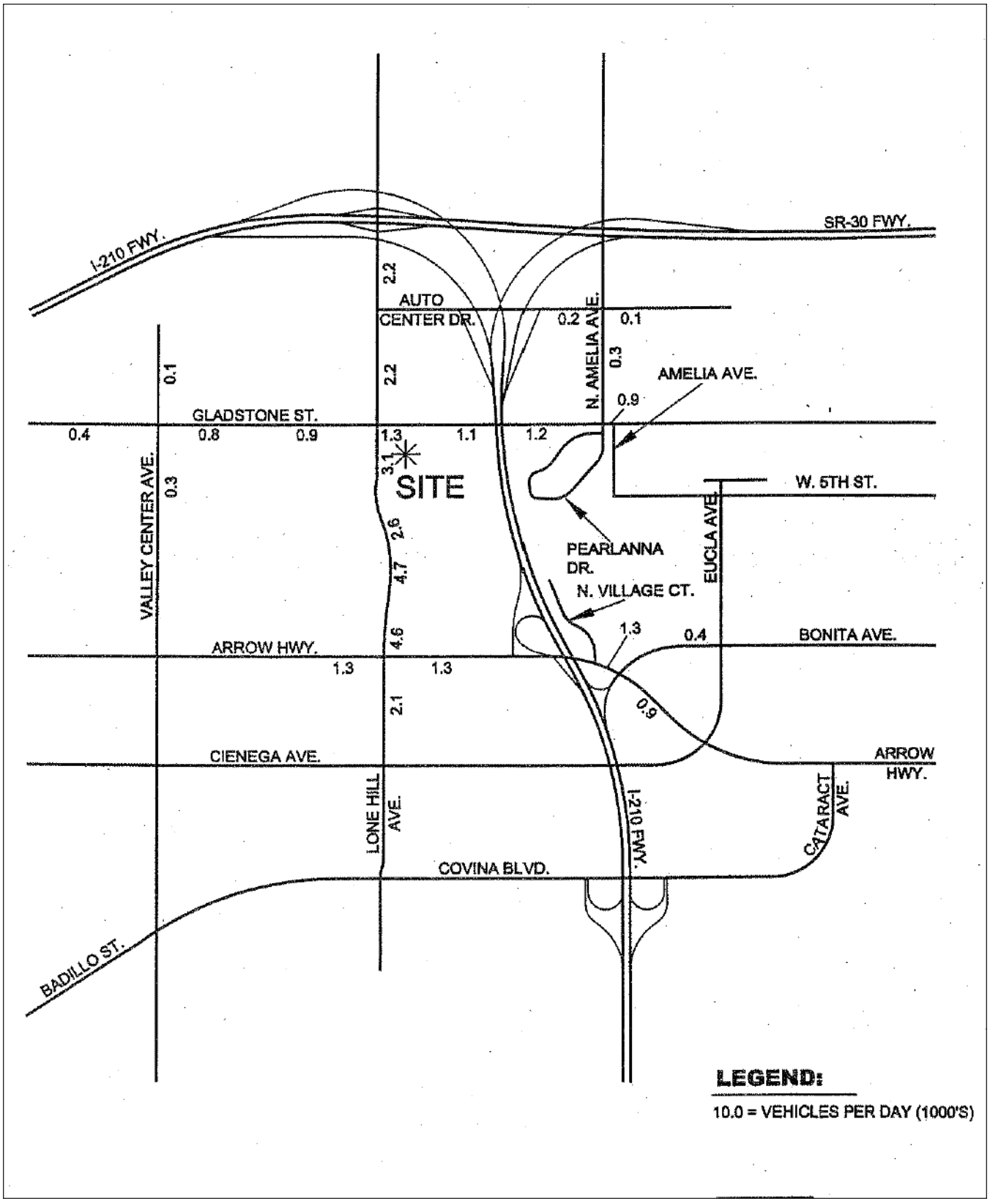
SOURCE: RK Engineering Group, Inc., 2001

Figure 3L-7
Proposed Project Inbound Trip Distribution



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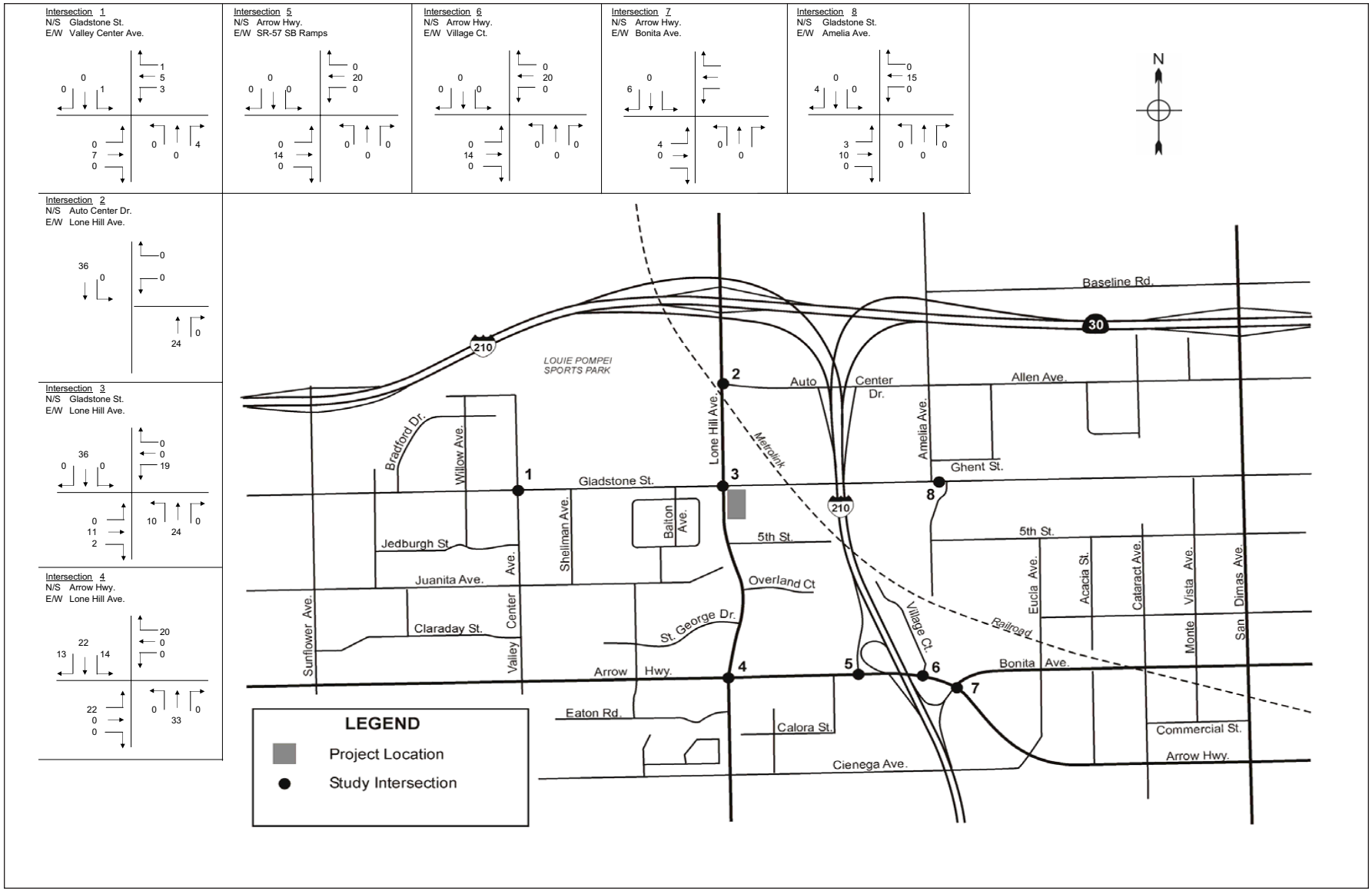
SOURCE: RK Engineering Group, Inc., 2001

Figure 3L-8
Proposed Project Only Average Daily Traffic



SOURCE: George Dunn Engineering, July 2003.

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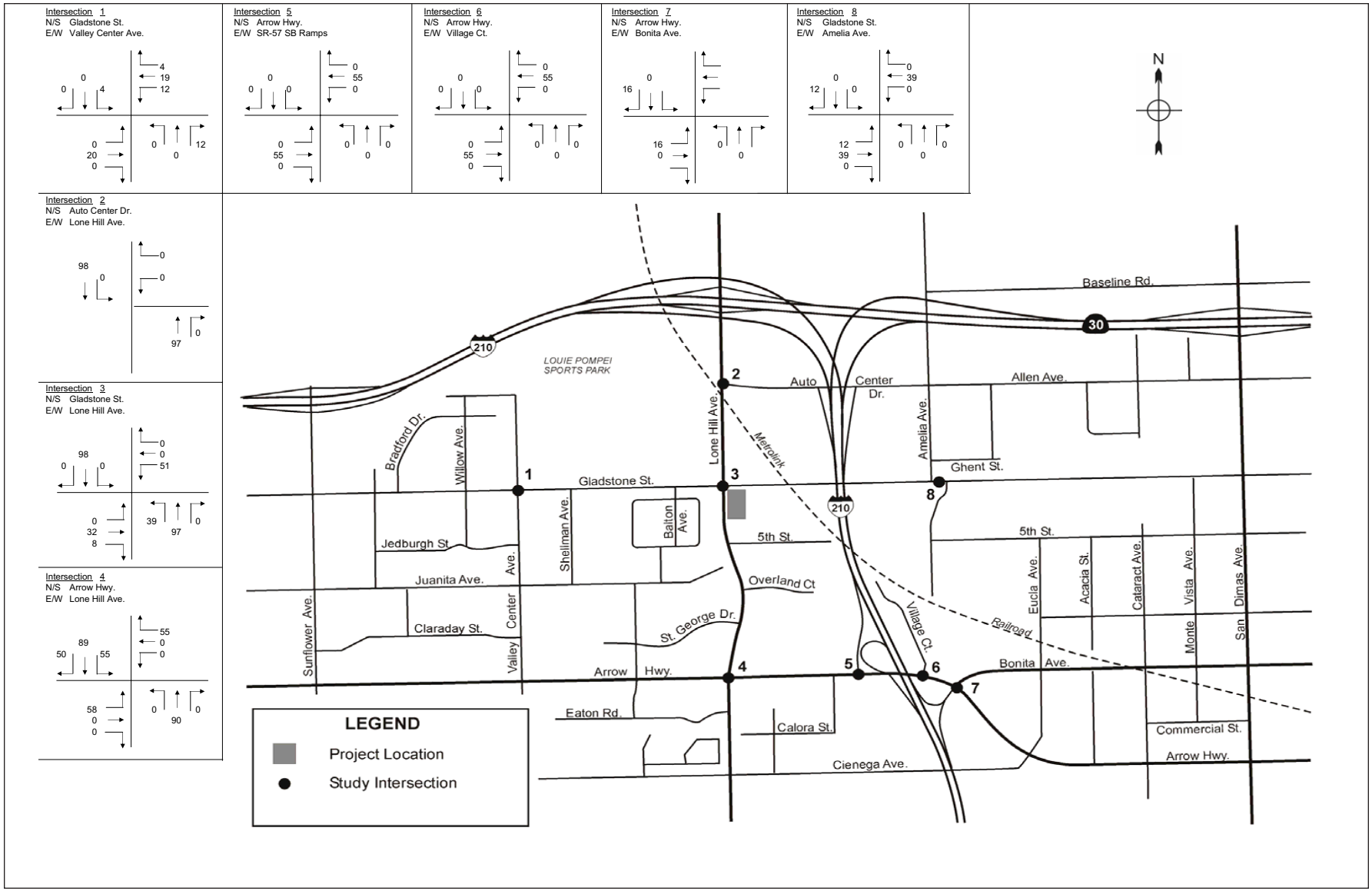
Figure 3L-9

Proposed Project Only AM Peak Hour Intersection Volumes



SOURCE: George Dunn Engineering, July 2003.

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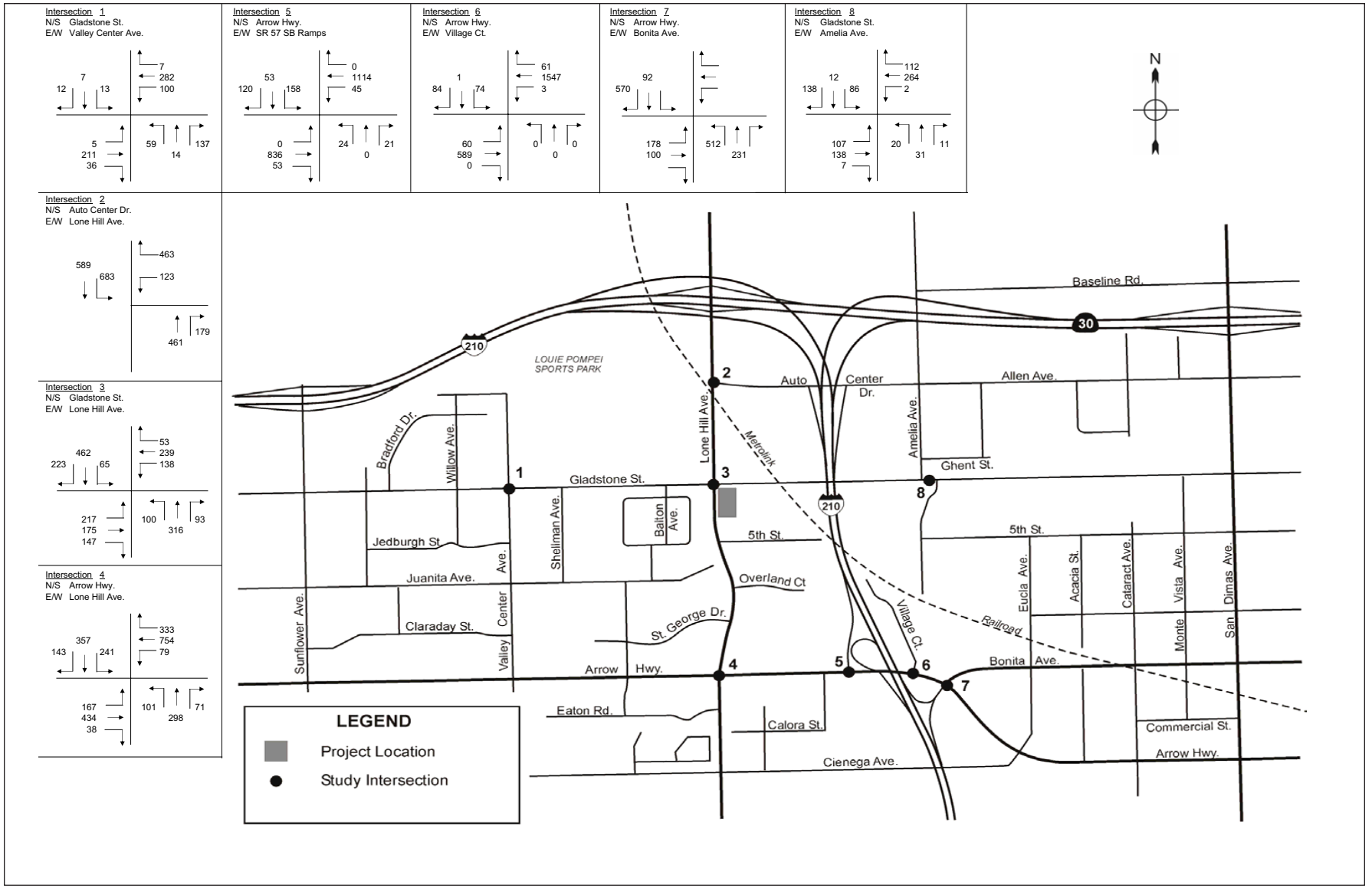
Figure 3L-10

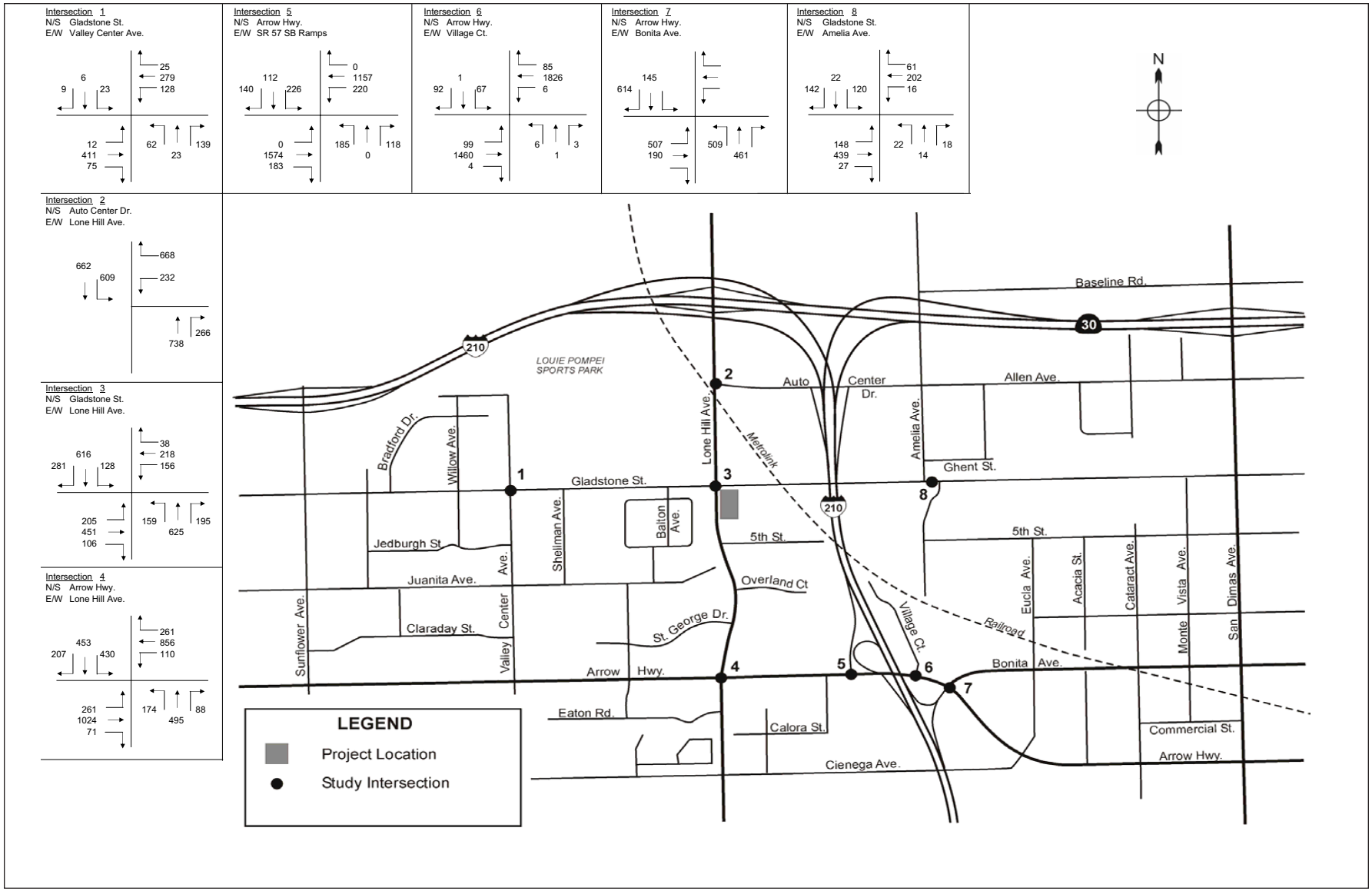
Proposed Project Only PM Peak Hour Intersection Volumes



SOURCE: George Dunn Engineering, July 2003.

Figure 3L-11

Existing Plus Proposed Project AM Peak Hour Intersection Volumes



SOURCE: George Dunn Engineering, July 2003.

Figure 3L-12

Existing Plus Proposed Project PM Peak Hour Intersection Volumes

TABLE 3L-3: EXISTING LEVELS OF SERVICE DURING THE AM/PM PEAK HOUR WITH THE PROPOSED PROJECT (2003)

INTERSECTION	PEAK HOUR	V/C	LOS
1. Valley Center Avenue/Gladstone Street[a]	AM	10.1 sec	-B
	PM	11.9 sec	-B
2. Lone Hill Avenue/Auto Center Drive	AM	0.602	B
	PM	0.730	C
3. Lone Hill Avenue/Gladstone Street	AM	0.557	A
	PM	0.772	C
4. Lone Hill Avenue/Arrow Highway	AM	0.650	B
	PM	0.811	D
5. 57 Freeway Southbound Off-Ramp/Arrow Highway	AM	0.605	B
	PM	0.783	C
6. 57 Freeway Northbound On/Off-Ramp (Bonita Avenue)/Arrow Highway	AM	0.897	D
	PM	1.011	F
7. Amelia Avenue/Gladstone Street	AM	0.501	A
	PM	0.509	A
8. Village Court/Arrow Highway	AM	0.525	A
	PM	0.624	B

a. Level of Service is calculated at the unsignalized intersection based on delay.

Sources: RK Engineering Group, *Costco Traffic and Circulation Study (Revised), San Dimas, California,* May 29, 2001.
George Dunn Engineering, *Traffic Study Update for the Costco Commercial Complex, San Dimas, California*, July 29, 2003.

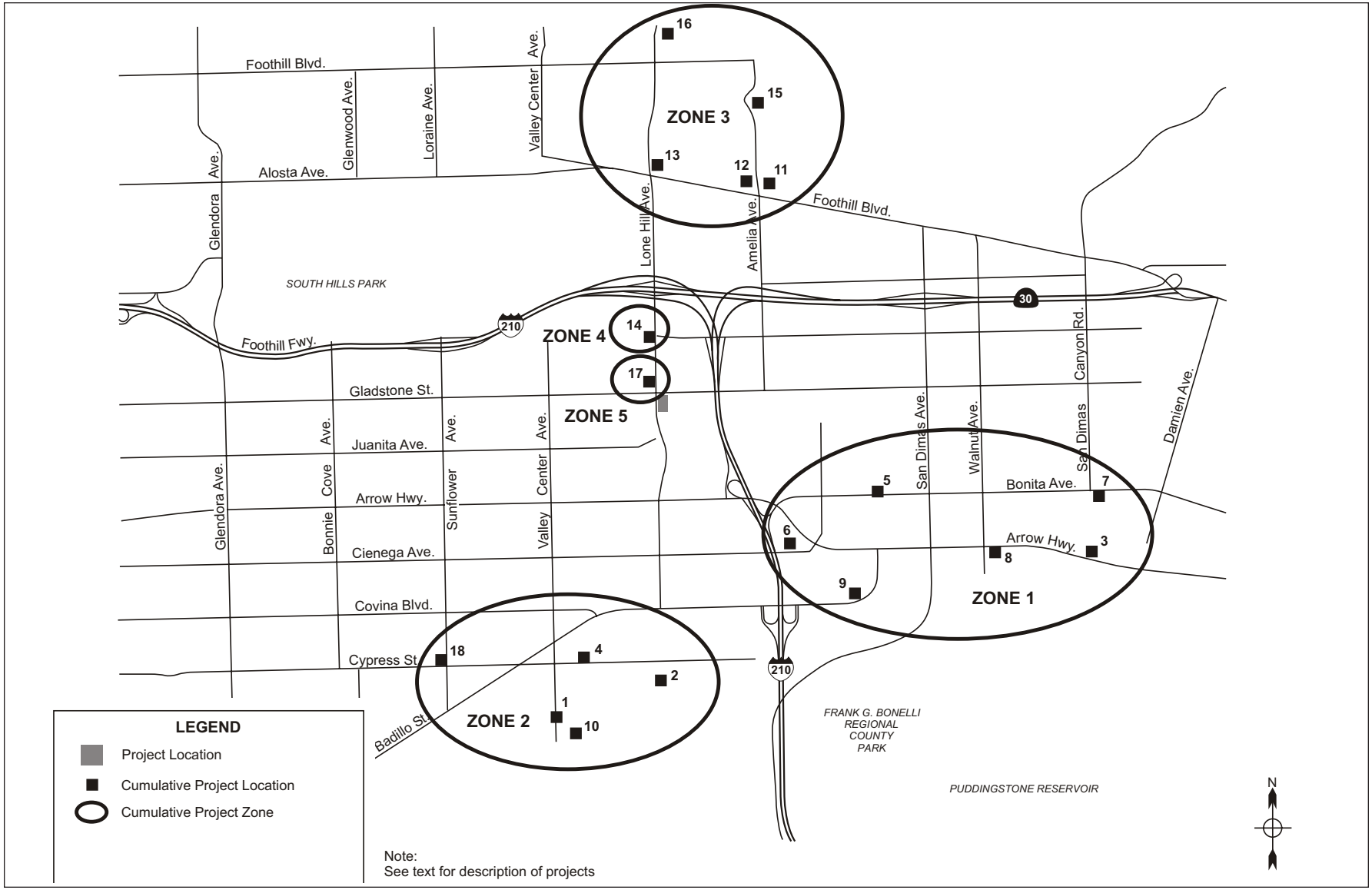
Traffic Conditions With Cumulative Development Only

Trip distribution for the identified cumulative projects (see Chapter 2, Table 2-2) used assumptions developed for the original traffic study and local area knowledge. The cumulative projects that were identified for analysis were grouped into zones. Figure 3L-13 shows the area project locations and zone designations. Cumulative development AM and PM peak hour intersection volumes are shown in Figures 3L-14 and 3L-15, respectively.

Existing Plus Cumulative Projects Without and With the Proposed Project Traffic Conditions

The 2001 traffic analysis assumed an opening year of 2002 for the proposed Costco commercial complex project. In addition to traffic generated by the proposed project and other developments, an area-wide growth factor of two percent per year for two years to the Year 2002 (per City Planning Department) was applied to 2001 traffic volumes.

Figures 3L-16 and 3L-17, respectively, show the forecast AM and PM peak hour traffic volumes, reflecting opening year 2005 conditions, without proposed project traffic conditions. Figures 3L-18 and 3L-19, respectively, show the AM and PM peak hour traffic volumes, reflecting opening year 2005 conditions, with proposed project traffic conditions.



SOURCE: George Dunn Engineering, July 2003.

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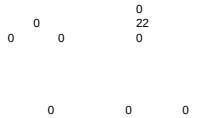
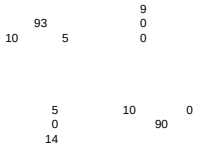
Figure 3L-13
Location of Cumulative Projects

Intersection 1
N/S Gladstone St.
E/W Valley CenterAve.

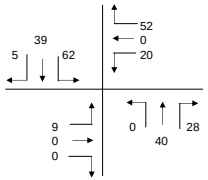


Intersection 2
N/S Auto Center Dr.
E/W Lone Hill Ave.

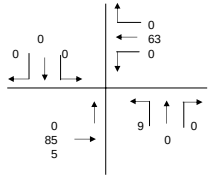
Intersection 3
N/S Gladstone St.
E/W Lone Hill Ave.



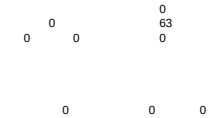
Intersection 4
N/S Arrow Hwy.
E/W Lone Hill Ave.



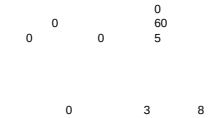
Intersection 5
N/S Arrow Hwy.
E/W SR-57 SB Ramps



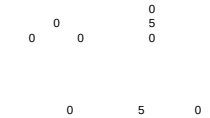
Intersection 6
N/S Arrow Hwy.
E/W Village Ct.



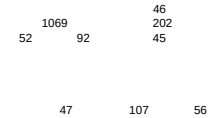
Intersection 7
N/S Arrow Hwy.
E/W Bonita Ave.



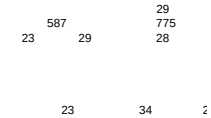
Intersection 8
N/S Gladstone St.
E/W Amelia Ave.

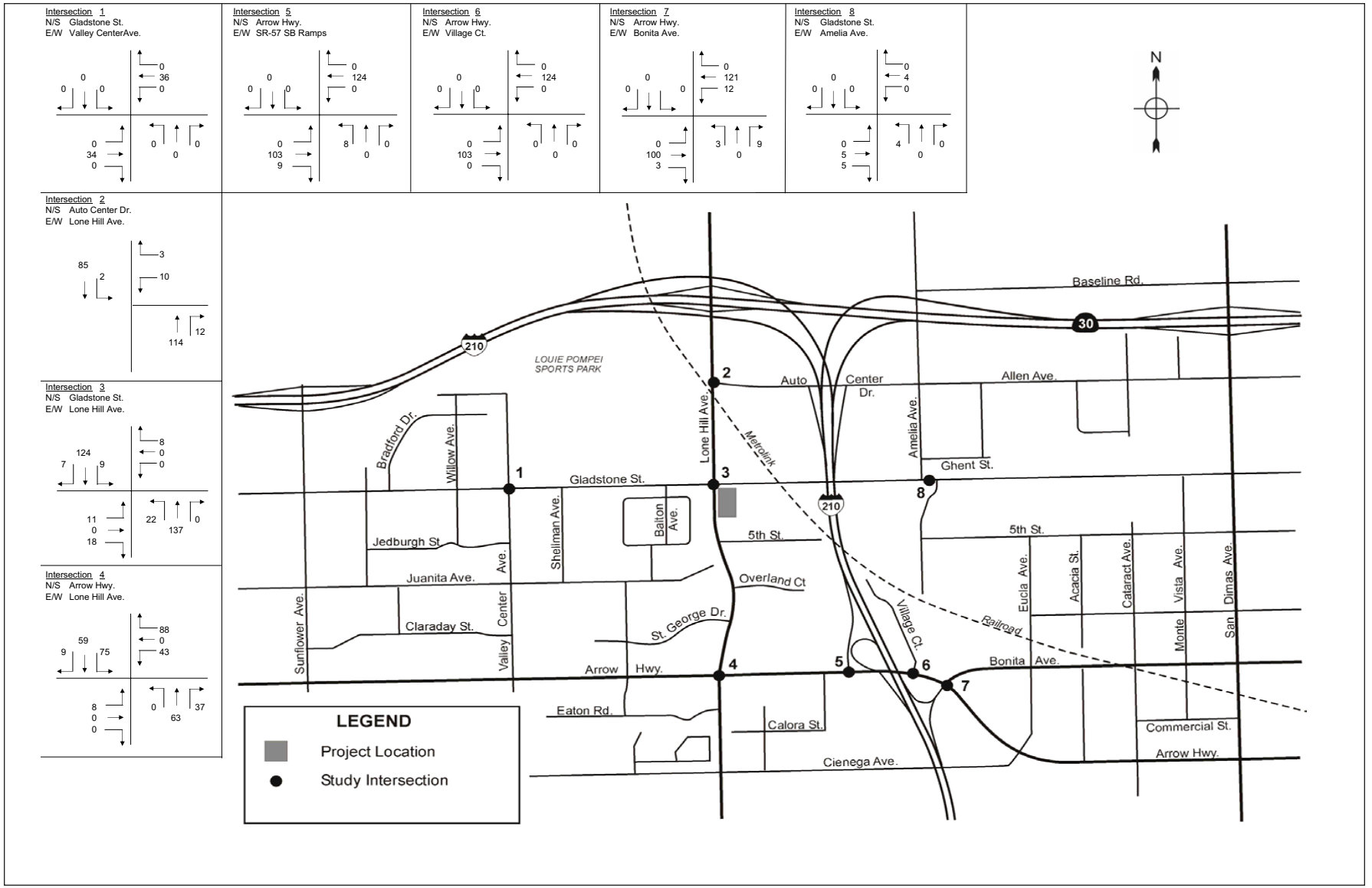


Intersection 9
N/S Vermont Ave.
E/W 7th St.



Intersection 10
N/S Irolo St.
E/W 8th St.

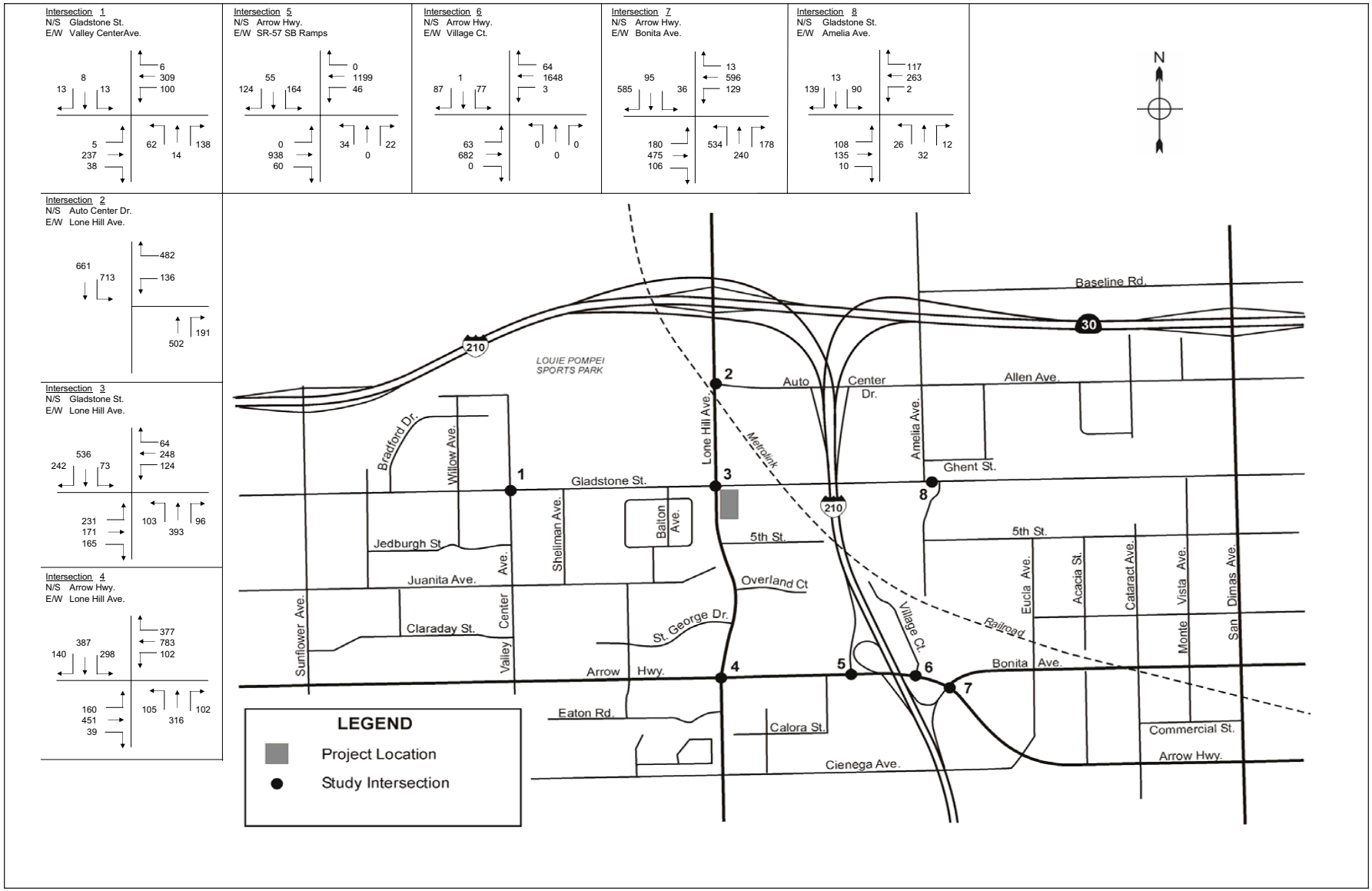




SOURCE: George Dunn Engineering, July 2003.

Figure 3L-15

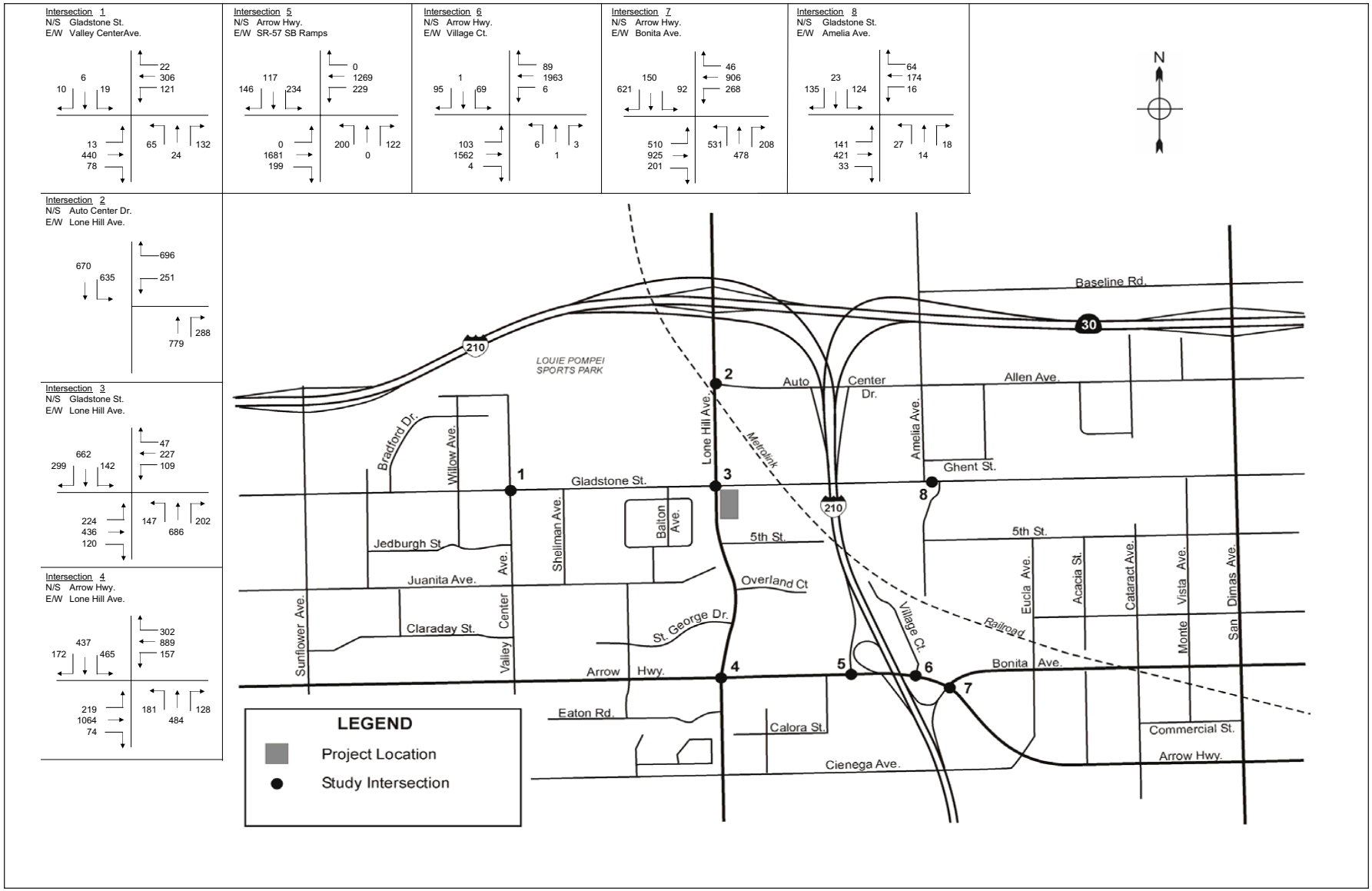
Cumulative Development PM Peak Hour Intersection Volumes



SOURCE: George Dunn Engineering, July 2003.

Figure 3L-16

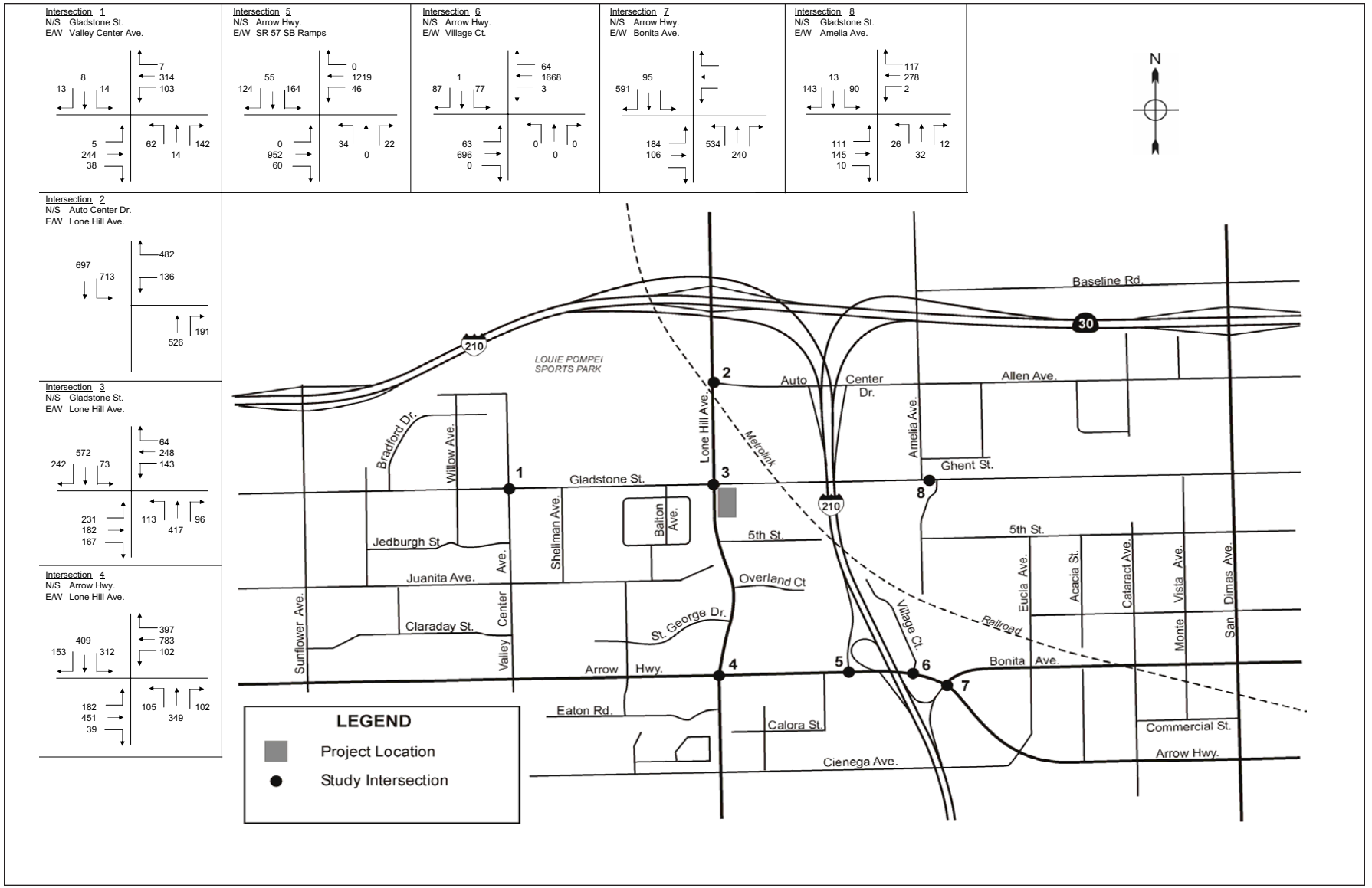
Year 2005 Without Proposed Project AM Peak Hour Intersection Volumes



SOURCE: George Dunn Engineering, July 2003.

Figure 3L-17

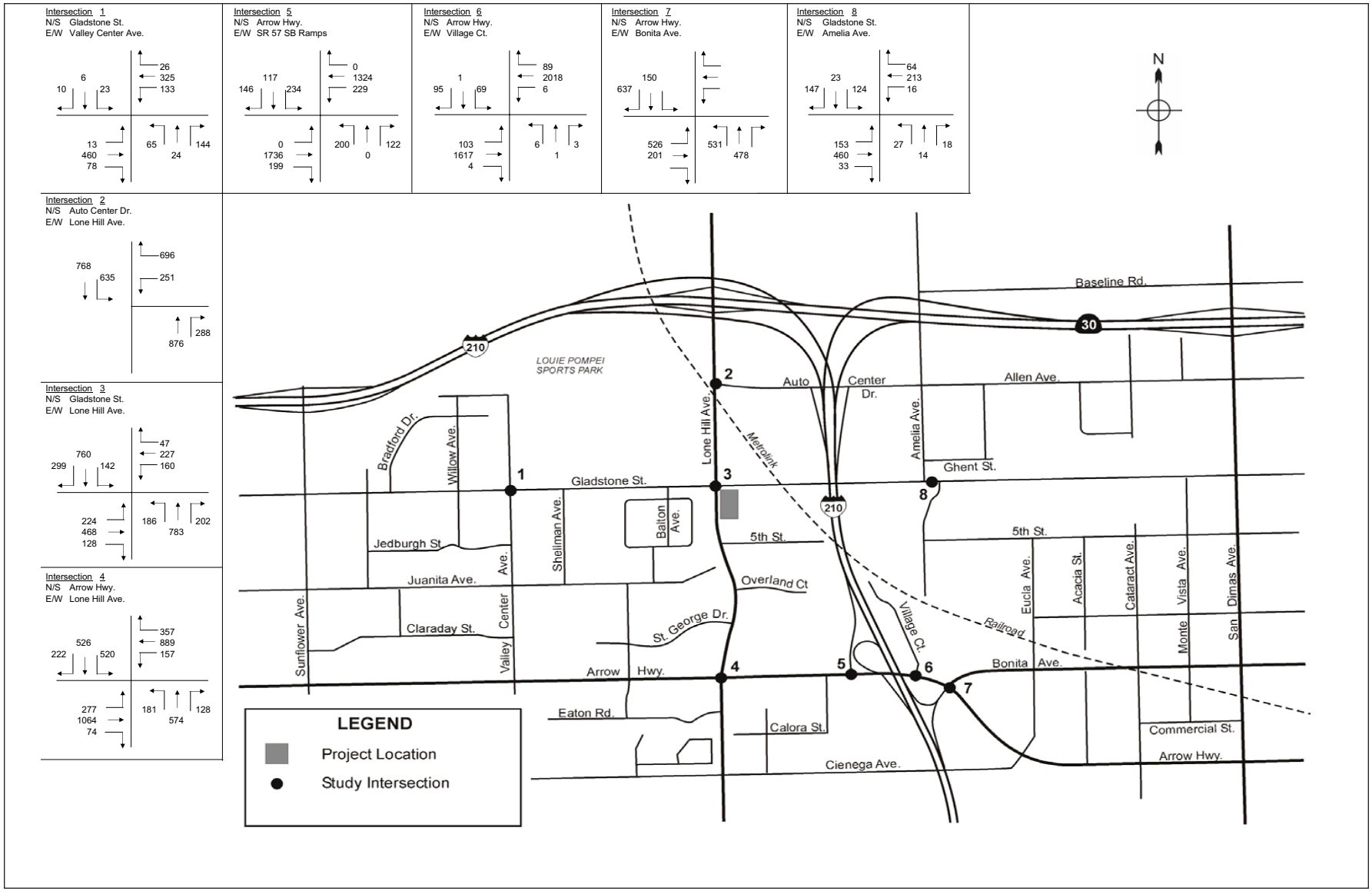
Year 2005 Without Proposed Project PM Peak Hour Intersection Volumes



SOURCE: George Dunn Engineering, July 2003.

Figure 3L-18

Year 2005 With Proposed Project AM Peak Hour Intersection Volumes



SOURCE: George Dunn Engineering, July 2003.

Figure 3L-19

Year 2005 With Proposed Project PM Peak Hour Intersection Volumes

Table 3L-4 displays a summary of the proposed project intersection analysis, showing the proposed project's affect on the volume-to-capacity ratio (V/C) and intersection LOS. As shown

TABLE 3L-4: PROPOSED PROJECT INTERSECTION ANALYSIS SUMMARY

INTERSECTION	PEAK HOUR	EXISTING (2003) V/C	EXISTING (2003) LOS	EXISTING (2003) PLUS PROPOSED PROJECT V/C	EXISTING (2003) PLUS PROPOSED PROJECT LOS	EXISTING (2003) PLUS CUMULATIVE PROJECTS WITHOUT PROPOSED PROJECT V/C	EXISTING (2003) PLUS CUMULATIVE PROJECTS WITHOUT PROPOSED PROJECT LOS	EXISTING (2003) PLUS CUMULATIVE PROJECTS WITH PROPOSED PROJECT V/C	EXISTING (2003) PLUS CUMULATIVE PROJECTS WITH PROPOSED PROJECT LOS
	AM	10.0 sec	-A	10.1 sec	-B	10.4 sec	-B	10.5 sec	-B
Valley Center Avenue/Gladstone Street	PM	11.3 sec	-B	11.9 sec	-B	12.2 sec	-B	12.8 sec	-B
	AM	0.595	A	0.602	B	0.630	B	0.637	B
Lone Hill Avenue/Auto Center Drive	PM	0.699	B	0.730	C	0.760	C	0.790	C
	AM	0.546	A	0.557	A	0.599	B	0.617	B
Lone Hill Avenue/Gladstone Street	PM	0.678	B	0.772	C	0.739	C	0.846	D
	AM	0.621	B	0.650	B	0.672	B	0.703	C
Lone Hill Avenue/Arrow Highway	PM	0.720	C	0.811	D	0.782	C	0.880	D
57 Freeway Southbound Off-	AM	0.598	A	0.605	B	0.649	B	0.656	B
Ramp/Arrow Highway	PM	0.772	C	0.783	C	0.821	D	0.832	D
57 Freeway Northbound On/Off-Ramp	AM	0.892	D	0.897	D	0.945	E	0.950	E
(Bonita Avenue)/Arrow Highway	PM	0.997	E	1.011	F	1.063	F	1.076	F
	AM	0.484	A	0.501	A	0.508	A	0.522	A
Amelia Avenue/Gladstone Street	PM	0.485	A	0.509	A	0.508	A	0.533	A
	AM	0.521	A	0.525	A	0.551	A	0.555	A
Village Court/Arrow Highway	PM	0.612	B	0.624	B	0.658	B	0.669	B

Sources: RK Engineering Group, Costco *Traffic and Circulation Study (Revised), San Dimas, California*, May 29, 2001.
George Dunn Engineering, *Traffic Study Update for the Costco Commercial Complex, San Dimas, California*, July 29, 2003.

in Table 3L-4, with the exception of the 57 Freeway northbound on/off ramp (Bonita Avenue) and Arrow Highway intersection during the AM and PM peak hours without proposed project traffic conditions, all intersections operate at acceptable levels of service during the AM and PM peak hours. The calculation results are consistent with those from the original traffic study, with one exception. The original traffic study showed poor levels of service at the Lone Hill Avenue/Auto Center Drive intersection. The original traffic study recommended the installation of a second southbound left-turn lane. That improvement has since been constructed, and the revised calculations conducted as part of the 2003 traffic study update show no significant impact at this intersection.

Furthermore, as shown in Table 3L-4, with the exception of the 57 Freeway northbound on/off ramp (Bonita Avenue) and Arrow Highway intersection during the AM and PM peak hours with proposed project traffic conditions, all intersections operate at acceptable levels of service during the AM and PM peak hours. The calculation results are consistent with those from the original traffic study, with two exceptions. The original traffic study showed poor levels of service at the Lone Hill Avenue/Auto Center Drive intersection. As already stated, the original traffic study recommended the installation of a second southbound left-turn lane, and that improvement has since been constructed. The original traffic study also showed that the addition of proposed project traffic would result in a LOS E at the Lone Hill Avenue/Arrow Highway intersection

during the PM peak period. Since the original study was conducted, an exclusive northbound right-turn lane has been added at this intersection, thereby improving the level of service to LOS D during the PM peak hour for this scenario.

The 2001 traffic study also recommended constructing a traffic signal at the intersection of North Amelia Avenue and Gladstone Street to help mitigate potentially significant impacts. Furthermore, it was recommended that a second westbound left-turn lane be constructed at the intersection of Lone Hill Avenue and Auto Center Drive. Since that time, a traffic signal has been constructed, and is currently in operation, at the North Amelia Avenue and Gladstone Street intersection. Additionally, two westbound left-turn lanes currently exist at the Lone Hill Avenue and Auto Center Drive intersection.

Both the 2001 traffic study and 2003 traffic study update identified a significant impact with or without the proposed project during the AM and PM peak periods at the 57 Freeway northbound on/off ramp (Bonita Avenue) and Arrow Highway intersection. The 2001 traffic study recommended the following two mitigation measures: 1) Construct two northbound left-turn lanes to provide two northbound left-turn lanes, one northbound through lane and one northbound through and right-turn lane; and, 2) Re-stripe the southbound approach to provide one shared left and through lane, one through lane, and two right-turn lanes with overlap phasing. Since the 2001 traffic study was conducted, the southbound approach to the intersection has been reconstructed to provide an exclusive left-turn lane, two through lanes and an exclusive right-turn lane. However, capacity enhancements, such as those outlined in mitigation measures **M-3L.4** and **M-3L.5** below would improve intersection operations to LOS D or better. Furthermore, implementation of mitigation measures **M-3L.1** through **M-3L.3** would also ensure that the proposed project has a less than significant impact to area traffic conditions.

Mitigation Measures

M-3L.1 *With the cooperation and approval of the City of Glendora, the applicant shall make a fair share contribution for the construction of a traffic signal at the Valley Center Avenue/Gladstone Street intersection, as well as for the widening and re-striping of Gladstone Street in the vicinity of Gladstone Elementary School to provide for one through-lane, a left-turn lane and parking along the south side of Gladstone Street.*

M-3L.2 *A traffic signal shall be constructed at the intersection of Lone Hill Avenue and the proposed project site's full access (south driveway).*

M-3L.3 *The 84-foot wide Lone Hill Avenue shall be re-striped approximately 300 feet north and south of Gladstone Street to provide dual north-south left-turn lanes with protected left-turn phasing, as well as to provide setback along the proposed project frontage to provide an exclusive northbound right-turn lane. Additionally, the traffic signal at the Lone Hill Avenue and Gladstone Street intersection shall be modified to provide a southbound right-turn overlap.*

M-3L.4 *The applicant shall make a fair share contribution for the construction of two northbound left-turn lanes at the intersection of the 57 Freeway (formerly known*

as the I-210 Freeway) northbound on/off ramp (Bonita Avenue) and Arrow Highway to provide two northbound left-turn lanes and one northbound through-lane, and one northbound through- and right-turn lane. If necessary, a nexus study shall be prepared to determine the fair share amount.

M-3L.5 *The applicant shall make a fair share contribution for the re-striping of the southbound approach of the intersection of the 57 Freeway (formerly known as the I-210 Freeway) northbound on/off ramp (Bonita Avenue) and Arrow Highway to provide one shared left- and through-lane, one through-lane, and two right-turn lanes with overlap phasing. If necessary, a nexus study shall be prepared to determine the fair share amount*

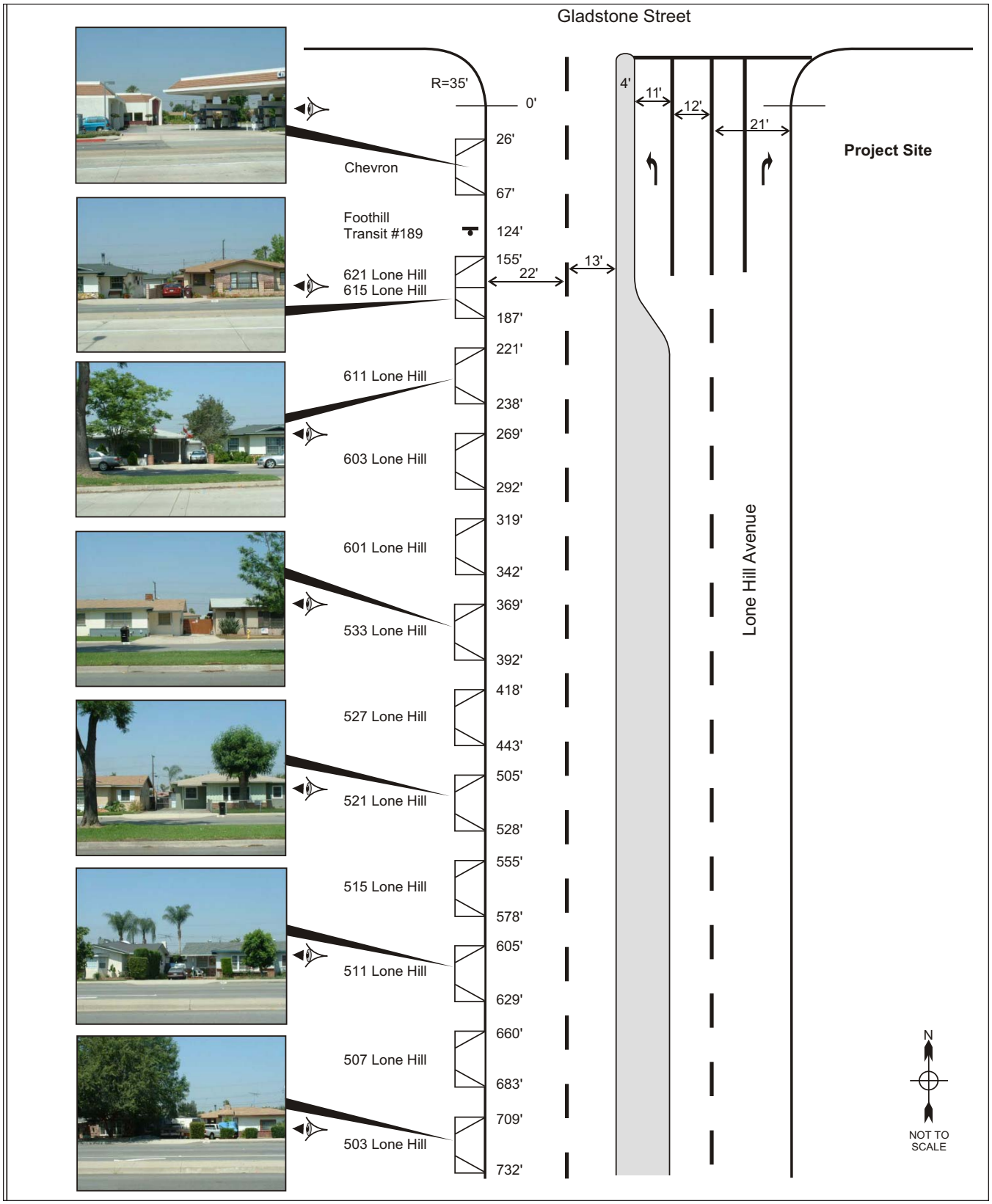
Residual Impacts

Impacts would be less than significant.

Impact 3L2: The proposed project would have a less than significant impact on residences located west of the proposed project site along Lone Hill Avenue.

There are currently 16 residential homes located on the west side of Lone Hill Avenue south of Gladstone Street across from the proposed project site (see Figure 3L-20). These homes have direct access (driveways) fronting onto Lone Hill Avenue and have been in place for a number of years. While it is not desirable to have direct residential frontage on an arterial highway such as Lone Hill Avenue, this condition has existed for some time in this area. These residents generally have to back out of their driveways onto Lone Hill Avenue to access the existing highway. Lone Hill Avenue is currently a four-lane divided 84-foot wide highway that is designated as a major highway by the City of San Dimas General Plan. Currently, the curb lanes on both sides of Lone Hill Avenue are sufficiently wide to provide for on-street parking. The residential uses along the west side of Lone Hill Avenue generally have driveways that provide for parking and access to garages located behind the residences. Based on recent field observations, it appears that several of the garage structures behind the residential properties are not used for parking (see Appendix E). In addition, some residents currently back their vehicles into their driveways to make departure onto Lone Hill Avenue easier. The median island makes these residential driveways right-turn in and right-turn out only.

The proposed project would include the construction of two driveways on Lone Hill Avenue. It is proposed that the southern driveway be signalized. In order to provide the signalized access on Lone Hill Avenue, the proposed project would make a median island break and create a signalized intersection approximately 500 feet south of Gladstone Street. The driveway would provide full access to the commercial complex and would require the removal of on-street parking for at least 100 feet on the west side of Lone Hill Avenue adjacent to the signalized driveway access. This would directly affect on-street parking and driveway access to the properties between 533 Lone Hill Avenue to the north and 515 Lone Hill Avenue to the south, providing a single southbound left-turn lane.



SOURCE: George Dunn Engineering, 2003.

Costco Commercial Complex / 202349 ■

Figure 3L-20

Existing Conditions for Lone Hill Avenue Residences

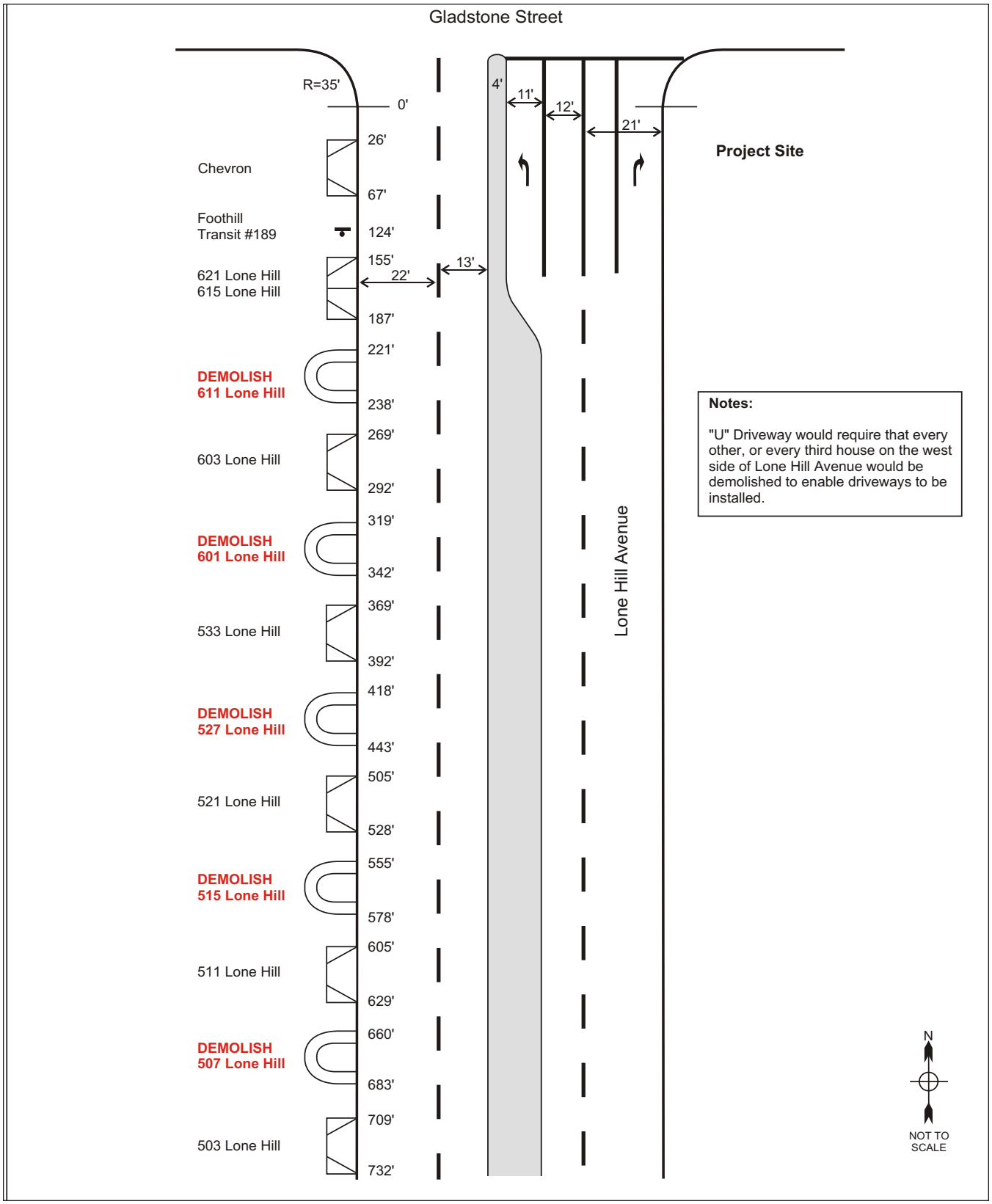
The residents on Lone Hill Avenue (across from the proposed project site) only have an access problem when they leave their driveways and are forced to back out into traffic. Thus the residents' potential problems occur in the morning when the residents leave for work. The proposed project does not open until 10AM when most residents have already left for work. The proposed project would not generate a significant amount of traffic when the stores are closed. Therefore, the proposed project's traffic would not contribute to the existing problem and is anticipated to have a less than significant impact on the residents of Lone Hill Avenue (across from the proposed project site) with the implementation of mitigation measure **M-3L.7**. The City acknowledges that there is an existing problem and intends to implement a program independent of the proposed project to address the existing problem. The applicant has voluntarily agreed to participate, even though under CEQA such a program is not required to mitigate existing problems.

Four access design options were considered to provide improved access to the residences located west of the proposed project site (see Figures 3L-21 through 3L-24). The opportunities presented by these design options could help improve safety and operations along Lone Hill Avenue. The design options considered are as follows:

- Option 1: Removal of select properties to provide for semi-circular driveways adjacent to the remaining houses.
- Option 2: Elimination of the sidewalk on the west side of Lone Hill Avenue to provide additional roadway width.
- Option 3: Creation of a one-way frontage road along the west side of Lone Hill Avenue to provide for residential driveway access restricted to local residences only.
- Option 4: Widening along the proposed project site (east side of Lone Hill Avenue) to provide additional lane width.

Option 1 would remove select properties and create driveways that would be semi-circular and allow vehicles to drive into the driveway at one end of the semi-circle and exit at the other end of the semi-circle (see Figure 3L-21). To make this option work, the driveway would have to provide at least a 25-foot radius and then a driveway width of approximately 12 feet. This would require approximately 74 feet along Lone Hill Avenue (25+25+12+12) and the removal of two properties for every driveway constructed. This option would not assist with access at the proposed signalized intersection of the proposed project's southern driveway. The advantage of Option 1 is that the remaining local residents would not need to back out of the reconstructed driveways onto Lone Hill Avenue, but instead would be able to drive out in a forward direction. The disadvantage of Option 1 is that implementing it would result in removal of more than half of the residential uses along the west side of Lone Hill Avenue and it would fail to address access concerns at the newly constructed traffic signal.

Option 2 would require the removal of the sidewalk on the west side of Lone Hill Avenue and would provide approximately five feet that could be utilized for roadway widening (see Figure 3L-22). If this width was combined with the existing 22-foot curb lane, the total 27 feet could be used to create an additional southbound lane, delineated with either a median or roadway marker that could be used only by residents to access their driveways. The advantage of adding a separate southbound lane to serve only local residents is that traffic entering and exiting residential driveways would be separated from southbound through traffic on Lone Hill Avenue.



SOURCE: George Dunn Engineering, 2003.

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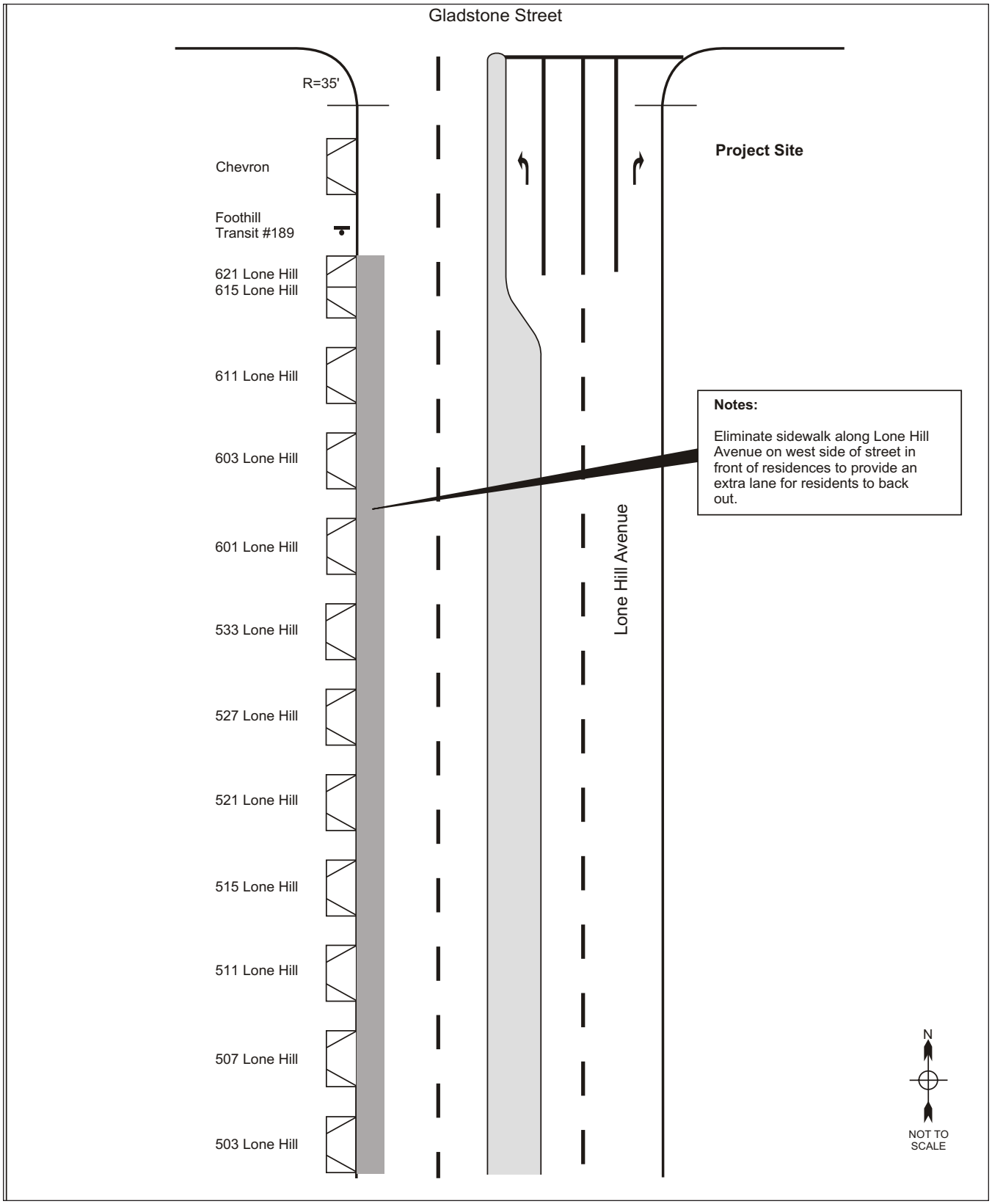
Figure 3L-21
Removal of Select Properties



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SOURCE: George Dunn Engineering, 2003.

Figure 3L-22
Elimination of the Westside Lone Hill Avenue Sidewalk

The disadvantage of Option 2 is that the removal of the sidewalk and construction of such a lane would require the removal of on-street parking and pedestrian access to and from the existing residences. In addition, this type of treatment near a busy intersection (Lone Hill Avenue and Gladstone Street) is not a standard treatment and would be difficult to sign and stripe to avoid confusion to southbound motorists. Finally, Option 2 would be difficult to implement without right-of-way acquisition if roadway striping is ultimately required to provide a second southbound left-turn lane and the new signalized project driveway on Lone Hill Avenue.

Option 3 would require the creation of a one-way frontage road along the west side of Lone Hill Avenue to provide for residential driveway access restricted to local residences only (see Figure 3L-23). This option is intended to separate residential traffic entering and exiting driveways from southbound traffic on Lone Hill Avenue. This option would not remove pedestrian access to the existing residences but would be able to utilize only the 22-foot curb lane to provide for a though-lane and the frontage road. This width is not sufficient to provide for two lanes of traffic, and even if it was, it has the same drawbacks as Option 2.

Like Option 3, Option 4 is intended to separate residential traffic entering and existing residential driveways on the west side of Lone Hill Avenue from southbound through traffic (see Figure 3L-24). Widening along the project frontage to provide additional roadway width and shifting north-south lanes towards the west would require widening along the roadway segments both north and south of the proposed project site so that lane transitions could be provided to accommodate striping changes along the proposed project frontage. Even if this widening were possible, the re-striping would likely provide an additional 10 to 12 feet of roadway adjacent to the residential uses. This additional space may provide sufficient width for a one-way southbound access road, however, such a configuration would be non-standard and difficult to sign and stripe.

Implementation of the following mitigation measure would ensure a less than significant impact to residences located west of the proposed project site along Lone Hill Avenue.

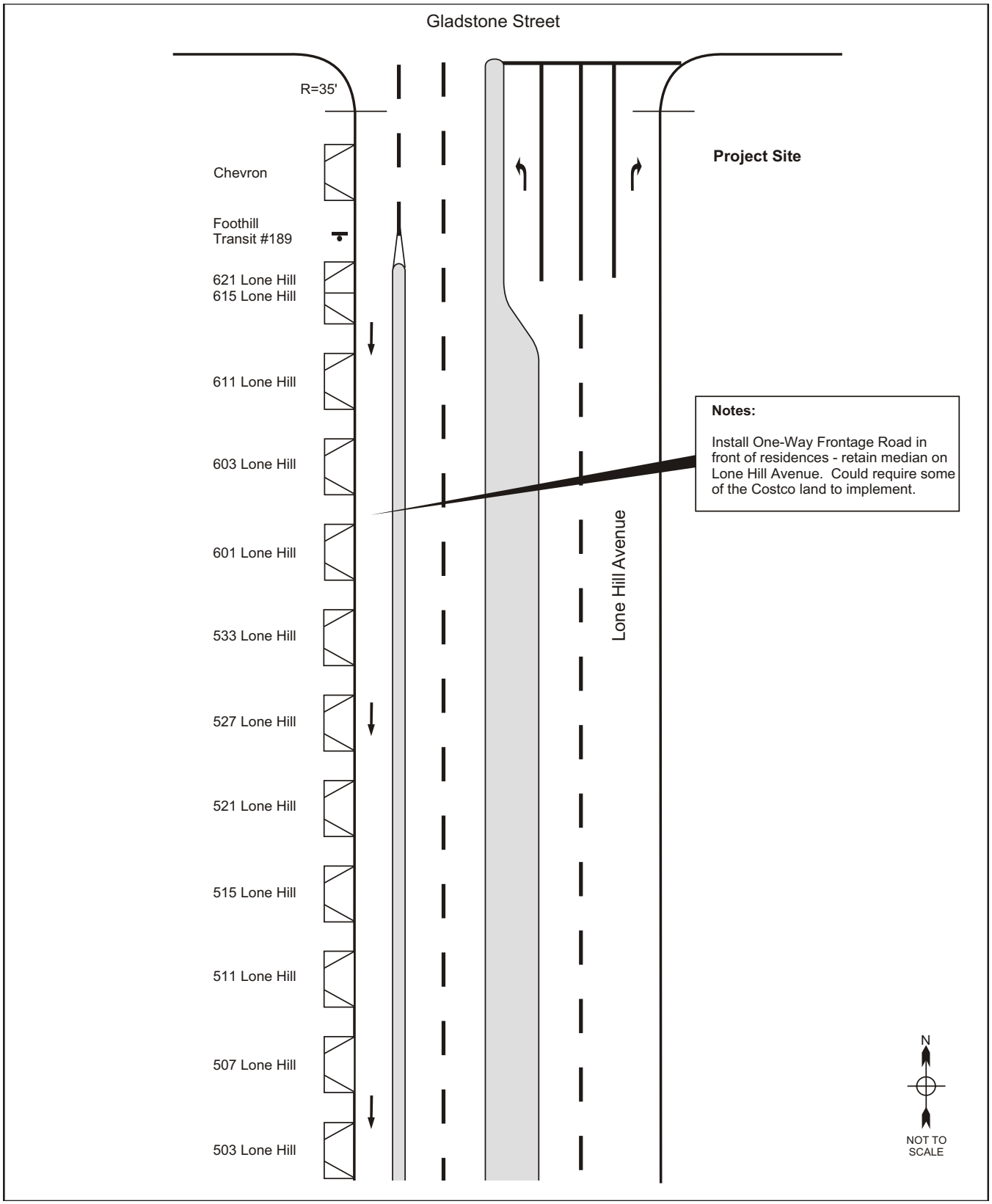
Mitigation Measure

M-3L.6 *Further studies shall be conducted to determine the feasibility of the proposed project's four design options (Options 1 through 4), or other feasible design variations, to provide better access for residences located west of the proposed project site, along Lone Hill Avenue. The City of San Dimas and the applicant shall work directly with these residents to determine the most feasible design option.*

Residual Impacts

Impacts would be less than significant.

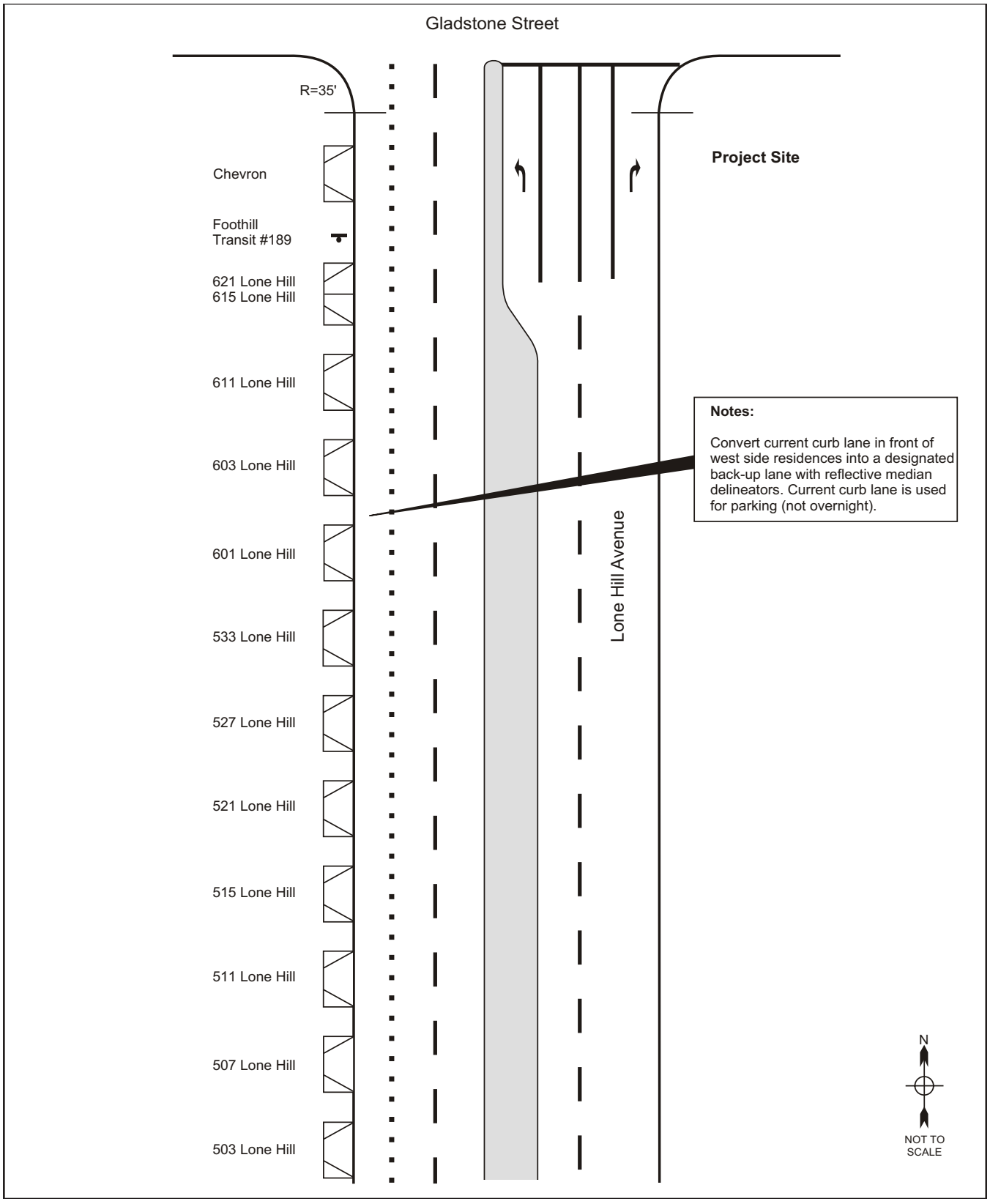
Impact 3L3: The proposed project would provide adequate parking supply.



Costco Commercial Complex / 202349 ■

SOURCE: George Dunn Engineering, 2003.

Figure 3L-23
Creation of a One-Way Frontage Road



Costco Commercial Complex / 202349 ■

SOURCE: George Dunn Engineering, 2003.

Figure 3L-24
Widening Along East side of Lone Hill Avenue

The City of San Dimas does not have a code parking requirement for discount club use. A major shopping center rate of 4.5 parking spaces per 1,000 square feet was used for this type of use since the restaurant uses are less than 20 percent of the total building square footage. Table 3L-5

TABLE 3L-5: PARKING REQUIREMENTS FOR THE PROPOSED PROJECT

Use	Size (Square Feet)	Rate	Space Required
Costco	148,474	4.5 spaces per 1,000 square feet	668
Fast Food w/Drive-Thru	3,500	4.5 spaces per 1,000 square feet	16
Restaurant	7,000	4.5 spaces per 1,000 square feet	32
Retail (under 20,000 square feet)	8,000	4.5 spaces per 1,000 square feet	36
Retail (under 20,000 square feet)	8,000	4.5 spaces per 1,000 square feet	36
Retail (under 20,000 square feet)	15,000	4.5 spaces per 1,000 square feet	68
Retail (over 20,000 square feet)	30,000	4.5 spaces per 1,000 square feet	135
Total Required	**219,974**	4.5 spaces per 1,000 square feet	**991**
Total Provided		5.6 spaces per 1,000 square feet	**1,242**

Source: RK Engineering Group, Costco *Traffic and Circulation Study (Revised), San Dimas, California,* May 29, 2001.

summarizes parking requirements. The proposed project would provide the number of parking spaces required, as outlined in Table 3L-5. No impacts are anticipated.

Mitigation Measure

No mitigation required.

Residual Impacts

Impacts would be less than significant.

Impact 3L4: The proposed project would not substantially increase hazards due to a design feature or incompatible use.

The proposed project will have access to Gladstone Street and Lone Hill Avenue through four access driveways. The access driveways on Gladstone Street, and the northerly access on Lone Hill Avenue will be right in/out only driveways. The southerly access on Lone Hill Avenue will be a full access driveway. The existing ATSF railroad right-of-way crossing of Gladstone Street is located approximately 800 feet east of the centerline of Lone Hill Avenue. A service driveway is proposed at the east side of the Costco commercial complex to accommodate ingress/egress of service vehicles and deliveries to the proposed project site. The proposed easterly driveway would be located in close proximity to the existing railroad crossing, however, it is proposed to

be restricted to right turns in/out only. According to consultation with Metrolink, this driveway is feasible. Implementation of the following mitigation measure will ensure a less than significant impact.

Mitigation Measures

M-3L.7 *With the exception of the southerly full access driveway along Lone Hill Avenue, a median shall be constructed fronting access driveways off of Gladstone Street and Lone Hill Avenue to limit the driveways to right turn in/out only.*

M-3L.8 *The service driveway proposed at the east side of the proposed project site shall be restricted to right-turn only. Furthermore, a fence shall be built between the proposed Costco site and the railroad right-of-way.*

M-3L.9 *The applicant shall submit a truck routing plan detailing the routes delivery vehicles will take for entering and exiting the proposed commercial complex.*

Residual Impacts

Impacts would be less than significant.

Impact 3L5: The proposed project would have adequate emergency access.

The proposed project design would be in compliance with City planning requirements regarding emergency vehicle access. Therefore, no impacts are anticipated.

Mitigation Measure

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact 3L6: The proposed project would not exceed either individually or cumulatively exceed the LOS standard established by the CMP.

The CMP was created statewide as a result of Proposition 111 and has been implemented locally by the LACMTA. The CMP for the County requires that the traffic impact of individual development projects of potentially regional significance be analyzed. A specific system of arterial roadways plus all freeways comprises the CMP system; 164 intersections are currently identified for monitoring on the system. This section describes the project-related analysis of the CMP system. The analysis has been conducted according to the guidelines set forth in CMP.

Per CMP Transportation Impact Analysis (TIA) Guidelines, a traffic impact analysis is conducted where:

- At CMP arterial monitoring intersections, including freeway on-ramps or off-ramps, where the proposed project will add 50 or more trips during either AM or PM weekday peak hours.

- At CMP mainline freeway-monitoring locations, where the project will add 150 or more trips, in either direction, during the either the AM or PM weekday peak hours.

The San Dimas Avenue/Arrow Highway intersection located in the City of San Dimas was identified as a potentially impacted CMP site. The freeway segment of I-210 at San Dimas Avenue was identified as a potentially impacted CMP freeway segment.

The maximum number of proposed project trips that could be added to the San Dimas Avenue/Arrow Highway Intersection would be the through trips passing through the Arrow Highway/San Dimas Avenue intersection to the west. The following shows the number of proposed project trips added to the Arrow Highway/San Dimas CMP intersection:

CMP Intersection	**Added AM Peak Hour Trips**	**Added PM Peak Hour Trips**
Arrow Highway/San Dimas Avenue	24	78

As shown, the number of proposed project trips added to the Arrow Highway/San Dimas Avenue CMP intersection is not sufficient to warrant a CMP analysis for the AM peak hour. There are sufficient trips added to the PM peak hour to warrant a CMP Analysis. However, the latest version of the Congestion Management Program intersection monitoring cycle shows that the intersection of San Dimas Avenue at Arrow Highway operates at Level of Service C during the PM peak period. Therefore, the addition of up to 78 proposed project trips is unlikely to result in more than a letter grade degradation in intersection operations (Level of Service D or better), and no further CMP analysis is necessary.

The freeway trips at the CMP monitoring station located on I-210 at San Dimas Avenue would equal the number of proposed project trips using the freeway ramps at Arrow Highway, south of the proposed project site. The analysis does not show a significant number of proposed project trips on those freeway ramps. Therefore, no further freeway analysis is required under CMP guidelines.

Mitigation Measure

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact 3L7: The proposed project and other area projects together would not have cumulatively significant impacts to area traffic.

Cumulative project traffic growth, which is growth due to specific known development projects in the City, is included in the analysis of the proposed project conditions. The area projects that could affect the study area are listed in Chapter 2, Table 2-2. Currently, several area projects are located within two miles of the project site that could pose a cumulative impact to area traffic conditions. Table 3L-4 shows the cumulative intersection impacts of three intersections that without mitigation would result in a cumulative significant impact. However, with the implementation of mitigation measures **M-3L.1** through **M-3L.5**, all cumulative intersection impacts would be reduced to less than significant levels. Also, as shown under Impact 3L6, the proposed project and future projects would not, cumulatively, exceed the CMP LOS standard and are not cumulatively considerable. Therefore, the proposed project would not result in cumulative significant impacts. In addition, the proposed project would not have a cumulative significant impact on the residences located on the west side of Lone Hill Avenue (across from the proposed project site) as the proposed project is not open during the AM peak hour when there exists the potential for conflicts between cars backing out of driveways and through traffic on Lone Hill Avenue.

Mitigation Measure

No mitigation is required.

Residual Impacts

Impacts would not be cumulatively considerable.