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PHASE I TRAFFIC ANALYSIS
FOR THE GALILEO APARTMENT PROJECT, COUNTY OF SANTA BARBARA

Associated Transportation Engineers (ATE) has prepared the following Phase I traffic analysis for the Galileo Apartment Project (Project), proposed in the Goleta area of Santa Barbara County. The purpose of the Phase I analysis is to develop information to assist County staff in determining what level of additional traffic analyses may be required for the environmental review documents.

PROJECT DESCRIPTION

The Project site is located on the southwest corner of the Patterson Avenue/Calle Real intersection in the County of Santa Barbara, as shown on Figure 1 (attached). The Project is proposing to develop the currently vacant site with 27 apartment units. Access is proposed via a new driveway on Calle Real that is positioned opposite of the Calle Real/Orchard Park Lane. Figure 2 illustrates the Project Site Plan.

EXISTING CONDITONS

Street Network

The Project site is served by US 101 and surface streets, as shown in Figure 1. The following text briefly describes the major components of the study-area street network.

US 101, located south of the Project site, is a multi-lane interstate freeway serving the Pacific Coast. US 101 is the principal route between Goleta and the adjacent cities of Santa Barbara, Carpinteria, and Ventura to the south; and Buellton and Santa Maria to the north. Project access to US 101 would be provided via the Patterson Avenue interchange.

Patterson Avenue, located along the eastern frontage of the Project site, extends as a four-lane arterial road south from Cathedral Oaks Road to south of Hollister Avenue. Patterson Avenue is signalized at the Calle Real, US 101 Northbound Ramps, and US 101 Southbound Ramps intersections.

Calle Real, located along the northern frontage of the Project site, is a four-lane arterial roadway that extends westerly from Patterson Avenue through the City of Goleta. Calle Real is signalized at the Patterson Avenue intersection. The Project would take access via a new driveway on Calle Real (see Figure 2 – Project Site Plan).

Existing Intersection Operations

Because traffic flow on urban arterials is most constrained at intersections, detailed traffic flow analyses focus on operating conditions at critical intersections during peak travel periods. Existing levels of service for the key intersections in the study area were taken from recently prepared traffic studies.[1] The levels of service were calculated using the ICU methodology adopted by Santa Barbara County, the City of Goleta, and SBCAG. Levels of service for the US 101/Patterson Avenue interchange account for the improvements that were recently implemented in 2019. Table 1 summarizes the existing AM and PM peak hour levels of service.

Table 1
Existing Intersection Operations

Intersection	Jurisdiction	Control	AM Peak Hour		PM Peak Hour	
			V/C	LOS	V/C	LOS
Calle Real/Patterson Ave	SB County	Signal	0.66	B	0.67	B
US 101 NB Ramps/Patterson Ave	Goleta	Signal	0.73	C	0.75	C
US 101 SB Ramps/Patterson Ave	Goleta	Signal	0.54	A	0.75	C

The data presented in Table 1 show that the study-area intersections currently operate acceptably at LOS C or better, which meets the LOS C standard adopted by the County and City of Goleta.

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[1] Traffic, Circulation and Parking Study for the Somera Medical Office Project, Associated Transportation Engineers, September 2019.

Revised Traffic Impact Analysis for the Goleta Hotel Project, Pinnacle Traffic Engineering, June 2019.

TRAFFIC IMPACT THRESHOLDS

The roadways and intersections analyzed in this traffic study are located in the County as well as the City of Goleta. The County and City of Goleta traffic impact thresholds were therefore used to evaluate the potential traffic impacts of the Project. The applicable thresholds are outlined below.

A significant traffic impact occurs when:

1. The addition of project traffic to an intersection increases the volume to capacity (V/C) ratio by the value provided below or sends at least 5, 10, or 15 trips to intersections operating at LOS F, E or D.

Significant Changes in Levels of Service	
Intersection Level of Service (Including Project)	**Increase in V/C Greater Than**
LOS A	0.20
LOS B	0.15
LOS C	0.10
	or the addition of
LOS D	15 Trips
LOS E	10 Trips
LOS F	5 Trips

2. Project access to a major road or arterial road would require a driveway that would create an unsafe situation or a new traffic signal or major revisions to an existing traffic signal.

3. The project adds traffic to a roadway that has design features (e.g. narrow width, road side ditches, sharp curves, poor sight distance, inadequate pavement structure) or receives use which would be incompatible with substantial increase in traffic (e.g. Rural roads with use by farm equipment, livestock, horseback riding, or residential roads with heavy pedestrian or recreational use, etc.) that will become potential safety problems with the addition of project or cumulative traffic. Exceedance of the roadway's designated Circulation Element Capacity may indicate the potential for the occurrence of the above impacts.

4. Project traffic would utilize a substantial portion of an intersection(s) capacity where the intersection is currently operating at acceptable levels of service (A-C) but with cumulative traffic would degrade to or approach LOS D (V/C 0.81) or lower. Substantial is defined as a minimum change of 0.03 for intersections which would operate from 0.80 to 0.85 and a change of 0.02 for intersections which would operate from 0.86 to 0.90, and 0.01 for intersections operating at anything lower.

PROJECT TRIP GENERATION

Trip generation estimates were calculated for the Project using trip rates published in the Institute of Transportation Engineers (ITE) Trip Generation Manual for Multifamily Housing (ITE Land Use Code #220).[2] Table 2 shows the trip generation estimates developed for the Project (a worksheet is attached that shows the detailed calculations).

Table 2
Project Trip Generation

Land Use	Size	ADT		AM Peak Hour		PM Peak Hour	
		Rate	Trips	Rate	Trips (In/Out)	Rate	Trips (In/Out)
Apartments	27 DU	7.32	198	0.46	12 (3/9)	0.56	15 (9/6)

The data presented in Table 2 show that the Project would generate 192 average daily trips, with 12 trips occurring during the AM peak hour and 15 trips occurring during the PM peak hour.

PROJECT TRIP DISTRIBUTION

Project traffic was distributed and assigned to the adjacent street network based on knowledge of the local street network and travel patterns, existing land uses and traffic flows in the area, and distribution patterns contained in other traffic studies. Table 3 presents the Project trip distribution percentages. Figure 3 illustrates the distribution and assignment of Project traffic to the study-area street network.

Table 3
Project Trip Distribution

Origin/Destination	Direction	Distribution Percentage
US 101	East	30%
	West	25%
Patterson Ave	North	10%
	South	15%
Calle Real	West	20%
Total		**100%**

PROJECT-SPECIFIC IMPACTS

Tables 4 & 5 list the Existing levels of service, Project added traffic, and the potential impacts for the study-area intersections based on the County and City of Goleta impact thresholds.

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2 Trip Generation Manual, 10th Edition, Institute of Transportation Engineers, 2017.

Table 4
Project-Specific Impacts – AM Peak Hour

Intersection	Existing LOS	Project Added Trips	Potential Impact?
Calle Real/Patterson Avenue	0.66/LOS B	9	No
US 101 NB Ramps/Patterson Avenue	0.73/LOS C	8	No
US 101 SB Ramps/Patterson Avenue	0.54/LOS A	5	No

Table 5
Project-Specific Impacts – AM Peak Hour

Intersection	Existing LOS	Project Added Trips	Potential Impact?
Calle Real/Patterson Avenue	0.67/LOS B	12	No
US 101 NB Ramps/Patterson Avenue	0.75/LOS C	10	No
US 101 SB Ramps/Patterson Avenue	0.75/LOS C	6	No

As shown in Tables 4 & 5, the Project would not generate project-specific impacts at the study-area intersections. The Project traffic additions are well below the impact thresholds adopted by the County and the City of Goleta.

CUMULATIVE IMPACTS

Cumulative level of service forecasts were taken from the Somera Medical Office and Goleta Hotel Project traffic studies. Tables 6 & 7 list the Cumulative level of service forecasts, Project-added traffic, and the potential cumulative impacts based on the County and City of Goleta impact thresholds.

Table 6
Cumulative Impacts – AM Peak Hour

Intersection	Cumulative LOS	Project Added Trips	Potential Impact?
Calle Real/Patterson Avenue	0.68/LOS B	9	No
US 101 NB Ramps/Patterson Avenue	0.75/LOS C	8	No
US 101 SB Ramps/Patterson Avenue	0.56/LOS A	5	No

Table 7
Project-Specific Impacts – PM Peak Hour

Intersection	Cumulative LOS	Project Added Trips	Potential Impact?
Calle Real/Patterson Avenue	0.69/LOS B	12	No
US 101 NB Ramps/Patterson Avenue	0.78/LOS C	10	No
US 101 SB Ramps/Patterson Avenue	0.78/LOS C	6	No

As shown in Tables 6 & 7, the study-area intersections are forecast to operate at LOS C or better with cumulative traffic, which meets the LOS C standard adopted by the County and City of Goleta. The Project would not contribute to cumulative impacts at the study-area intersections since the Project's traffic additions are well below the cumulative impact thresholds adopted by the County and the City of Goleta.

SITE ACCESS

Access is proposed via one new driveway on Calle Real (see Figure 2 - Project Site Plan). The proposed access would accommodate the low volume of traffic generated by the Project, which is 99 inbound + 99 outbound vehicles per day. It is recommended that the driveway be construction to County standards and be located opposite of the Calle Real/Orchard Park Lane as shown on the site plan – thereby forming a conventional 4-way intersection. It is also recommended that the applicant work with the Fire Department in order to ensure that the site access and on-site circulation system meet Fire Department standards.

HCM OPERATIONS ANALYSIS

The US 101/Patterson Avenue interchange is also under the jurisdiction of Caltrans. The City of Goleta have requested evaluation of peak hour operating conditions at the interchange using Caltrans level of service methodology for other recently prepared traffic studies. The Caltrans method is based on the operations methodology outlined in the Highway Capacity Manual (HCM).[3] The results are therefore different than City's ICU method of analysis.

The US 101 NB Ramps and US 101 SB Ramps intersections are coordinated to manage flows between the intersections. ATE reviewed the signal timing for the two intersections to develop the SYNCHRO traffic modeling program, which implements the Caltrans operations method outlined in the HCM. Table 8 lists the AM and PM peak hour operations at the interchange based on the HCM modeling.

[3] Highway Capacity Manual, Transportation Research Board, 2016.

Table 8
US 101/Patterson Avenue Levels of Service – HCM Operations Method

Time Period / Intersection	Delay / LOS	
	Existing	Cumulative
AM PEAK HOUR		
US 101 NB Ramps/Patterson Avenue	28.1 Sec./LOS C	28.4 Sec./LOS C
US 101 SB Ramps/Patterson Avenue	21.4 Sec./LOS C	21.6 Sec./LOS C
PM PEAK HOUR		
US 101 NB Ramps/Patterson Avenue	23.9 Sec./LOS C	24.2 Sec./LOS C
US 101 SB Ramps/Patterson Avenue	30.2 Sec./LOS C	30.9 Sec./LOS C

LOS based on average delay per vehicle in seconds pursuant to HCM operations method.

As shown, the US 101/Patterson Avenue interchange currently operates at LOS C and is forecast to continue to operate at LOS C with Cumulative + Project traffic based on the HCM operations methodology recommended by Caltrans. The Project's minor traffic additions to the intersections (less than 15 trips during the AM and PM peak hours) would not significantly degrade operations at the US 101/Patterson Avenue interchange.

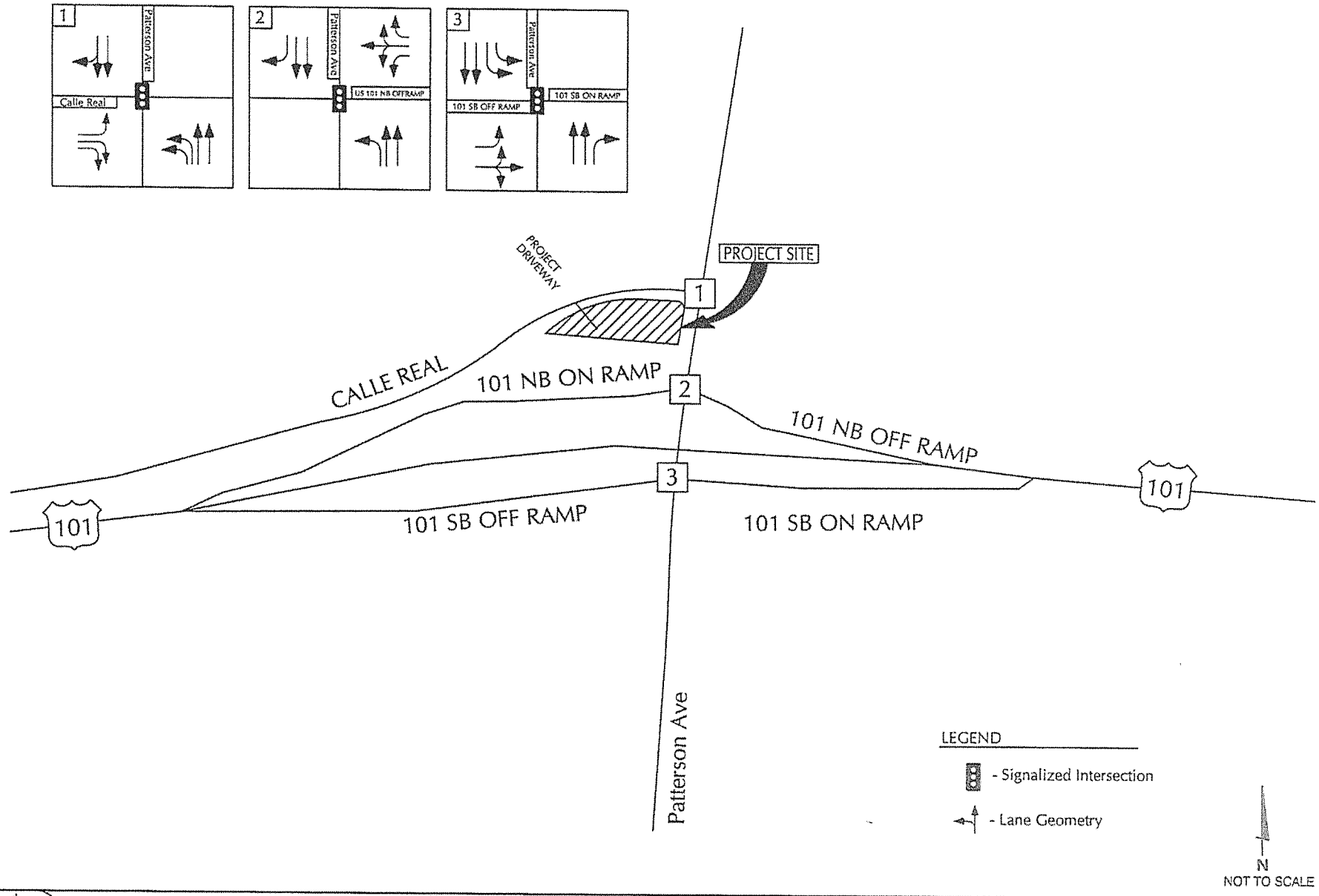
We appreciate the opportunity to assist with your project and look forward to working with you in the future.

Associated Transportation Engineers

Scott A. Schell, AICP
Principal Transportation Planner

SAS/DLD

Attachments



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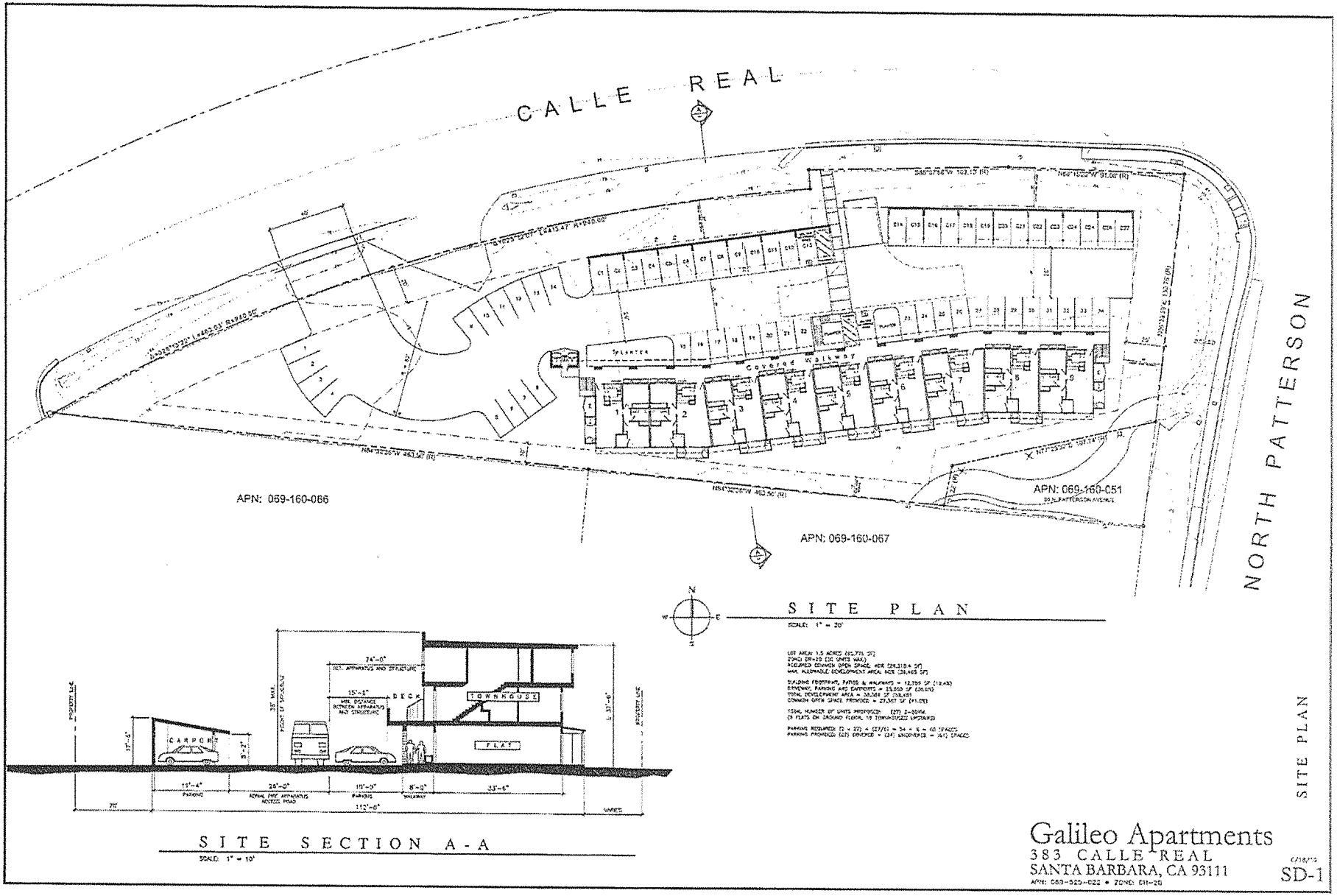
PROJECT SITE LOCATION - EXISTING STREET NETWORK

FIGURE 1

CS - ATE#19061



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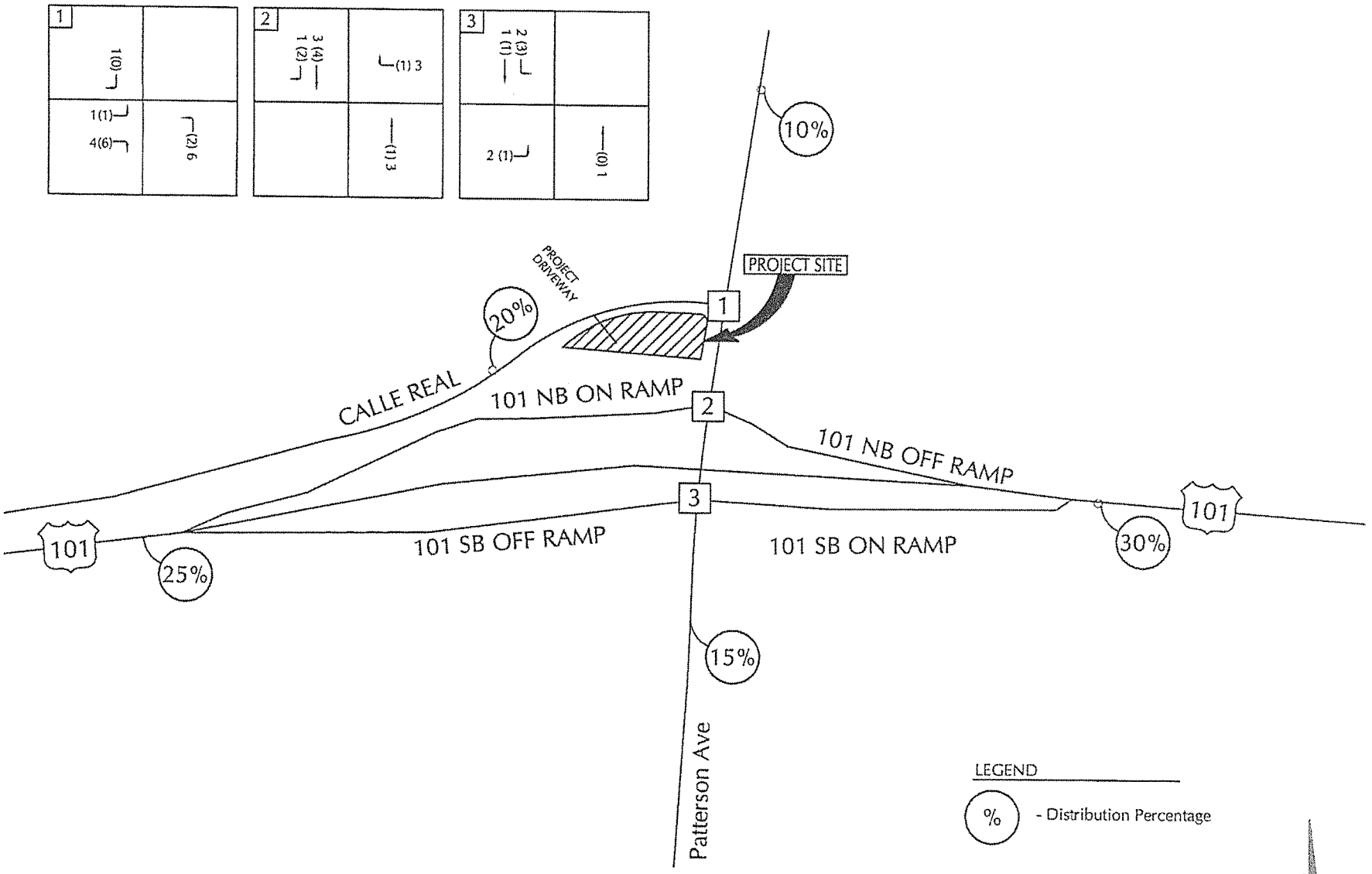
PROJECT SITE PLAN

FIGURE 2

CS - ATE#19061



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PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

FIGURE 3

CS - ATE#19061

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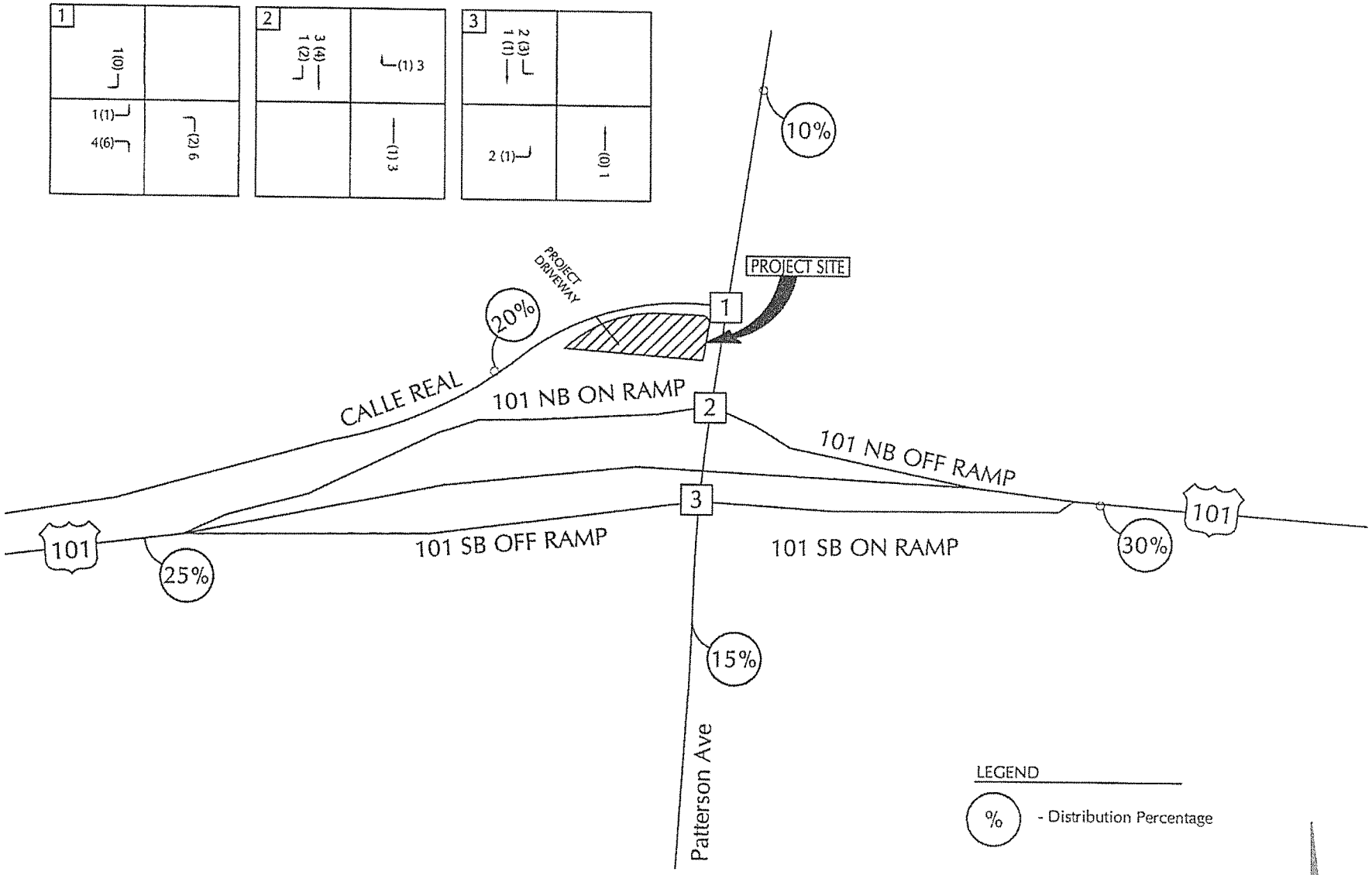
Trip Generation Worksheet

GALILEO APARTMENT PROJECT - GOLETA CALIFORNIA

Use	Size	ADT		AM PEAK HOUR						PM PEAK HOUR					
		Rate	Trips	Rate	Trips	In %	Trips	Out %	Trips	Rate	Trips	In %	Trips	Out %	Trips
Apartments(a)	27 DU	7.32	198	0.46	12	23%	3	77%	9	0.56	15	63%	9	37%	6

(a) Trip generation based on ITE rates for Multifamily Housing (ITE #220).



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PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

FIGURE 3

CS - ATE#19061