GROWTH WESTERN PROPERTIES, INC.

December 30, 1988

Los Angeles County Regional Planning
Attn: Frank Kuo, AICP, Section Head
Impact Analysis Section
320 West Temple Street
Los Angeles, CA 90012

Re: Project No. IS 87400 -- Traffic Study.

Here are 2 copies of the required traffic study for subject project. According to our records, this should complete the various data and report requirements to be submitted for the initial study on subject project.

Please advise if additional information is required.

Many thanks and best regards,

Lee C. Pulsipher
Enclosures

17800 Ridgeway Road • Tel 818-368-3201
P.O. Box 3568 • Granada Hills, California 91344

THOMAS S. MONTGOMERY AND ASSOCIATES
Transportation & Traffic Engineers

December 15, 1988

Mr. Lee C. Pulsipher
GROWTH WESTERN PROPERTIES, INC.
17800 Ridgeway Road
P.O. Box 3568
Granada Hills, California 91344

Re: Soledad Canyon Road Commercial Center Traffic Impact Study

Dear Mr. Pulsipher:

As authorized, we have conducted a study to determine the potential impacts associated with the additional traffic that would be generated by the proposed commercial development to be located on the north side of Soledad Canyon Road east of Langside Avenue in the easterly portion of the City of Santa Clarita. This report contains the findings and conclusions of our analysis, with all necessary supportive data. In general, we have concluded that the street system adjacent to the study site can accommodate the additional external traffic demands generated by this development, provided that the primary site access driveway located on the north side of Soledad Canyon Road about 1,050 feet east of Langside Avenue is controlled with a new traffic signal with separate left-turn phasing for the eastbound left-turn ingress traffic movement. However, the additional external site traffic demands generated by this project may significantly contribute to total future traffic demand projections in excess of design capacity at two of the four selected study area intersections along Soledad Canyon Road. These potential adverse site traffic impacts were estimated based on using a "worst case" traffic condition analysis methodology that normally results in total future design year traffic demands projections significantly higher than would actually occur. Furthermore, these projected future adverse traffic conditions would be of relatively short duration, since planned future long-term infrastructure improvements are anticipated to significantly relieve these

congestion problems in the time frame beyond 1995. These planned infrastructure improvements include: the construction of an east-west expressway on the old State Route 126 alignment, a new north-south arterial east of Bouquet Canyon Road-San Fernando Road, and the extension of Via Princessa easterly from White's Canyon Road to San Fernando Road, etc.

PROJECT DESCRIPTION

The proposed commercial development would be located on a 22.74 acre vacant parcel of land located on the north side of Soledad Canyon Road between Langside Avenue and the Soledad Canyon Road bridge crossing the Santa Clara river channel. This commercial center would contain 192,100 square feet of floor area for typical retail-type shopping center uses; 72,000 square feet of floor area devoted to general office land uses; and 17,500 square feet of floor area in four separate free-standing quality restaurants. Site access is planned via three two-way driveways located approximately 250, 1,050 and 1,600 feet east of the center line of Langside Avenue. Unrestricted ingress and egress site traffic movements would be provided at the central site access driveway, whereas the westerly site access driveway nearest Langside Avenue would be restricted to right turns only, in and out. The easterly site access driveway would be designed to allow the eastbound ingress left-turn movement into the site, but would physically prohibit the outbound left-turn movement to proceed easterly on Soledad Canyon Road. On site parking would be provided for a total of 1,158 vehicles. For study purposes, it was assumed that this project would be constructed and become fully operational by 1995, the selected study design year.

SCOPE OF WORK AND DATA SOURCES

The scope of work for this study effort was determined based on discussions held with the staff of the traffic study section of the County of Los Angeles Road Department (LACRD). The arterial intersections selected for detailed volume/capacity analysis were all located along Soledad Canyon Road at Bouquet

Canyon Road, Langside Avenue, White's Canyon Road and Sierra Highway. New morning and afternoon peak period (6:30 AM to 8:30 AM and 4:00 PM to 6:00 PM) manual turning movement traffic volume counts were made by our personnel at all four study intersections in late July and early August 1988. Field investigations were made to ascertain the existing physical and traffic operational characteristics of these locations and the overall street system serving the study site. All pertinent project description information was obtained from your offices and the preliminary site plan prepared by ALAN K. GASSMAN, A.I.A., Thousand Oaks, California.

EXISTING TRAFFIC CONDITIONS

Soledad Canyon Road adjacent to the study site is fully improved, with a raised median and striped for two through travel lanes in each direction and bike/parking lanes. This important east-west arterial now carries about 38,000 vehicle trips per day (vpd) adjacent to the study site.

The intersection of Soledad Canyon Road and Bouquet Canyon Road (a.k.a. Bouquet Junction) is controlled with a fully-actuated traffic signal with separate left-turn phasing in all directions, with the northbound approach striped for a left-turn lane, three through lanes and a right turn only lane; southbound for double left-turn lanes, two through lanes and double right-turn lanes; eastbound for double left-turn lanes and three through lanes; and the westbound approach for double left-turn lanes, three through lanes and a right-turn-only lane.

The intersection of Soledad Canyon Road and Langside Avenue is controlled with a two-phase semi-actuated signal, with the eastbound approach striped for a left-turn lane and two through lanes, westbound for two through lanes and a right-turn-only lane, whereas the southbound approach on Langside Avenue is confined to a single travel lane.

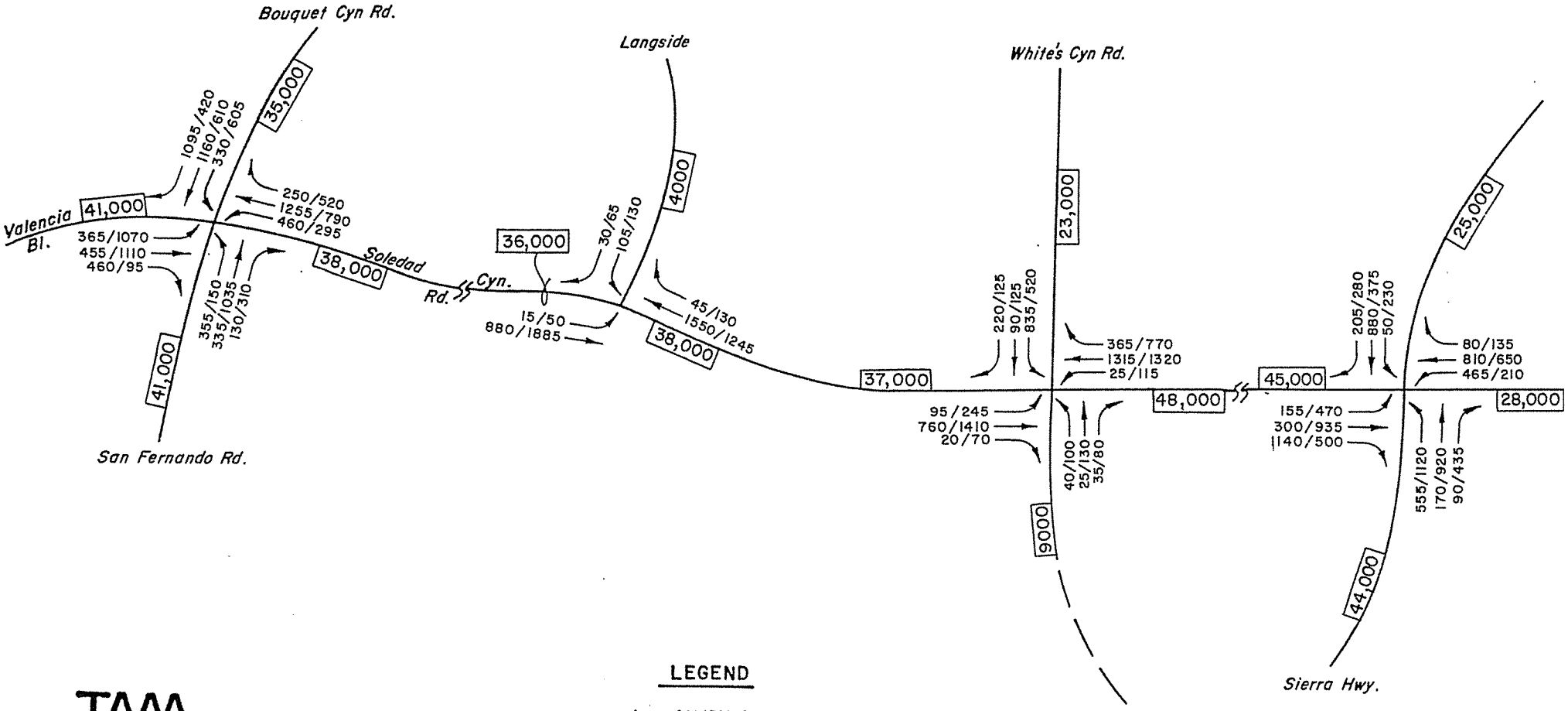
The intersection of Soledad Canyon Road and White's Canyon Road is controlled with an actuated signal with separate left-turn phasing for east and westbound traffic, with "split phasing" for the north and southbound approaches.

At this intersection, the northbound approach is striped for a left-turn-only lane and two through lanes; southbound for a left-turn-only lane, an optional left-turn or through lane and one wide through lane; eastbound for a left-turn-only lane and three through lanes; and the westbound approach for a left-turn-only lane, two through lanes and a right-turn-only lane.

The intersection of Soledad Canyon Road and Sierra Highway (a.k.a. Solemint Junction) is also controlled with an actuated signal, with "protected-permissive" left-turn phasing for east and westbound traffic, plus north-south "split-phasing". The northbound approach is striped for double left-turn lanes, two through lanes and right-turn-only lane; southbound for a left-turn lane, two through lanes and a right-turn-only lane; eastbound for a left-turn-only lane, two through lanes and a free-flowing right-turn-only lane; and the westbound approach for a left-turn lane and three through lanes.

Shown on Figure 1 are the estimated morning and afternoon directional peak hour turning movement traffic volumes at each of the four selected study area intersections, plus the associated daily traffic demands on each leg of these four intersections. These existing traffic volumes were estimated based on the manual turning movement traffic volume counts made by our personnel in July and August 1988.

In order to estimate the existing operational efficiency of the street system serving the study site, a volume/capacity analysis was made at these four locations, using the "intersection capacity utilization" (ICU) technique. The results of that analysis are summarized in Table 1, with the corresponding ICU worksheets contained in the Appendix of the report.



LEGEND

oo/oo AM/PM Peak Hour Traffic Volumes

000 Daily Traffic Volumes

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NO SCALE

EXISTING (1988) TRAFFIC VOLUMES

TABLE 1
EXISTING VOLUME/CAPACITY RELATIONSHIPS

Study Intersection Along Soledad Canyon Road At:	ICU/LOS Values	
	Morning Peak Hour Period	Afternoon Peak Hour Period
Bouquet Junction	1.07/F	1.06/F
Langside Avenue	0.66/B	0.81/D
White's Canyon Road	0.79/C	0.85/D
Solemint Junction	0.90/D	1.03/F

This analysis indicates that two of the four selected study area intersections are now operating in excess of design capacity, based on the LACRD's definition of design capacity as Level of Service D (LOS D), with a maximum ICU value of 0.85.

SITE TRAFFIC GENERATION AND DISTRIBUTION

The additional traffic that would be generated by the various land uses planned to be contained in the subject commerical center, as well as all other known related planned developments in the vicinity of the study site, are estimated based on traffic generation factors obtained from the Institute of Transportation Engineers' (ITE) Trip Generation Manual, Fourth Edition, and other pertinent sources. These factors are listed in Table 2, with the resultant site traffic generation characteristics displayed in Table 3.

TABLE 2
STUDY TRAFFIC GENERATION FACTORS

Land Use	Base Unit	Number of Vehicle Trips/Base Factor Unit				
		AM Peak Hour		PM Peak Hour		Daily Total
		IN	OUT	IN	OUT	
Residential						
Single Family Detached						
< - 199 Dwelling Units	D.U.'s	0.21	0.55	0.66	0.39	9.8
200 - 299 Dwelling Units	D.U.'s	0.20	0.54	0.65	0.38	9.7
300 - 399 Dwelling Units	D.U.'s	0.19	0.53	0.64	0.37	9.5
> - 400 Dwelling Units	D.U.'s	0.19	0.52	0.63	0.37	6.3
Apartment	D.U.'s	0.09	0.42	0.42	0.20	6.1
Condominium	D.U.'s	0.06	0.46	0.46	0.25	8.0
Commercial						
192,100 $Ft.^2$ - Retail Shops	1,000 $Ft.^2$	0.94	0.41	2.14	2.42	59.1
12.750 $Ft.^2$ - Retail Shops	1,000 $Ft.^2$	1.57	0.63	4.55	4.71	84.0
72,000 $Ft.^2$ - General Office	1,000 $Ft.^2$	1.82	0.28	0.33	1.75	14.9
12,750 $Ft.^2$ - Medical Office	1,000 $Ft.^2$	0.86	0.71	0.86	2.35	25.5
17,500 $Ft.^2$ - Quality Restaurant	1,000 $Ft.^2$	0.63	0.06	4.40	1.94	99.4

TABLE 3
SITE TRAFFIC GENERATION

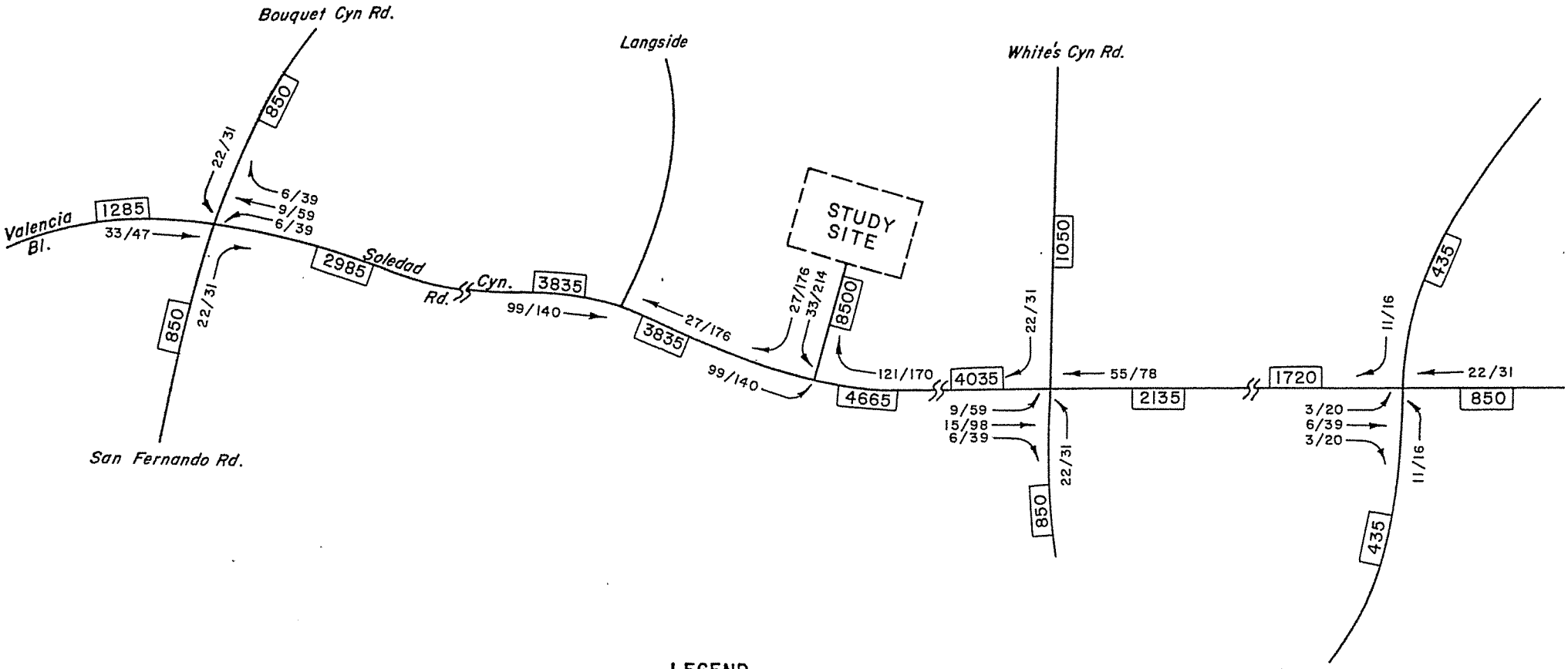
Land Use Description	Number Of Additional Vehicle Trips				
	AM Peak Hour		PM Peak Hour		Daily Total
	IN	OUT	IN	OUT	
192,100 $Ft.^2$ of Retail Shops	181	78	412	465	11,360
72,000 $Ft.^2$ of General Offices	131	20	24	126	1,070
17,500 $Ft.^2$ of Quality Restaurants	11	1	77	34	1,740
TOTAL SITE TRAFFIC GENERATION:	323	99	513	625	14,170
EXTERNAL SITE DEMANDS: *	220	60	310	390	8,500

* Based on a 42 percent reduction attributable to "by-pass" traffic for retail uses, plus a 10 percent reduction for interaction between site land uses (peak hour demands rounded off to the nearest 10 vph, the daily total external demand to the nearest 100 vpd).

We estimate that the study project would generate a total of more than 14,000 vpd, with maximum directional peak demands between 510 and 625 vehicle trips per hour (vph) inbound and outbound during a typical weekday afternoon commuter peak travel period, respectively. However, since recent traffic generation research data indicates that a significant portion of the total traffic demands generated by retail commerical uses are attracted to these shopping centers from the traffic flow already on the adjacent arterial street system for other primary trip purposes, and the proposed site land use mix would result in a relatively high interaction between these facilities, actual external site traffic demands would be approximately 60 percent of these total site traffic generation estimates.

The orientation of the additional traffic generated by the subject commerical center was estimated based on a review of the existing traffic flow characteristics at each of the four selected study area intersections; trip distribution estimates contained in previous traffic impact studies made by our firm and others in this portion of the Santa Clarita Valley; and on our general knowledge of existing and future traffic and demographic characteristics for this portion of the City of Santa Clarita. We estimate that 50 percent of the total site traffic demands would be oriented to and from the north, north of Soledad Canyon Road (5 percent on Sierra Highway, 15 percent of White's Canyon Road, 10 percent on Bouquet Canyon Road and 20 percent on the local street system between Bouquet and Solemint Junctions); 10 percent to and from the east on Soledad Canyon Road east of Sierra Highway; 25 percent to and from the south, south of Soledad Canyon Road (10 percent on San Fernando Road, 10 percent on future White's Canyon Road, and 5 percent on Sierra Highway); with the remaining 15 percent to and from the west on Soledad Canyon Road (Valencia Boulevard) west of Bouquet Junction.

Illustrated on Figure 2-A are the resultant directional peak hour and daily external site traffic demands assigned to the future street system serving the study site based on these site traffic generation and distribution estimates. These external site traffic demands do not include the by-pass traffic estimated to be attracted to the on site retail commercial facilities, nor the portion of the total site traffic demand estimated to be internal to the study site. To simplify this graphic, all three site access driveway traffic demands were combined into one



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LEGEND

oo/oo AM/PM Peak Hour Traffic Volumes

000 Daily Traffic Volumes

2A

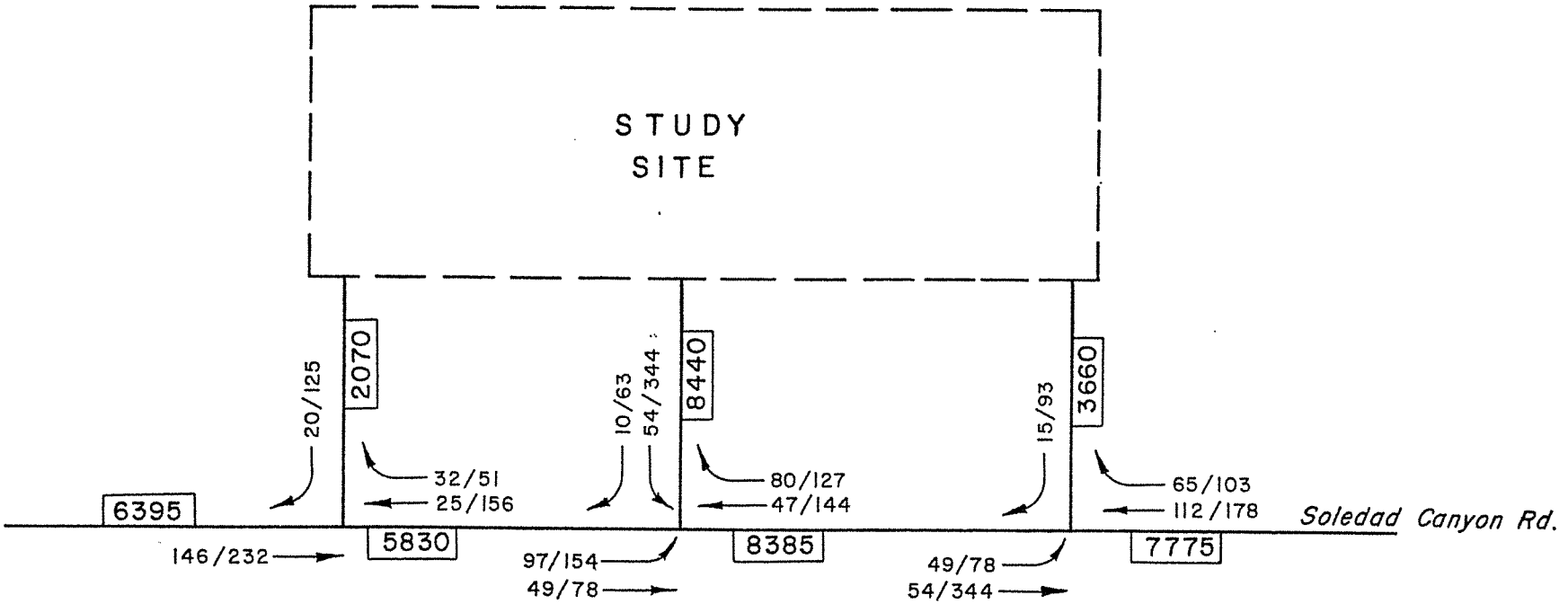
EXTERNAL SITE TRAFFIC DEMANDS

composite site access roadway location. Maximum external daily site traffic demands would occur on Soledad Canyon Road just east of the study site, slightly less than 4,700 vpd. The additional external peak period site turning movement traffic demands at the approaches to all four study intersections would be less than 100 vph in all cases.

Shown on Figure 2-B are the estimated total daily and directional peak hour site traffic volumes, as assigned to all three proposed site access driveways. To present a conservative "worst case" total site traffic demand scenario, these peak hour and daily site traffic volumes contain both the estimated by-pass and internal site traffic demands attributable to this specific commercial center's planned land use mix. This total site traffic volume assignment graphic shows that almost 60 percent of the site traffic would utilize the central site access driveway (in excess of 8,400 vpd). This quantity of "minor street" traffic demand would readily exceed the minimum volume requirements for the installation of traffic signal control (see the CALTRANS Traffic Signal Warrant Sheet in the Appendix of the report). Also, the eastbound left-turn ingress demand at this location during a typical weekday afternoon commuter peak travel (about 155 vph) would probably require separate left-turn phasing at this new traffic signal.

FUTURE TRAFFIC CONDITIONS

The only significant study area street improvement anticipated to be constructed between now and 1995 is the planned extension of Plum Canyon-White's Canyon Road southerly from its present terminus south of Soledad Canyon Road to join the westerly extension of Via Princessa west of Sierra Highway to form a more direct link between the central Canyon Country area and the existing Antelope Valley Freeway ramps to and from the San Fernando Valley on the south that now terminate at Sierra Highway. We estimated that the construction of this master plan highway connection would divert two-thirds of the eastbound right-turn and northbound left-turn traffic now using Solemint Junction to this new route, as well as two-thirds of the southbound left-turn and westbound right-turn traffic now traversing Bouquet Junction to the Plum Canyon Road-White's Canyon Road-Via Princessa route. Furthermore, about one-half of



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LEGEND

oo/oo AM/PM Peak Hour Traffic Volumes

000 Daily Traffic Volumes

2B

TOTAL SITE TRAFFIC VOLUMES

the existing traffic now making southbound left turns and westbound right turns at the intersection of Soledad Canyon Road and White's Canyon Road was diverted to this new arterial link. The resultant diverted existing traffic volumes were increased by 10 percent to reflect future design year background traffic demands; a growth rate equivalent to an average of 1.4 percent per year to account for ongoing regional growth trends in this portion of the Santa Clarita Valley.

Total future cumulative 1995 traffic demands were estimated to be comprised of the aforementioned background traffic, plus external site traffic demands, plus the additional external traffic that would be generated by all known related projects in the study area. Our analysis of the computerized listing of presently planned developments in this portion of the Santa Clarita Valley (obtained from the County of Los Angeles Regional Planning Department) indicates that there are now 25 specific related projects located in the study area that may significantly contribute to total future cumulative traffic demands. The general locations of these related planned developments are shown on Figure 3, with the land use and traffic generation characteristics of each listed in Table 4, on page 10.

The external traffic demands generated by each of these 25 related planned developments was assigned to the study area street system utilizing trip distribution characteristics compatible to those used for the assignment of site traffic demands. The resultant total future design year directional peak hour and daily traffic volume projections for the arterial street system serving the study site are illustrated on Figure 4. An initial review of these total future peak period traffic demands indicated that the following traffic engineering improvements would be appropriate for three of the four selected study intersection locations:

1. Soledad Canyon Road and Langside Avenue - That the east and westbound curb lanes at this location would be striped to provide three through travel lanes in each direction, with the southbound approach on Langside Avenue restriped to provide separate right and left-turn lanes.

2. Soledad Canyon Road and White's Canyon Road - That the northbound approach at this intersection would be restriped for double left-turn lanes and two through lanes, with the southbound approach restriped to provide double left-turn lanes, two through lanes and a right-turn-only lane. In conjunction with this restriping, the traffic signal would be

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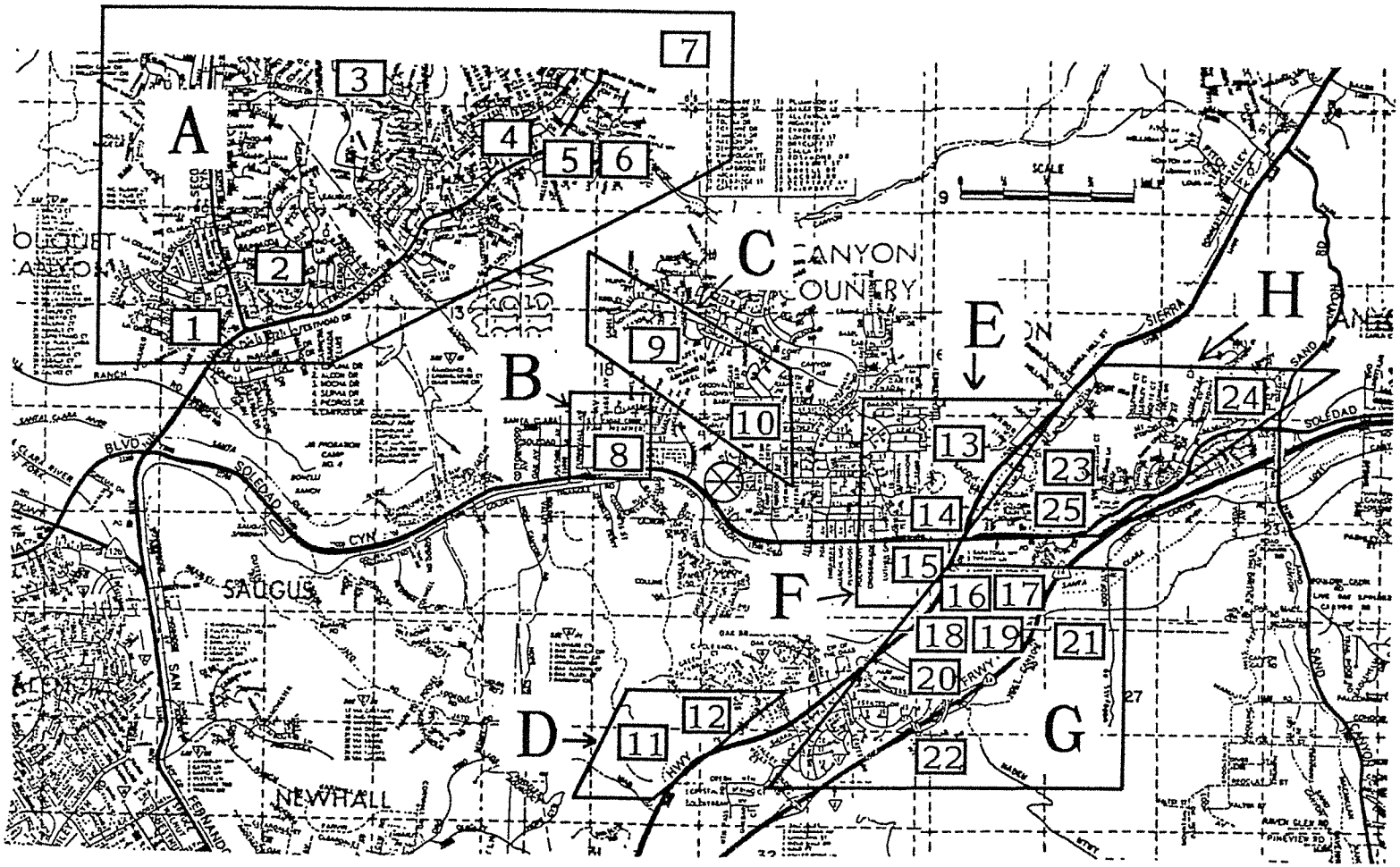

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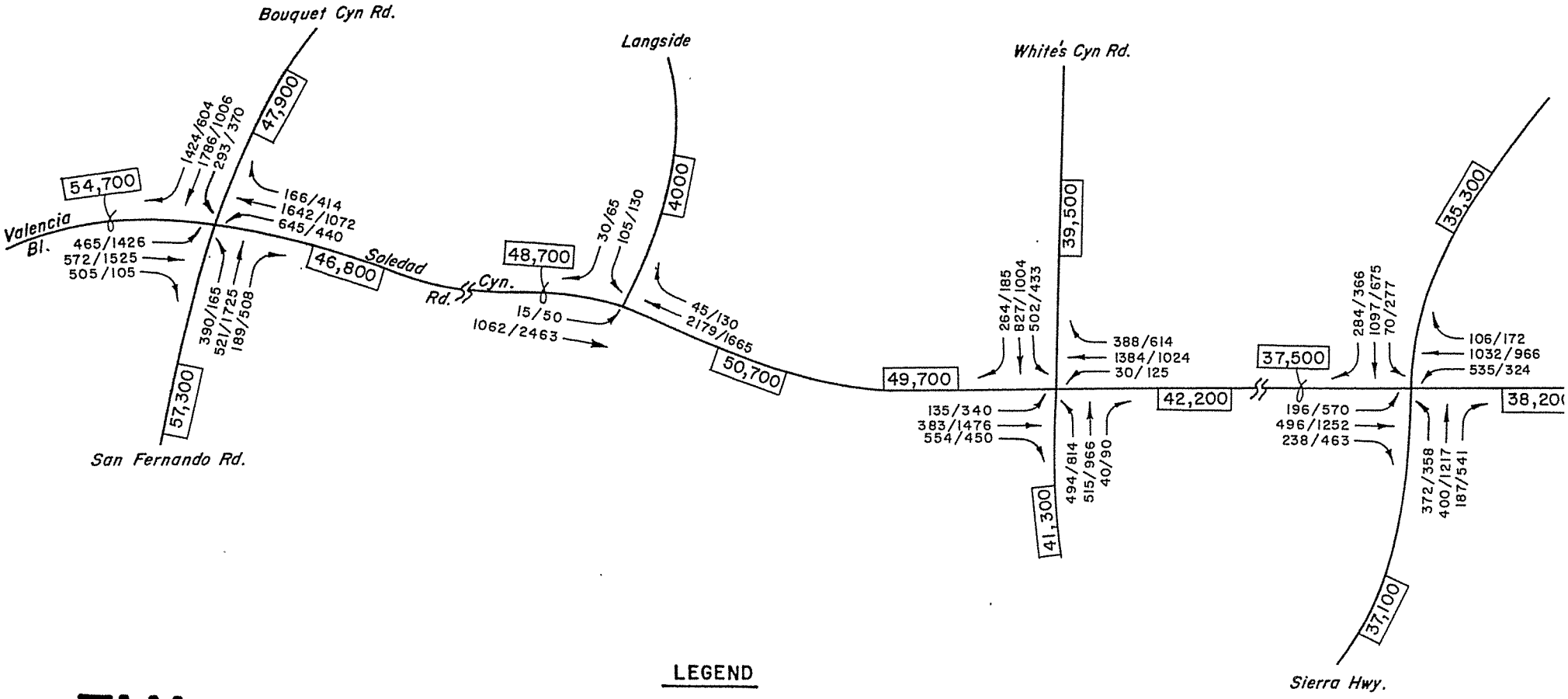
STUDY SITE LOCATION

RELATED PROJECT LOCATION NUMBER (SEE TABLE 4)

3

RELATED PROJECTS LOCATION MAP



LEGEND

oo/oo AM/PM Peak Hour Traffic Volumes

000 Daily Traffic Volumes

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NO SCALE

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TOTAL FUTURE (1995) TRAFFIC DEMANDS

TABLE 4
RELATED PROJECTS TRAFFIC GENERATION

Location Number (see Figure 3)	Land Use Description	Number of Additional Vehicle Trips				
		AM Peak Hour		PM Peak Hour		Daily Total
		IN	OUT	IN	OUT	
1	192 Condominiums	12	88	88	48	1,540
2	469 Single Family Dwelling Units	89	240	243	172	4,370
3-A	368 Single Family Dwelling Units	71	193	233	137	3,480
3-B	121 Condominiums	7	56	56	30	970
4	241 Single Family Dwelling Units	49	131	157	92	2,340
5-A	542 Single Family Dwelling Units	101	274	335	197	5,000
5-B	180 Condominiums	11	83	83	45	1,440
6-A	193 Single Family Dwelling Units	40	107	127	75	1,890
6-B	648 Condominiums	39	298	298	162	5,180
7	283 Single Family Dwelling Units	56	152	182	107	2,720
8	328 Condominiums	20	151	151	82	2,620
9	105 Condominiums	6	48	48	26	840
10	448 Mobile Homes	52	133	155	95	2,160
11	368 Condominiums	22	169	169	92	2,940
12	180 Condominiums	11	83	83	45	1,440
13	209 Condominiums	13	96	96	52	1,670
14	329 Condominiums	20	151	151	82	2,630
15	232 Condominiums	14	107	107	58	1,860
16	384 Condominiums	23	177	177	96	3,070
17	464 Condominiums	28	213	213	116	3,710
18	776 Condominiums	47	357	357	194	6,210
19	544 Condominiums	33	250	250	136	4.350
20	600 Condominiums	36	276	276	150	4,800
21	800 Condominiums	48	368	368	200	6,400
22	440 Condominiums	28	202	202	110	3,520
23	256 Apartments	24	108	108	51	1,570
24	392 Condominiums	24	180	180	98	3,140
25	25,500 Ft. ^{2} Retail/Medical Office	32	19	72	91	1,400
	Totals:	954	4,710	5,015	2,839	83,260
	External Related Project Traffic Demands: *	860	4,240	4,510	2,560	74,900

* Equivalent to 90 percent of total related projects traffic generation with peak hour demands rounded off to the nearest 10 vph, daily traffic demand rounded off to the nearest 100 vpd.

revised to provide a typical "eight-phase" operation with separate left-turn phasing in all directions.

3. Soledad Canyon Road and Sierra Highway - That additional left-turn lanes would be provided for east, west and southbound traffic to provide double left-turn lanes in all four directions and the existing traffic signal converted to a typical eight-phase-type operation.

Utilizing these intersection mitigation measures, and the total future peak hour traffic volume projections shown on Figure 4, an ICU analysis was again conducted to estimate the potential future operational efficiency of the street system serving the study site. The results of this analysis, with and without site generated traffic demands, are displayed in Table 5.

Table 5
FUTURE VOLUME/CAPACITY RELATIONSHIPS

Study Intersections Along Soledad Canyon Road At:	Peak Period	ICU - LOS Value	
		Without Site Traffic	With Site Traffic
Bouquet Junction	AM	1.40/F	1.40/F
	PM	1.29/F	1.31/F
Langside Avenue	AM	0.64/B	0.64/B
	PM	0.66/B	0.69/B
White's Canyon Road	AM	1.02/F	1.04/F
	PM	1.16/F	1.22/F
Solemint Junction	AM	0.91/E	0.92/E
	PM	1.07/F	1.08/F

This design year volume/capacity analysis indicates that three of the four study intersections would be operating well in excess of design capacity during both commuter peak travel periods, with or without external site-generated traffic demands.

CONCLUSIONS AND RECOMMENDATIONS

Soledad Canyon Road in the vicinity of the study site is now operating at acceptable levels of service during typical weekday commuter peak travel periods. However, the intersections of Soledad Canyon Road and Bouquet Junction (3.5 miles west of the study site) and Solemint Junction (1.5 miles east of the study site) are currently congested during said peak travel periods. By 1995, the additional traffic that would be generated by the study project, and the numerous related planned developments in the vicinity of the study site (plus background traffic demands), would result in total future design year traffic demands in excess of design capacity at three of the four selected study intersections. External site traffic demands would significantly contribute to these projected future adverse traffic condition situations at two of the three critical locations based on the LACRD's definition of a significant adverse site traffic impact (i.e., site traffic would account for a differential in the "with or without site traffic" ICU values of 0.02 or more). Therefore, it has been concluded that the additional external traffic demands generated by the proposed commercial center may have a significantly adverse impact on the street system serving the study site by 1995.

However, these findings and conclusions are based on a "worst case" traffic impact analysis methodology, as required by the staff of the LACRD. It is highly probable that actual 1995 total traffic demands on the street system serving the study site would be significantly less than those projected for the following reasons:

1. Future Design Year Background Traffic Demands - Due to the large number of related planned developments considered in this analysis, the projected increases in existing traffic volumes due to unspecified future planned developments, and historic traffic growth trends in the Santa Clarita Valley area, may be substantially less than estimated;

2. Related Projects Traffic Demands - The total additional traffic generated by the large number of planned developments considered in this analysis (25 specific future planned residential and commercial projects) may be significantly less than estimated in this analysis since recent studies conducted by the County of Los Angeles Regional Planning Department show that only 88 percent of large groups of proposed developments such as this would ultimately be approved for development by the county, and that only 84 percent of the approved projects would actually be built as now planned. Furthermore, studies conducted by the Los Angeles Regional Transportation Study Group (LARTS) indicate that actual total future traffic demands generated by large groups of proposed mixed use developments, such as those considered in this analysis, would generate actual total future traffic demands between 12 and 18 percent less than the sum of the totals for each specific development. Therefore, the actual traffic generation attributable to the related projects considered in this analysis may be less than two-thirds of the total related project generation quantities shown in Table 4, instead of the relatively conservative 10 percent reduction factor used in our analysis.

It should also be noted that the worst case future traffic condition scenario described in this report would be of a relatively short-term nature since there are numerous additional major street system improvements planned in this portion of the Santa Clarita Valley that would significantly relieve these projected adverse traffic conditions in the time frame beyond 1995. Of this group, the major transportation infrastructure improvements that would have the most beneficial effect on traffic operations are as follows:

1. The "Cross-Valley" Expressway - The completion of the east-west expressway facility to be built between the present terminus of State Route 126 at its interchange with the Golden State Freeway and a future interchange with the Antelope Valley Freeway (SR 14) east of Sierra Highway near Via Princessa would provide a high capacity facility parallel to the existing Valencia Boulevard-Soledad Canyon Road route crossing the northern portion of the valley. This east-west expressway facility should dramatically reduce potential future through traffic demands on Valencia Boulevard and Soledad Canyon Road.

2. The Via Princessa Extension - Though the Via Princessa-White's Canyon Road link between Soledad Canyon Road and Sierra Highway was assumed to be completed in our analysis of design year traffic impacts, Via Princessa is also planned to be extended westerly from White's Canyon Road to an intersection with San Fernando Road south of Bouquet Junction in the foreseeable future. This new street link would also have a beneficial effect on traffic operations along Soledad Canyon

Road, as well as at the intersections of Soledad Canyon Road/White's Canyon Road and Bouquet Junction.

3. The Rio Vista Extension - Current planning efforts by the City of Santa Clarita and the County of Los Angeles indicate that the construction of a new north-south arterial between Bouquet Canyon Road south of Seco Canyon Road and a point near the San Fernando Road/SR 14 Freeway interchange may occur in the foreseeable future. This new north-south arterial route would greatly relieve existing and projected future traffic demands along the Bouquet Canyon Road-San Fernando Road corridor.

Though the findings and conclusions of this analysis indicate that the potential future external traffic demands generated by the proposed commercial facility to be located on the north side of Soledad Canyon Road between Langside Drive and the Santa Clara River Channel may significantly contribute to projected future adverse traffic conditions at two of the four selected study area intersections along the effected portion of Soledad Canyon Road, these adverse impacts may not be nearly as critical as now projected. Furthermore, these adverse traffic conditions can be considered to be of a relatively short-term nature since long-range transportation improvements in this portion of the Santa Clarita Valley are anticipated to provide a reasonable balance between total future cumulative traffic demands at build-out levels and the total capacity of the ultimate circulation system.

It has been a pleasure to serve you on this interesting project. If you have any questions concerning the findings and conclusions of our analysis, or require any further input at this time, please contact us at your convenience.

Very truly yours,
THOMAS S. MONTGOMERY AND ASSOCIATES

Thomas S. Montgomery, P.E.
Firm Principal

TSM:bf

Project No. 880703

APPENDIX

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Figure 9-1D

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic - See Note 2)

URBAN ..... RURAL	Minimum Requirements EADT	
1. Minimum Vehicular Satisfied ✓ Not Satisfied _____	Vehicles per day on major street (total of both approaches)	Vehicles per day on higher-volume minor-street approach (one direction only)
Number of lanes for moving traffic on each approach		
Major Street / Minor Street	Urban / Rural	Urban / Rural
1 / 1	8,000 / 5,600	2,400 / 1,680
2 or more / 1 (50,200 / 4280*)	9,600 / 6,720	2,400 / 1,680
2 or more / 2 or more	9,600 / 6,720	3,200 / 2,240
1 / 2 or more	8,000 / 5,600	3,200 / 2,240
2. Interruption of Continuous Traffic Satisfied _____ Not Satisfied _____	Vehicles per day on major street (total of both approaches)	Vehicles per day on higher-volume minor-street approach (one direction only)
Number of lanes for moving traffic on each approach		
Major Street / Minor Street	Urban / Rural	Urban / Rural
1 / 1	12,000 / 8,400	1,200 / 850
2 or more / 1 (50,200 / 4280)	14,400 / 10,080	1,200 / 850
2 or more / 2 or more	14,400 / 10,080	1,600 / 1,120
1 / 2 or more	12,000 / 8,400	1,600 / 1,120
3. Combination Satisfied _____ Not Satisfied _____ No one warrant satisfied but following warrants fulfilled 80% or more ..... 1 _____ 2 _____	2 Warrants	2 Warrants

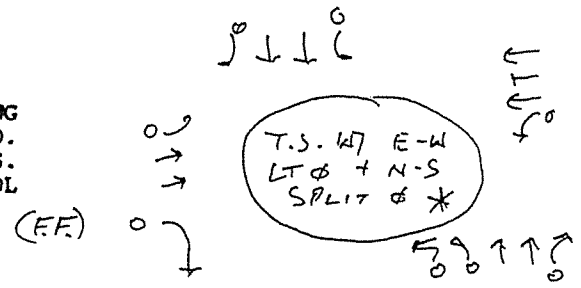
NOTE:

1. Heavier left turn movement from the major street may be included with minor street volume if a separate signal phase is to be provided for the left-turn movement.
2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

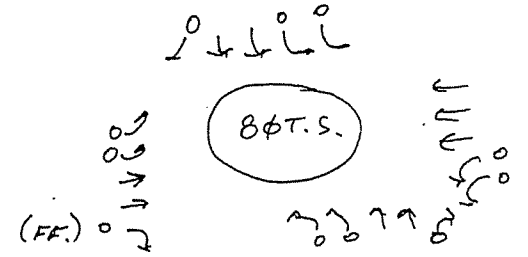
* SUM OF SB DAILY TRAFFICS FROM FIGURE 2B

INTERSECTION: Sierra Hwy & Soledad Canyon Rd. JOB NUMBER: 880703 (6/25)

EXISTING I/S G.D. & T.S. CONTROL



FUTURE I/S G.D. & T.S. CONTROL



* E-W Protected Promissive LT Ø

Approach Traffic Movement	Capacity		Peak Hour Traffic Volumes: Exist. AM	Exist. PM	Site AM	Site PM	Tot 1995 AM	Tot 1995 PM	V/C Ratios (Critical w/*): Exist AM	Exist PM	1995 w/o Site AM	1995 w/o Site PM	Tot 1995 AM	Tot 1995 PM
	EXISTING													
NBRT	1600 (a)	1600 (d)	90	435	–	–	187	541	–	.19	–	.23	–	.23
NB	3200	3200	170	920	–	–	400	1217	.05	.29	.13	.38*	.13	.38*
NBLT	2880 (c)	2880 (c)	555	1120	11	16	372	358	.19*	.39*	.13*	.12	.13*	.12
SBRT	1600 (a)	1600 (a)	205	280	11	16	284	366	.08	–	.10	.03	.11	.03
SB	3200	3200	880	375	–	–	1097	675	.28*	.12	.34*	.21	.34*	.21
SBLT	1600	2880 (c)	50	230	–	–	70	277	.03	.14*	.02	.10*	.02	.10*
EBRT	1600 (4)	1600 (4)	1140	500	3	20	238	463	.71	.31	.15	.28	.15	.29
EB	3200	3200	200	935	6	39	496	1252	.09*	.29	.15*	.38*	.16*	.39*
EBLT	1600 (b)	2880 (c)	155	470	3	20	196	570	.05	.24*	.07	.19	.07	.20
WBRT			80	135	–	–	106	172						
WB	4800	4800	810	650	22	31	1032	966	.19	.16*	.23	.23	.24	.24
WBLT	1600 (b)	2880 (c)	465	210	–	–	535	324	.24*	.08	.19*	.11*	.19*	.11*
YELLOW									.10*	.10*	.10*	.10*	.10*	.10*
TOTAL ICU:									0.90	1.03			.91	1.07	.92	1.08
Level of Service:									D	F			E	F	E	F

NOTES:

(a) Exclude RT's in separate RTO lane

(b) LT volumes in excess of 80 VPH treated as a ~~separate~~ Protected Prom left turn signal phase

(c) Double turn lane capacity 2880

(d) Net V/C = Total V/C − WBLT V/C

(e) Net V/C = Total V/C − EBLT V/C

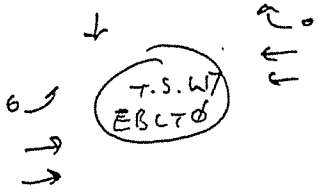
(4) Free Flow RTO Lane w/ Acc. Lane

Site/Total 1995 ⇒ AM = $\frac{56}{5013}$ = 1.1 %

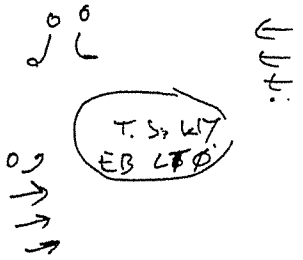
PM = $\frac{142}{7181}$ = 2.0 %

INTERSECTION: Lonas Ridge Ave & Second Cyn Rd. JOB NUMBER: 880703 (10/24)

EXISTING I/S G.D. & T.S. CONTROL



FUTURE I/S G.D. & T.S. CONTROL



Approach Traffic Movement	Capacity		Peak Hour Traffic Volumes								V/C Ratios (Critical w/*)							
			Exist.	Site					Tot 1995		Exist				1995 W/o Site		Tot 1995	
	EXISTING	1995	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
NBRT																		
NB																		
NBLT																		
SBRT		1600	30	65	—	—			30	65					.02	.04	.02	.04
SB	1600	—	—	—	—	—			—	—	.08*	.12*			—	—	—	—
SBLT		1600	105	130	—	—			105	130					.07*	.08*	.07*	.08*
EBRT																		
EB	3200	4800	880	1885	99	139			1062	2463	.28	.59*			.20	.48*	.22	.51*
EBLT	1600	1600	15	50	—	—			15	50	.01	.03			.01*	.03	.01*	.03
WBRT	1600	}	45	130	—	—			45	130	.03	.08						
WB	3200	4800	1550	1245	27	176			2179	1665	.48*	.39			.46*	.34	.46*	.37
WBLT																		
YELLOW											.10*	.10*			.10*	.10*	.10*	.10*
TOTAL ICU:											.66	.81			.64	.66	.64	.69
Level of Service:											B	D			B	B	B	B

NOTES:

(a) Exclude RT's in separate RTO lane

(b) LT volumes in excess of _____ VPH treated as a separate left turn signal phase

(c) Double turn lane capacity

(d)

Site/Total ⇒ AM = $\frac{126}{3436}$ = 3.7 %

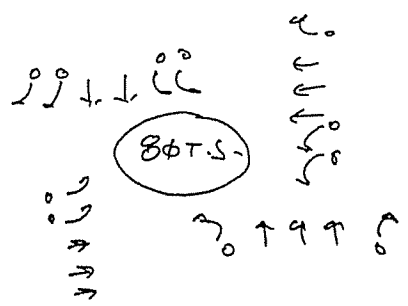
PM = $\frac{315}{4503}$ = 7.0 %

Thomas S. Montgomery & Associates
2151 Alessandro Drive, Suite 210
Ventura, California 93001

Intersection: EDUCATIONAL/SOUTH EDMD
Projection Year: 1995

Proj. Name: SOLBERG COMMERCIAL C
Proj. Number: 880906
Date: OCTOBER 25, 1988

EXISTING
I S C H
A T S.
CONTROL



FUTURE
I/S C H
A T.S.
CONTROL

Same As Exist.

	Capacity Exist.	Capacity Future	Traffic Volumes: Existing Condition Exist. AM	Exist. PM	Site AM	Site PM	Future Condition Bel.Pro. AM	Bel.Pro. PM	1995 AM	1995 PM	Volume/Capacity Relationships: Existing Condition Existing AM	Existing PM	Exist.+ Site AM	Exist.+ Site PM	Future Condition W/O Site AM	W/O Site PM	Total AM	Total 1995 PM
NBRT	1600	1600 (4)	190	310	22	31			189	508	-	0.09			-	0.30 .16	-	0.32 .17
NB	4800	4800	830	1035					571	1725	0.07	0.22 *			0.11	0.36 *	0.11	0.36 *
NBLT	1600	1600	355	150					390	165	0.22	*0.09			0.24	*0.10	0.24	*0.10
SBRT	2880	2880 (6)	1085	420					1424	604	0.25	-			0.38		0.38	-
SB	9200	9200	1160	610					1780	1006	0.36	*0.19			0.50	*0.31	0.56	*0.31
SBLT	2880	2880	330	605	22	31			293	370	0.11	0.21 *			0.09	0.12 *	0.10	0.13 *
EBRT	0	0	460	95					505	105	-	-			-	-	-	-
EB	4800	4800	455	1110	30	47			570	1525	0.19	0.25			0.22	0.30	0.22	0.34
EBLT	2880	2830	360	1070					465	1426	0.13	*0.37 *			0.16	*0.50 *	0.16	*0.50 *
WBRT	1600	1600 (4)	290	520	6	39			106	414	0.05	0.12			0.01	0.11	-	0.13
WB	4800	4800	1295	790	9	59			1642	1072	0.26	*0.16 *			0.34	*0.21 *	0.34	*0.22 *
WBLT	2080	2080	490	295	6	39			645	440	0.16	0.10			0.22	0.14	0.22	0.15
									Yellow Allowance:		0.10	*0.10 *			0.10	*0.10 *	0.10	*0.10 *
									ICU LOS Value		1.07 F	1.06 F			1.40 F	1.29 F	1.40 F	1.31 F

Notes:

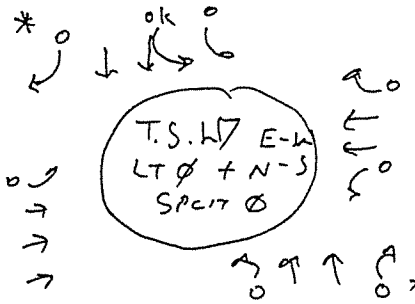
(a) Excludes PTs in RTO lane
(b) LT volumes in excess of _____ WBO treated as a separate left turn signal phase
(c) Double turn lane capacity 1.8 * sgle lane = 2880
(d) NET V/C = TOTAL V/C - WBLT V/C
(e) NLT V/C = TOTAL V/C - EBLT V/C
(f) NLT V/C = TOTAL V/C - SBLT V/C

SITE/TOTAL ⇒ AM = $\frac{98}{8598} = 1.1\%$

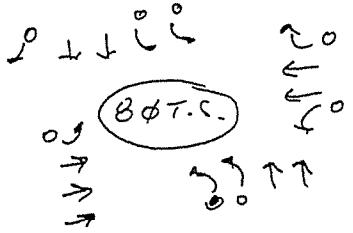
PM = $\frac{246}{9360} = 2.6\%$

INTERSECTION: Soledad Cyn & White's Cyn Rd. JOB NUMBER: 980703 (10/25)

EXISTING I/S G.D. & T.S. CONTROL



FUTURE I/S G.D. & T.S. CONTROL



Approach Traffic Movement	Capacity		Peak Hour Traffic Volumes: Exist. AM	Exist. PM	Site AM	Site PM			Tot. 1995 AM	Tot. 1995 PM	V/C Ratios (Critical w/*): Exist. AM	Exist. PM			1995 W/O Site AM	1995 W/O Site PM	Tot 1995 AM	Tot 1995 PM
	EXISTING																	
NBRT	1600(d)		35	80	–	–			40	90	–	–						
NB	3200	3200	25	130	–	–			515	966	.01	.04			.17	.33	.17	.33
NBLT	1600	2880(c)	40	100	22	31			494	814	.03*	.06*			.16*	.27*	.17*	.28*
SBRT	1600(b)	1600(g)	220	125	22	31			264	185	.08	–			.07	–	.09	–
SB	4800	3200	790	125	–	–			827	1004	.19*	.13*			.26*	.31*	.26*	.31*
SBLT		2880(c)	335	520	–	–			502	433					.17	.15	.17	.15
EBRT			20	70	6	39			559	456								
EB	4800	4800	700	1410	15	98			383	1476	.16	.31			.19	.37	.20	.40
EBLT	1600	1600	95	245	9	59			135	340	.06*	.15*			.08*	.18*	.08*	.21*
WBRT	1600(f)	1600(g)	365	770	–	–			388	614	.04	.35			.07	.23	.07	.23
WB	3200	3200	1315	1320	55	78			1384	1024	.41*	.41*			.42*	.30*	.43*	.32*
WBLT	1600	1600	25	115	–	–			30	125	.02	.07			.02	.08	.02	.08
YELLOW											.10*	.10*			.10*	.10*	.10*	.10*
TOTAL ICU:											.79	.85			1.02	1.16	1.04	1.22
Level of Service:											C	D			F	F	F	F

NOTES:

(a) Exclude RT's in separate RTO lane

(b) LT volumes in excess of _____ VPH treated as a separate left turn signal phase

(c) Double turn lane capacity 2880 VPH

(d) NET V/C = TOTAL V/C – WBLT V/C

(e) NET V/C = TOTAL V/C – EBLT V/C

(f) NET V/C = TOTAL V/C – MAX SB. V/C

(g) NET V/C = TOTAL V/C – SB LT V/C

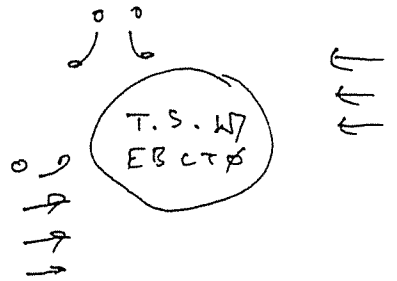
SITE/TOTAL ⇒ AM = $\frac{129}{5516}$ = 2.3 %

PM = $\frac{336}{7521}$ = 4.5 %

INTERSECTION: Soledad Cyn Rd. & Primary Access Dwy JOB NUMBER: 880703

EXISTING
I/S G.D.
& T.S.
CONTROL

FUTURE
I/S G.D.
& T.S.
CONTROL



Approach Traffic Movement	Capacity		Peak Hour Traffic Volumes								V/C Ratios (Critical w/*)							
									1995								1995	
	EXISTING	1995	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
NBRT																		
NB																		
NBLT																		
SBRT		1600							10	63							.01	.04
SB																		
SBLT		1600							54	344							.03*	.22*
EBRT																		
EB		4800							1070	2439							.22	.51*
EBLT		1600							97	159							.06*	.10
WBRT																		
WB		4800							2306	1785							.48*	.37
WBLT																		
YELLOW																	.10*	.10*
TOTAL ICU:																	.67	.83
Level of Service:																	B	D

NOTES:

(a) Exclude RT's in separate RTO lane

(b) LT volumes in excess of _____ VPH treated as a separate left turn signal phase

(c) Double turn lane capacity

(d)