

APPENDIX F

Transportation



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TRAFFIC AND CIRCULATION STUDY FOR THE SANTA SUSANA KNOLLS PROJECT, VENTURA COUNTY, CALIFORNIA

The following report presents the findings of the traffic and circulation analysis prepared by Associated Transportation Engineers (ATE) for the Santa Susana Knolls project. It is our understanding that the traffic analysis will be used by Ventura County to assess the traffic impacts associated with the project, and to develop appropriate mitigation measures where required.

We appreciate the opportunity to assist Colton Lee Development with this project.

Associated Transportation Engineers

Richard L. Pool, P.E.
President



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INTRODUCTION

The following traffic and circulation study contains an analysis of the potential traffic and circulation impacts associated with the development of the proposed 146 unit residential development. The traffic and circulation study provides information relative to existing, existing + project and General Plan Buildout traffic conditions in the vicinity of the project site. Circulation-related improvements are identified where appropriate. The roadways and intersections analyzed in the study were determined based on scoping information provided by Ventura County and City of Simi Valley staff. The on-site peak parking demands were also evaluated as part of this traffic study.

PROJECT DESCRIPTION

The proposed residential development is to be located south of Simi Valley just outside the City limit in unincorporated Ventura County. Figure 1 illustrates the location of the project site within Ventura County. The project is proposing to develop 146 manufactured homes. Primary access to the project site would be provided via a driveway connection to Katherine Road and a driveway connection to Peppertree Lane. Figure 2 illustrates the proposed site plan for the project.

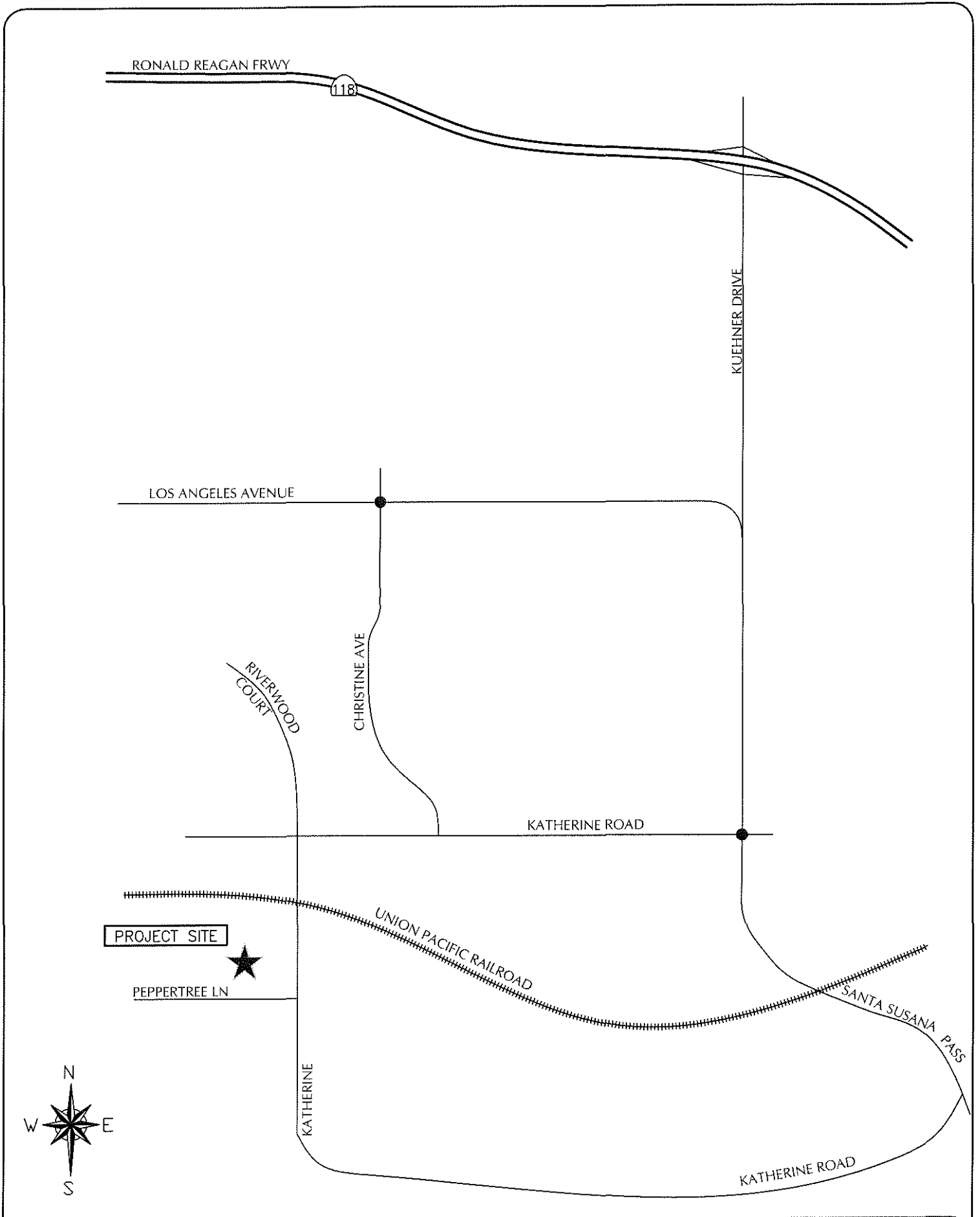
EXISTING CONDITIONS

Street Network

The project study area is served by a network of freeways, arterial streets and collector streets, as illustrated in Figure 1. The following text provides a brief discussion of the primary components of the study-area street network.

State Route 118 (Ronald Reagan Freeway), the principal east-west freeway in the City of Simi Valley, is located just north of the project. The Ronald Reagan Freeway extends as a 6-lane freeway easterly from Simi Valley to the San Fernando Valley and the Los Angeles Basin. West of Simi Valley, State Route 118 continues west to the Ventura-Oxnard area as a conventional highway. Access between the Ronald Reagan Freeway to the project is provided via the Kuehner Road interchange.

Kuehner Road, classified as a primary arterial street in the City's General Plan, is a 2- to 4-lane roadway with left-turn channelization at major intersections in the vicinity of the project area. Kuehner Road extends southerly from the Ronald Reagan Freeway to the Union Pacific Railroad tracks, at which point it becomes Santa Susana Pass Road and extends easterly to the City of Chatsworth. Within the project vicinity, Kuehner Road is signalized at Katherine Road.



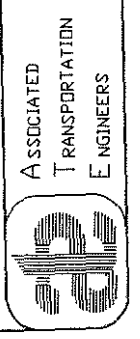
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ENGINEERS

PROJECT SITE LOCATION/EXISTING STREET NETWORK

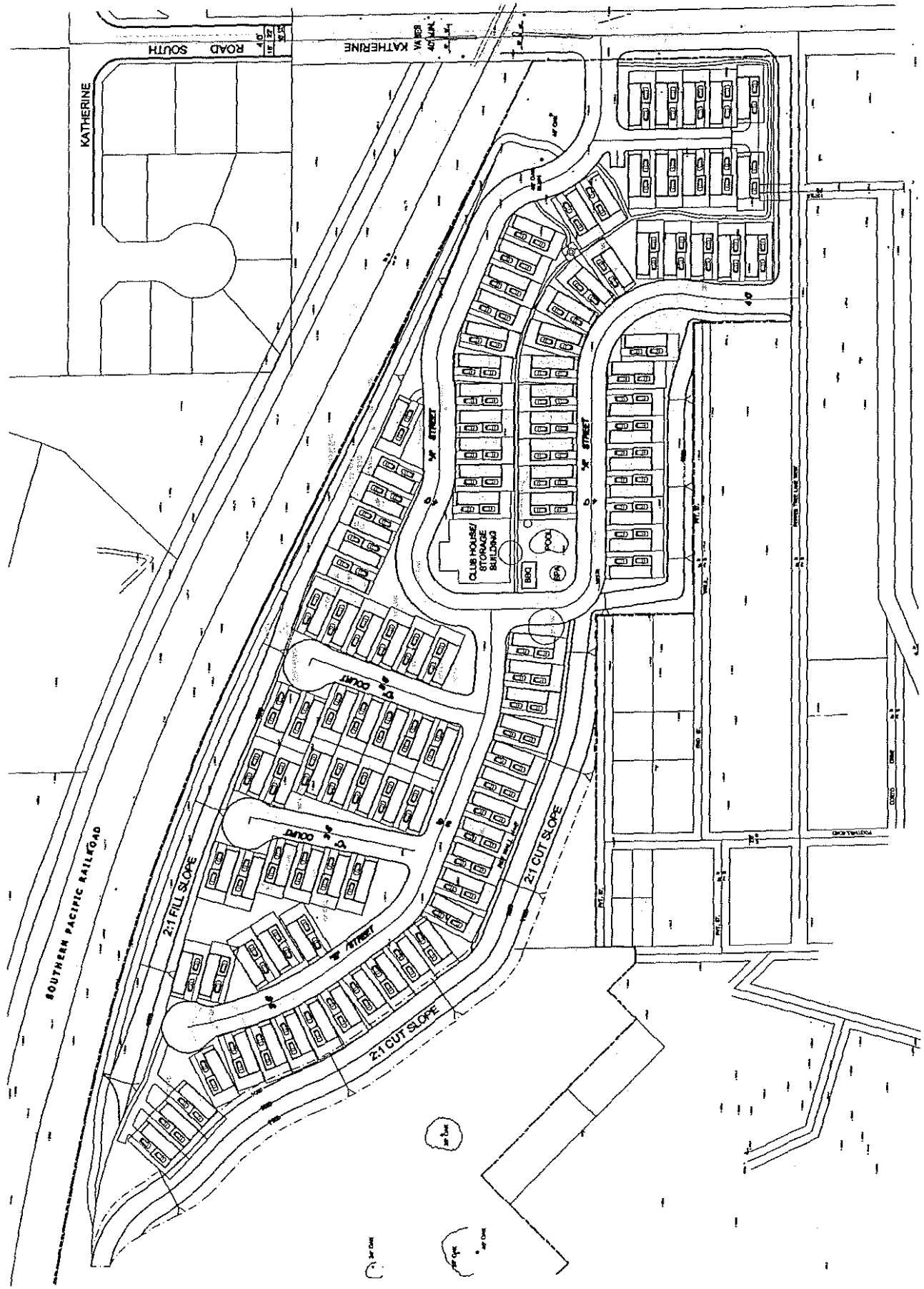
FIGURE 1

DH # 05116

PROJECT SITE PLAN



Associated Transportation Engineers
December 28, 2006



Los Angeles Avenue classified as a major arterial street, consist of two separate segments in the Simi Valley area. The westerly segment begins at the State Route 118 freeway in the City of Moorpark and extends easterly to Easy Street, which continues to Madera Road. The easterly segment begins at Madera Road south of Easy Street and runs easterly through the City of Simi Valley, terminating at Kuehner Road.

Katherine Road is a 2-lane collector street within the Simi Valley area. West of Kuehner Drive, Katherine Road extends approximately one-half mile at which point it turns south and continues on to Santa Susana Pass Road.

Christine Avenue is a 2-lane collector street within the Simi Valley area. Christine Avenue extends south from Los Angeles Avenue terminating at Katherine Road. Christine Avenue is signalized at Los Angeles Avenue. The roadway serves a residential subdivision in southeastern Simi Valley.

Peppertree Lane is a 2-lane east-west local street within the unincorporated area of Ventura County. West of Katherine Drive, Peppertree Lane extends west approximately one-quarter mile at which point it terminates. The roadway service a residential community. Peppertree Lane is STOP-sign controlled at Katherine Road.

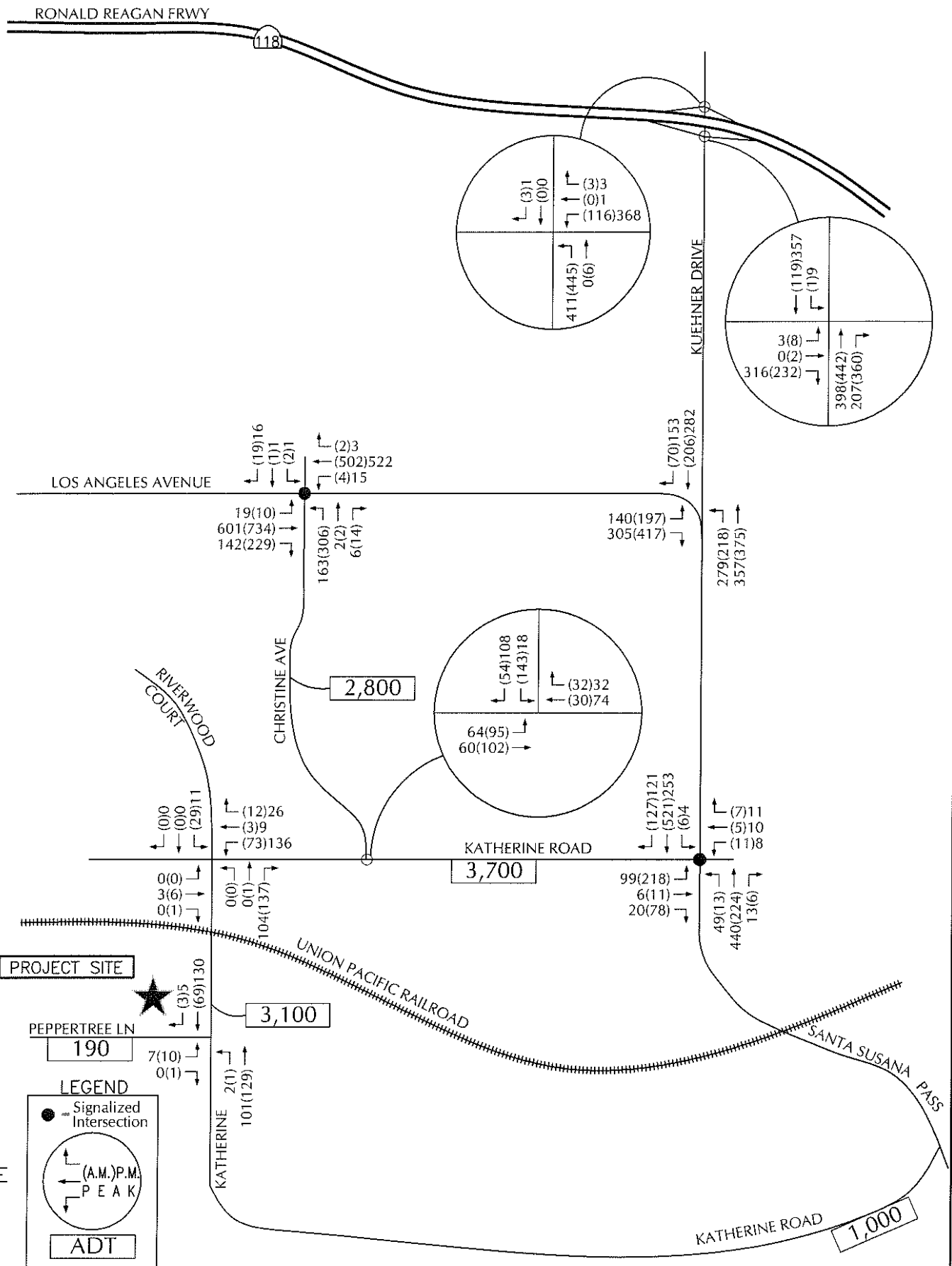
Roadway Operations

Existing average daily traffic (ADT) volumes for the study-area roadway segments are illustrated on Figure 3. The peak hour turning volumes were collected by ATE in September and October of 2005 in conjunction with this study. In determining the operational characteristics of these roadway segments, "Levels of Service (LOS) "A" through "F" are applied, with LOS "A" indicating very good operations and LOS "F" indicating poor operations (more complete definitions of levels of service are contained in the Technical Appendix).

Levels of Service for the study-area roadway segments were determined based on Ventura County roadway engineering design capacities, which are summarized in the Technical Appendix. The results are presented in Table 1.

**Table 1
Existing Roadway Levels of Service**

Roadway Segment	Existing Geometry	Roadway Classification	Existing ADT	LOS D Capacity	LOS
Katherine Rd. w/o Kuehner Dr.	2-lane	Class I	3,700	16,000	LOS B
Katherine Rd. n/o Peppertree Ln.	2-lane	Class II	3,100	11,000	LOS B
Katherine Rd. w/o Santa Susana Pass	2-lane	Class II	1,000	11,000	LOS A
Christine Dr. n/o Katherine Rd.	2-lane	Class I	2,800	16,000	LOS B
Peppertree Ln. w/o Katherine Rd.	2-lane	Class II	190	11,000	LOS A



The data presented in Table 1 indicates that the study-area roadway segments currently operate in the LOS "A"- "B" range based on the County's level of service criteria.

Intersection Levels of Service

Because traffic flow on urban arterials is most restricted at intersections, a detailed analysis of traffic flow must examine the operating conditions of critical intersections during peak flow periods. As with roadway segments "Levels of Service" (LOS) "A" through "F" are used to rate intersection operations.

Existing A.M. and P.M. peak hour turning volumes for the study-area intersections are shown on Figure 3. The peak hour turning volumes were collected by ATE in September and October of 2005 in conjunction with this study.

Levels of service for the signalized intersections were calculated using the V/C methodology required by the City of Simi Valley. The level of service for the unsignalized intersections was calculated using the Highway Capacity Manual unsignalized intersection methodology. The Technical Appendix contains the level of service calculation worksheets for the study-area intersections. Table 2 lists the type of traffic control and the existing A.M. and P.M. peak hour levels of service for each of the study-area intersections analyzed.

**Table 2
Existing Intersection Levels of Service**

Intersection	Control Type	A.M. Peak Hour		P.M. Peak Hour	
		V/C-Delay	LOS	V/C-Delay	LOS
Kuehner Dr./S.R. 118 WB Ramps	STOP-Sign	14.3 sec.	LOS A	77.7 sec.	LOS F
Kuehner Dr./S.R. 118 EB Ramps	STOP-Sign	2.0 sec.	LOS A	2.8 sec.	LOS A
Kuehner Dr./Los Angeles Ave.	STOP-Sign	9.6 sec.	LOS A	10.1 sec.	LOS B
Kuehner Dr./Katherine Rd.	Signal	0.43	LOS A	0.24	LOS A
Katherine Rd./Christine Ave.	STOP-Sign	7.3 sec.	LOS A	4.8 sec.	LOS A
Katherine Rd./Riverwood Ct.	STOP-Sign	8.1 sec.	LOS A	7.2 sec.	LOS A
Katherine Rd./Peppertree Ln.	STOP-Sign	0.5 sec.	LOS A	0.3 sec.	LOS A
Los Angeles Ave./Christine Ave.	Signal	0.39	LOS A	0.28	LOS A

The data presented in Table 2 indicate that all of the signalized study-area intersections currently operate in the LOS "A" range during the peak hour periods. The unsignalized Kuehner Drive/State Route 118 westbound ramps intersection operates at LOS "F". The remaining unsignalized intersections operate in the LOS "A" -"B" range during the peak hour periods.

IMPACT CRITERIA

The County of Ventura has established LOS "D" as the design criteria for all County thoroughfares in the unincorporated areas of the County and LOS "C" for all County maintained local roads.

The City of Simi Valley considers LOS "C" acceptable for roadways and signalized intersections, with mitigations required for operations at LOS "D" or worse.

PROJECT-SPECIFIC IMPACT ANALYSIS

The following section evaluates the average daily trips (ADT), A.M. and P.M. project-specific impacts related to the development of the proposed residential subdivision based on Ventura County and the City of Simi Valley impact criteria.

Project Trip Generation

Trip generation estimates for the proposed 146 unit subdivision were calculated based on rates published from the Institute of Transportation Engineers (ITE), Trip Generation, 7th Edition¹. This manual is a standard reference used by jurisdictions throughout the United States and is based on actual trip generation studies conducted at numerous locations in areas of various populations. Table 3 summarizes the estimated average daily, A.M. and P.M. peak hour trip generation for the proposed project.

**Table 3
Project Weekday Trip Generation**

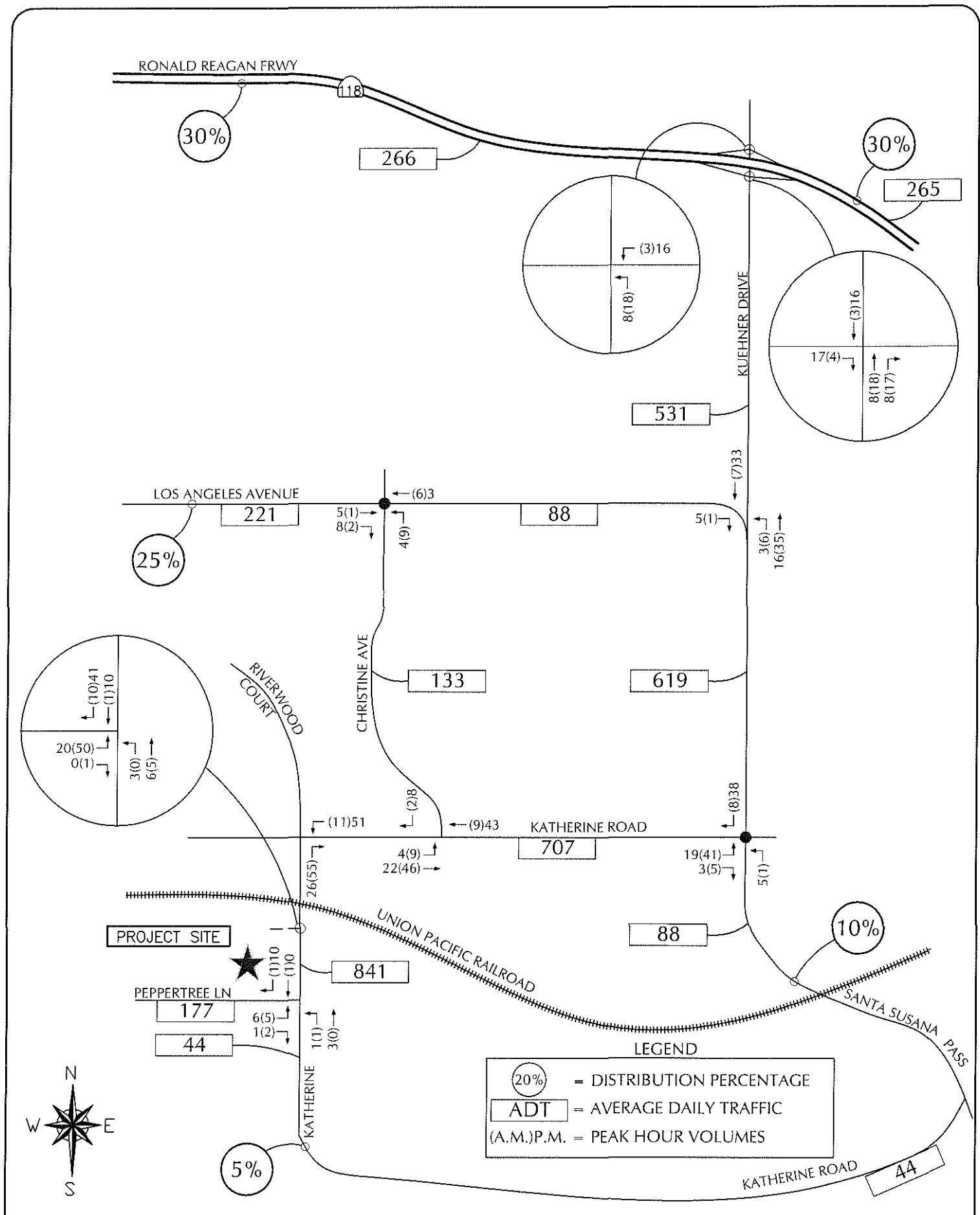
Land Use	Size	ADT	A.M. Peak Hour			P.M. Peak Hour		
			Entering	Exiting	Total	Entering	Exiting	Total
Residential	146	885	12	58	70	55	27	82

The data presented in Table 3 indicate that the project is expected to generate a total 885 average daily trips, 70 A.M. and 82 P.M. peak hour trips.

Project Trip Distribution and Assignment

Figure 4 illustrates the distribution pattern used to assign the trips associated with the proposed residential development. Once distributed, the traffic generated by the project was assigned to the study-area intersections. The project-generated weekday and peak hour traffic volumes are also illustrated on Figure 4.

¹ Trip Generation, Institute of Transportation Engineers, Seventh Edition, 2000.



Existing + Project Roadway Operations

Existing + project average daily traffic (ADT) volumes for the study-area roadway segments are illustrated on Figure 5. Levels of Service for the study-area roadway segments were determined based on Ventura County roadway engineering design capacities, the results are presented in Table 4.

**Table 4
Existing + Project Roadway Levels of Service**

Roadway Segment	Existing Geometry	Roadway Classification	Existing + Project ADT	LOS D Capacity	LOS
Katherine Rd. w/o Kuehner Dr.	2-lane	Class I	4,407	16,000	LOS B
Katherine Rd. n/o Peppertree Ln.	2-lane	Class II	3,941	11,000	LOS C
Katherine Rd. w/o Santa Susana Pass	2-lane	Class II	1,044	11,000	LOS A
Christine Dr. n/o Katherine Rd.	2-lane	Class I	2,933	16,000	LOS B
Peppertree Ln. w/o Katherine Rd.	2-lane	Class II	367	11,000	LOS A

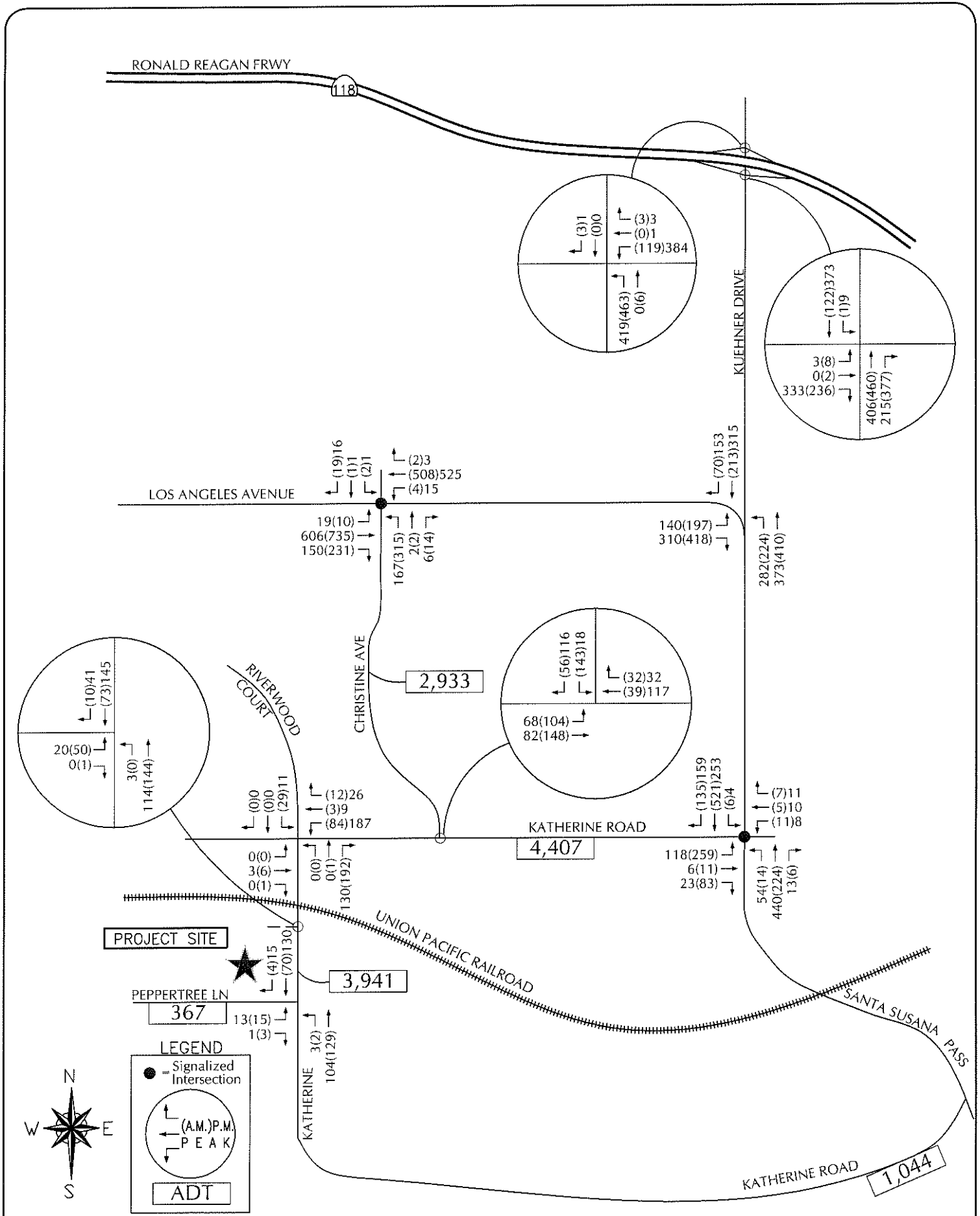
The data presented in Table 4 indicates that the study-area roadway segments would continue to operate in the LOS "A"- "C" range with project-generated traffic based on the County's level of service criteria.

Existing + Project Intersection Levels of Service

Intersection levels of service for the study-area intersections were calculated assuming the existing + project traffic volumes shown on Figure 5. Worksheets illustrating the calculations are provided in the Technical Appendix. Table 5 list the results of the calculations and existing + project level of service ratings.

**Table 5
Existing + Project Weekday Intersection Levels of Service**

Intersection	Control Type	A.M. Peak Hour		P.M. Peak Hour	
		V/C-Delay	LOS	V/C-Delay	LOS
Kuehner Dr./S.R. 118 WB Ramps	STOP-Sign	15.3 sec.	LOS A	92.8 sec.	LOS F
Kuehner Dr./S.R. 118 EB Ramps	STOP-Sign	2.0 sec.	LOS A	2.8 sec.	LOS A
Kuehner Dr./Los Angeles Ave.	STOP-Sign	9.7 sec.	LOS A	10.4 sec.	LOS B
Kuehner Dr./Katherine Rd.	Signal	0.45	LOS A	0.25	LOS A
Katherine Rd./Christine Ave.	STOP-Sign	7.4 sec.	LOS A	4.4 sec.	LOS A
Katherine Rd./Riverwood Ct.	STOP-Sign	8.5 sec.	LOS A	7.5 sec.	LOS A
Katherine Rd./Peppertree Ln.	STOP-Sign	0.9 sec.	LOS A	0.6 sec.	LOS A
Los Angeles Ave./Christine Ave.	Signal	0.39	LOS A	0.28	LOS A



The data presented in Table 5 indicate that the project would not generate significant impacts at the study-area intersections during weekday peak hour periods. The study-area signalized intersections would continue to operate in the LOS "A" range with the addition of project-generated traffic volumes. The unsignalized Kuehner Drive/State Route 118 westbound ramps intersection would continue to operate at LOS "F". The remaining unsignalized intersections would continue to operate in the LOS "A" -"B" range during the peak hour periods.

Project Site Access and Circulation

As illustrated in the project site plan (Figure 2), access to residential development would be provided by a driveway connection to Katherine Road and the existing Peppertree Lane via a full-access driveway connection. The project is proposing to widen and improve the section of Katherine Road in the County to match the section north of the railroad tracks in the City of Simi Valley. This roadway improvement will enhance the vehicle flow. Review of the site plan also indicates that the proposed internal circulation layout would adequately accommodate the flow of vehicular traffic on-site. The ultimate configuration of the site plan will be subject for final review and approval by Ventura County.

Project-Specific Mitigations

The project-specific impact analysis found that generally all of the study-area intersections would operate at LOS "B" or better and thus no mitigations would be required. The existing and existing + project P.M. peak hour level of service at the Kuehner Drive/State Route 118 westbound ramps intersection, along with the peak hour volume warrant, suggest that a traffic signal is needed. The City should monitor the Kuehner Drive/State Route 118 westbound ramps intersection in the future to determine the timing for signal installation as cumulative buildout of the study-area occurs.

GENERAL PLAN BUILDOUT CONDITIONS

The potential cumulative traffic impacts associated with the project were assessed using traffic forecasts generated by the City's traffic model for General Plan Buildout traffic conditions. Table 6 presents the trip generation comparison of the approved land density and with the currently proposed residential land use density. Increasing the residential land-use density would increase the overall site trip generation by 598 average daily trips, 53 A.M. peak hour trips and 52 P.M. peak hour trips.

**Table 6
Buildout Trip Generation Comparison**

Land Use	ADT	A.M. Peak Hour	P.M. Peak Hour
<u>Approved Land Use Density:</u> 30 Residential Dwellings	287	23	30
<u>Proposed Land Use Density:</u> 146 Residential Dwellings	885	70	82
Total Net Trip Generation Change:	+ 598	+ 53	+ 52

Transportation Plans and Programs

As part of the General Plan Circulation Element, the City has determined the necessary roadway sections and intersection geometrics required to accommodate buildout of the City. The City's Capital Improvement Program (CIP) identifies these improvements, which are funded using the Capital Improvement Fund (CIF). Monies for the CIF are obtained from traffic improvement fees required of new developments. Thus, the City has planned for the orderly implementation of a circulation system that will accommodate buildout of the City – including development of the existing land uses proposed within the western portion of the City (i.e. the project-study area). Under General Plan Buildout the major arterial intersections are signalized.

General Plan Buildout Roadway Operations

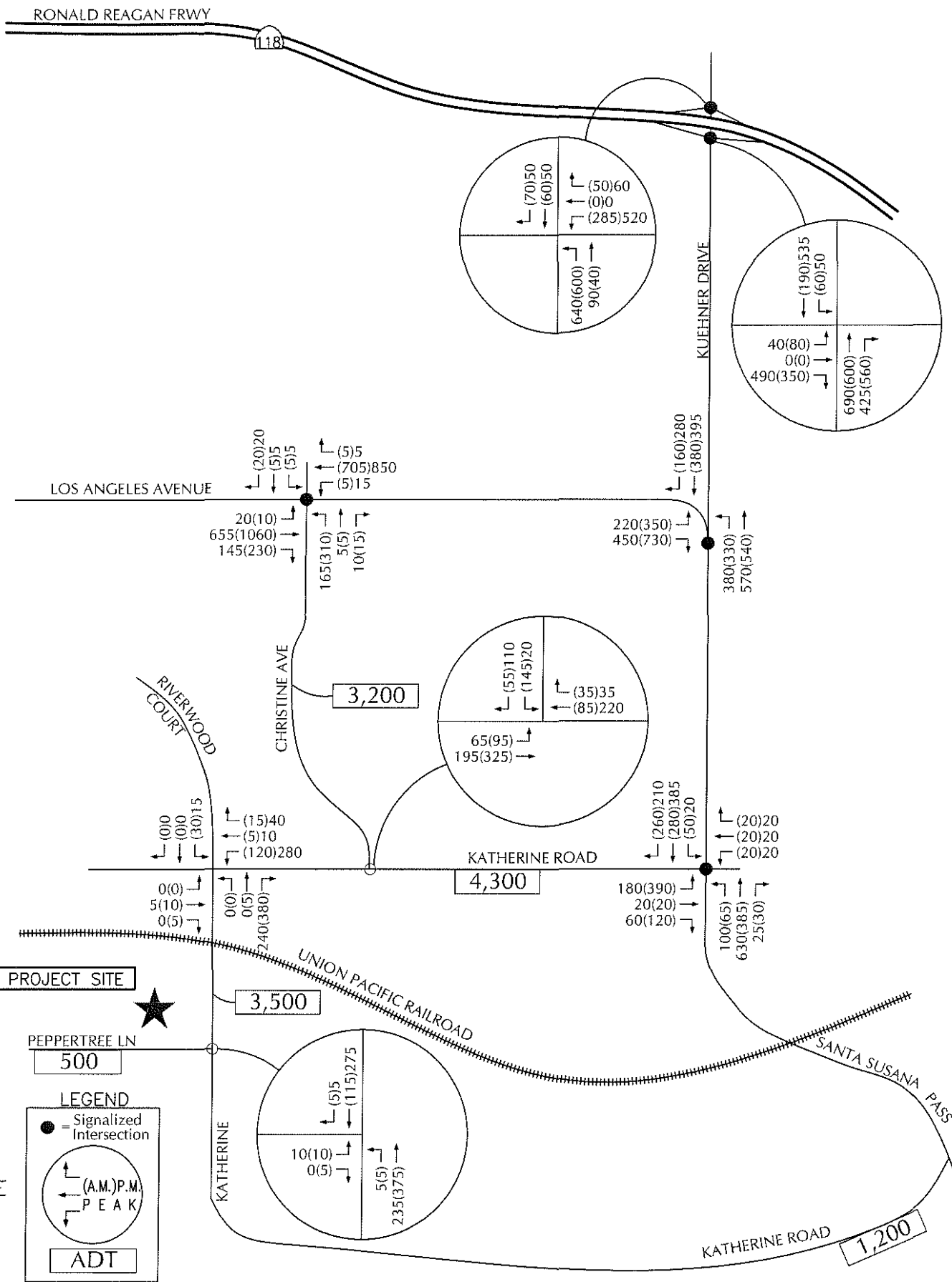
General Plan Buildout daily traffic (ADT) volumes for the study-area roadway segments are illustrated on Figure 6. Levels of Service for the study-area roadway segments were determined based on Ventura County roadway engineering design capacities, the results are presented in Table 7.

Table 7
General Plan Buildout Roadway Levels of Service

Roadway Segment	Existing Geometry	Roadway Classification	General Plan Buildout ADT	LOS D Capacity	LOS
Katherine Rd. w/o Kuehner Dr.	2-lane	Class I	4,300	16,000	LOS B
Katherine Rd. n/o Peppertree Ln.	2-lane	Class II	3,500	11,000	LOS B
Katherine Rd. w/o Santa Susana Pass	2-lane	Class II	1,200	11,000	LOS A
Christine Dr. n/o Katherine Rd.	2-lane	Class I	3,200	16,000	LOS B
Peppertree Ln. w/o Katherine Rd.	2-lane	Class II	500	11,000	LOS A

The data presented in Table 7 indicates that the study-area roadway segments would operate in the LOS "A"- "B" range during General Plan Buildout based on the County's level of service criteria.

General Plan Buildout + project daily traffic (ADT) volumes for the study-area roadway segments are illustrated on Figure 7. Levels of Service for the study-area roadway segments were determined based on Ventura County roadway engineering design capacities, the results are presented in Table 8.



PROJECT SITE

PEPPERTREE LN
500

LEGEND

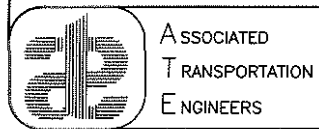
- = Signalized Intersection
- (A.M.) P.M. PEAK
- ADT

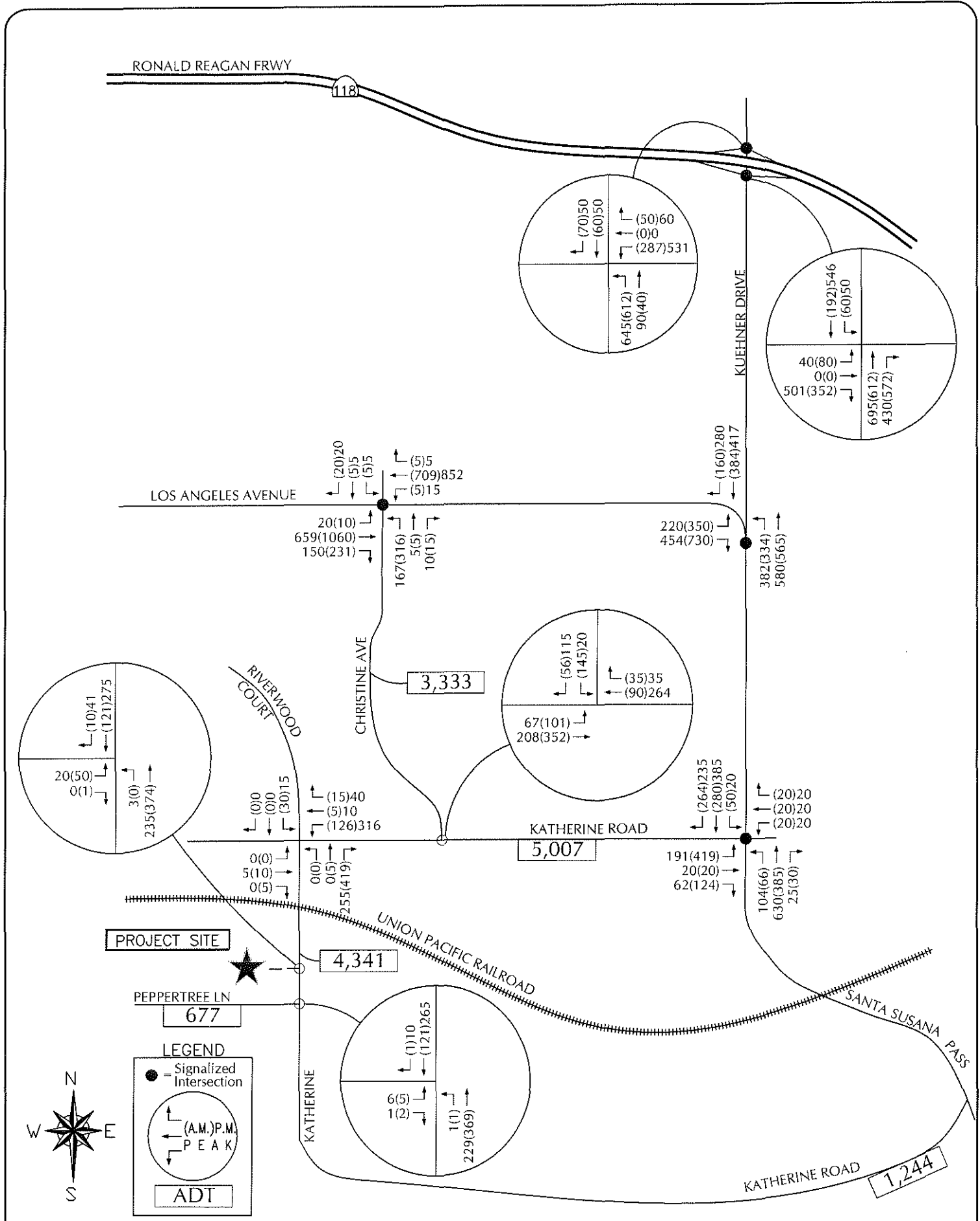


GENERAL PLAN BUILDOUT TRAFFIC VOLUMES

FIGURE 6

DH # 05116





LEGEND

- = Signalized Intersection
- (A.M.) P.M. PEAK
- ADT



Table 8
General Plan Buildout + Project Roadway Levels of Service

Roadway Segment	Existing Geometry	Roadway Classification	GP Buildout + Project ADT	LOS D Capacity	LOS
Katherine Rd. w/o Kuehner Dr.	2-lane	Class I	5,007	16,000	LOS B
Katherine Rd. n/o Peppertree Ln.	2-lane	Class II	4,341	11,000	LOS B
Katherine Rd. w/o Santa Susana Pass	2-lane	Class II	1,244	11,000	LOS A
Christine Dr. n/o Katherine Rd.	2-lane	Class I	3,333	16,000	LOS B
Peppertree Ln. w/o Katherine Rd.	2-lane	Class II	677	11,000	LOS A

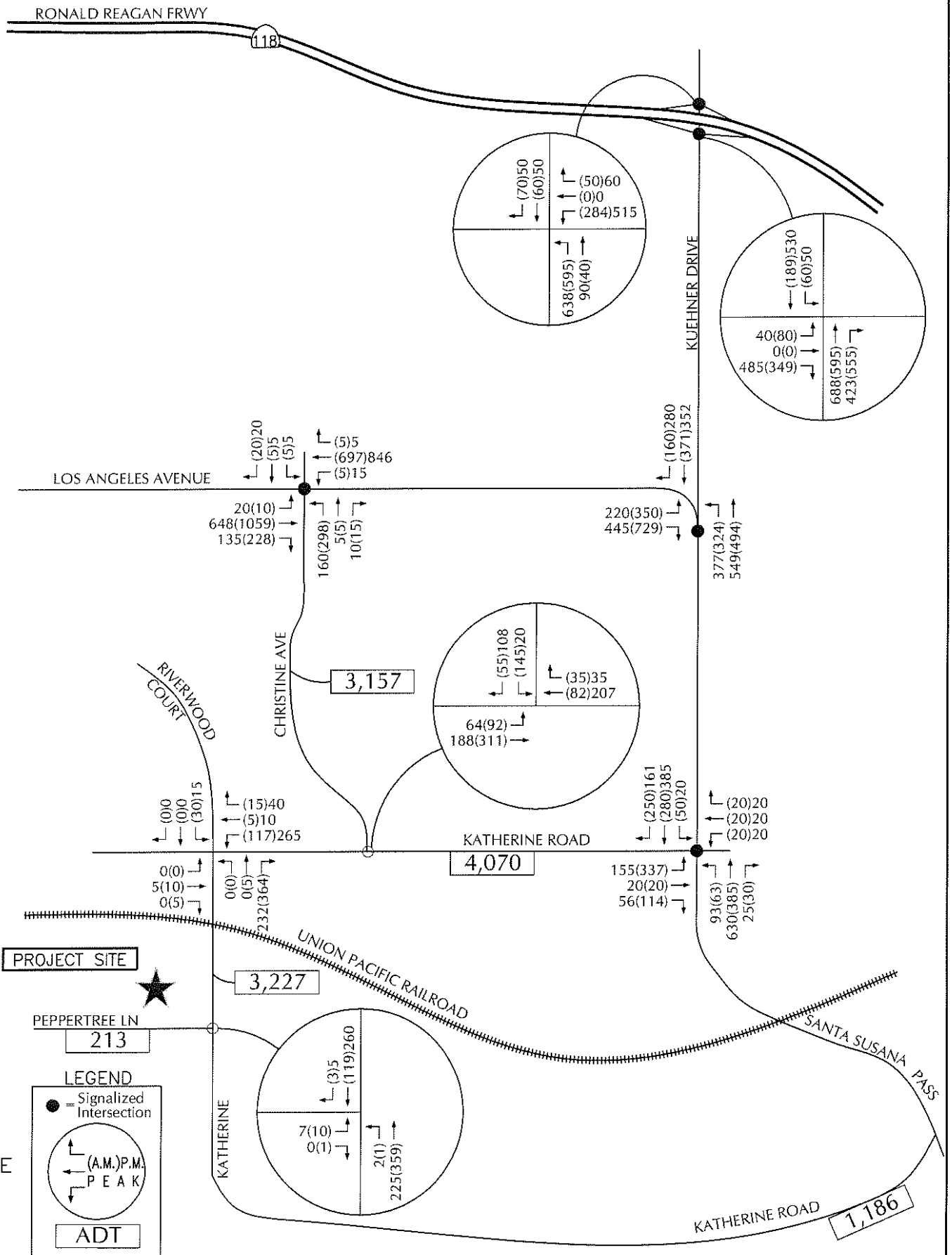
The data presented in Table 8 indicates that the study-area roadway segments would continue to operate in the LOS "A"- "B" range during General Plan Buildout with the addition of project-generated traffic based on the County's level of service criteria.

General Plan Buildout with no site development (ADT) volumes for the study-area roadway segments are illustrated on Figure 8. Levels of Service for the study-area roadway segments were determined based on Ventura County roadway engineering design capacities, the results are presented in Table 9.

Table 9
General Plan Buildout with No Site Development Roadway Levels of Service

Roadway Segment	Existing Geometry	Roadway Classification	GP Buildout w/o Development ADT	LOS D Capacity	LOS
Katherine Rd. w/o Kuehner Dr.	2-lane	Class I	4,070	16,000	LOS B
Katherine Rd. n/o Peppertree Ln.	2-lane	Class II	3,227	11,000	LOS B
Katherine Rd. w/o Santa Susana Pass	2-lane	Class II	1,186	11,000	LOS A
Christine Dr. n/o Katherine Rd.	2-lane	Class I	3,157	16,000	LOS B
Peppertree Ln. w/o Katherine Rd.	2-lane	Class II	213	11,000	LOS A

The data presented in Table 9 indicates that the study-area roadway segments would continue to operate in the LOS "A"- "B" range during General Plan Buildout with no site development based on the County's level of service criteria.



PROJECT SITE ★

PEPPERTREE LN 213

LEGEND

- = Signalized Intersection
- ⤴ (A.M.) P.E.A.K.
- ⤵ P.E.A.K.

ADT



General Plan Buildout Intersection Levels of Service

Figures 7 and 8 illustrate the General Plan Buildout + project and General Plan Buildout without development traffic volumes respectively. Tables 10 and 11 show the A.M. and P.M. peak hour intersection levels of service for the General Plan Buildout scenarios with and without project-generated traffic volumes. Level of service worksheets are contained in the Technical Appendix for reference.

Table 10
General Plan Buildout Intersection Levels of Service – A.M. Peak Hour

Intersection	V/C - Level of Service		
	General Plan w/o Site Development	General Plan	General Plan With Project
Kuehner Dr./S.R. 118 WB Ramps	0.46 - A	0.47 - A	0.47 - A
Kuehner Dr./S.R. 118 EB Ramps	0.46 - A	0.46 - A	0.47 - A
Kuehner Dr./Los Angeles Ave.	0.61 - B	0.62 - B	0.62 - B
Kuehner Dr./Katherine Rd.	0.41 - A	0.44 - A	0.46 - A
Katherine Rd./Christine Ave.	6.4 sec. - A	6.5 sec. - A	6.8 sec. - A
Katherine Rd./Riverwood Ct.	9.8 sec. - A	10.0 sec. - A	10.5 sec. - B
Katherine Rd./Peppertree Ln.	0.3 sec. - A	0.4 sec. - A	0.2 sec. - A
Los Angeles Ave./Christine Ave.	0.48 - A	0.49 - A	0.49 - A

Table 11
General Plan Buildout Intersection Levels of Service – P.M. Peak Hour

Intersection	V/C - Level of Service		
	General Plan w/o Site Development	General Plan	General Plan With Project
Kuehner Dr./S.R. 118 WB Ramps	0.54 - A	0.54 - A	0.55 - A
Kuehner Dr./S.R. 118 EB Ramps	0.41 - A	0.41 - A	0.42 - A
Kuehner Dr./Los Angeles Ave.	0.53 - A	0.55 - A	0.57 - A
Kuehner Dr./Katherine Rd.	0.38 - A	0.40 - A	0.41 - A
Katherine Rd./Christine Ave.	3.3 sec. - A	3.3 sec. - A	3.2 sec. - A
Katherine Rd./Riverwood Ct.	8.1 sec. - A	8.2 sec. - A	8.4 sec. - A
Katherine Rd./Peppertree Ln.	0.2 sec. - A	0.3 sec. - A	0.2 sec. - A
Los Angeles Ave./Christine Ave.	0.35 - A	0.36 - A	0.36 - A

Tables 10 and 11 show that most of the study-area intersections are forecast to operate at LOS "B" or better during the peak hour periods with General Plan Buildout volumes, including the proposed residential development.

The proposed project is subject to the Ventura County and City traffic mitigation fee programs, with collected fees used for the future transportation improvements required to accommodate future traffic volumes. The buildout analysis showed that generally the future service levels at the study-area intersections would be maintained at LOS "B" or better assuming the transportation improvements planned by the City of Simi Valley. The City's CIP identifies these improvements and funds them via traffic fees required of new developments. The project would contribute to the future improvements by payment of traffic mitigation fees to offset it's cumulative traffic impacts.

■ ■ ■

REFERENCES AND PERSONS CONTACTED

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Written Material

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ADDENDUM TO THE TRAFFIC AND CIRCULATION STUDY FOR THE SANTA SUSANA KNOLLS PROJECT - VENTURA COUNTY, CALIFORNIA

ATE prepared the initial traffic study for the Santa Susana Knolls Project in December of 2006. The following traffic analysis provides a comparison of the average daily, A.M. and P.M. peak hour trips that will be generated by the current 100 unit project with the trips generated by the initial 146 unit project evaluated by ATE in December of 2006.

Project Trip Generation

The current project is a residential development consist of 100 manufactured home units, which is 46 units smaller than the initial 146 unit project. For the purposes of estimating the number of "new" trips which would be generated by the current project, the rates published in the Institute of Transportation Engineering (ITE), Trip Generation, 7th Edition were used. Table 1 summaries the estimated average daily, A.M. and P.M. peak hour trip generation of the current project and the initial project.

**Table 1
Project Trip Generation Comparison**

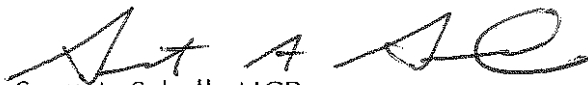
Land Use	Units	ADT	A.M. Peak Hour Trips			P.M. Peak Hour Trips		
			Entering	Exiting	Total	Entering	Exiting	Total
<u>Initial Project:</u> Residential	146 d.u's	885	12	58	70	55	27	82
<u>Current Project:</u> Residential	100 d.u's	642	9	43	52	40	20	60
Net Trip Change:		-243	-3	-15	-18	-15	-7	-22

The data presented in Table 1 shows that the trip generation forecast for the initial project was 885 average daily trips, 70 A.M. peak hour trips and 82 P.M. peak hour trips. Table 1 also shows that the current project would generate a total of 642 average daily trips, 52 A.M. peak hour trips and 60 P.M. peak hour trips. As indicated in Table 1, the current project trip generation results in a net decrease of 243 average daily trips, 18 A.M. peak hour and 22 P.M. peak hour trips.

Based on this trip generation analysis the traffic impacts associated with the current Santa Susana Knolls Project would be less than those identified in the December, 2006 traffic study. The identified mitigation measures would still be appropriate to offset the identified traffic impacts.

We appreciate the opportunity to assisting Colton Lee with this project.

Associated Transportation Engineers

By: 
Scott A. Schell, AICP
Principal Planner

Levels of Service (LOS) DESCRIPTIONS

Traffic flow conditions, ranging from "ideal" to breakdown, have been divided into six Levels of Service (LOS) for qualitative evaluation. For uninterrupted flow, the LOS are defined as follows:

Level A - free flow, low volumes and densities, high speeds. Drivers can maintain their desired speeds with little or no delay and are unaffected by other vehicles.



Level B - reasonably free flow, operating speeds beginning to be restricted somewhat by traffic conditions. Drivers still have reasonable freedom to select their speeds.



Level C - speeds remain near free flow speed, but freedom to maneuver is noticeably restricted.



Level D - speed begins to decline with increasing volume. Freedom to maneuver is extremely limited and level of comfort afforded the driver is poor.



Level E - unstable flow, with volume at or near capacity. Freedom to maneuver is extremely limited and level of comfort afforded the driver is poor.



Level F - breakdown in flow. Both speeds and volume can drop to zero.

