

# Darnell & ASSOCIATES

TRANSPORTATION PLANNING & TRAFFIC ENGINEERING

October 30, 2019

Vicky Barklis  
Carefield Solana LLC  
201 Loma Santa Fe Drive  
Solana Beach, CA. 92075

D&A Ref. No: 190102

Subject: Revised Traffic Analysis for the Carefield Solana Assisted Care Facility located on the northside of Old Mission Road east of Thoroughbred Lane north of State Route 76 (SR-76) in the Bonsall area of San Diego County. (Environmental Log No: PDS2018-MPA-18-019), APN 126-230-55-00

Dear Ms. Barklis:

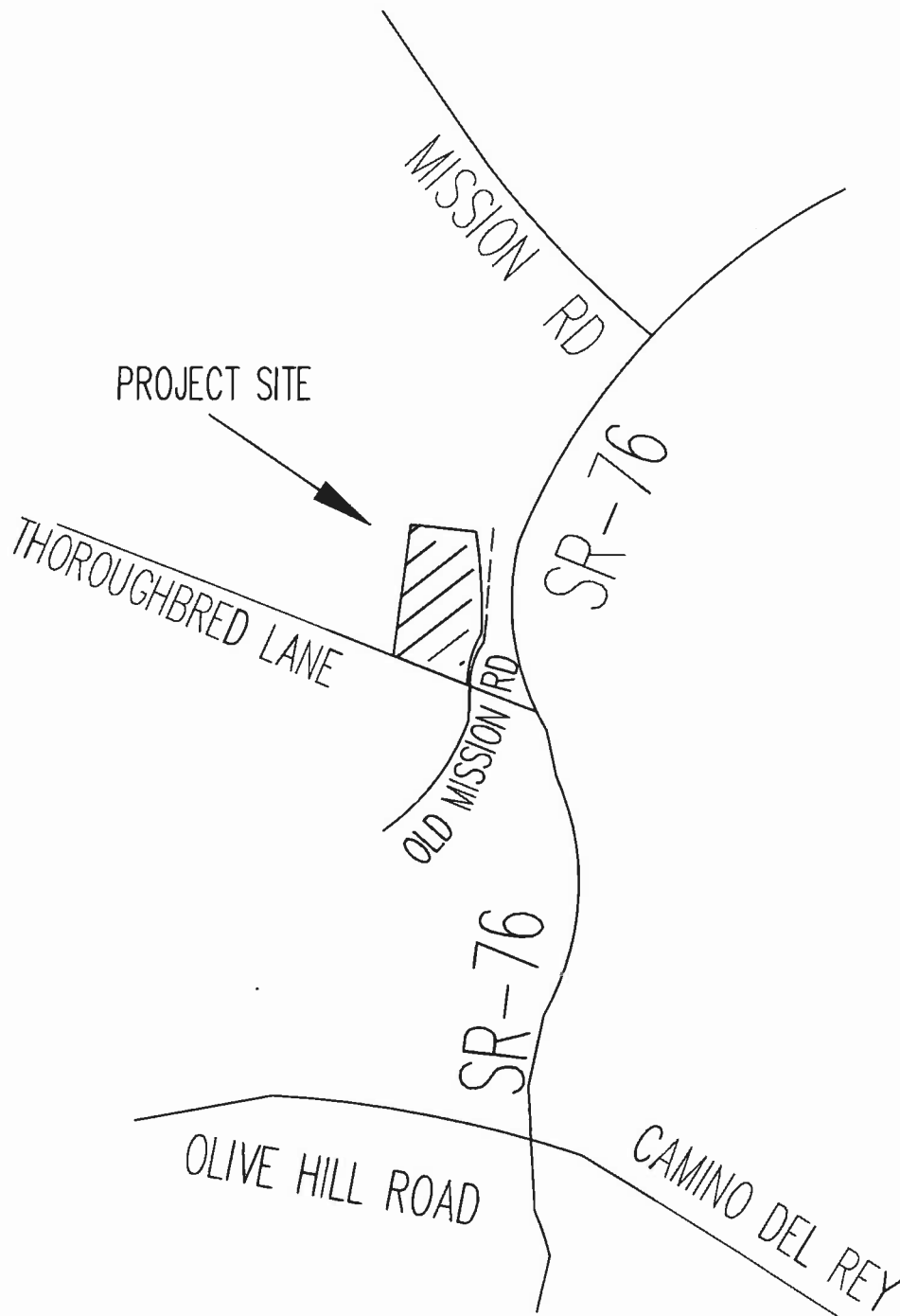
Our July 11, 2019 report has been revised to add comparison of project trips to County requirements and corner sight distance certification and revise the report to respond to County Comments. The report discusses project trip generation and discussion of traffic study requirements based on project trip generation and County requirements,

## Project Trip Generation

The project proposes development of 56 Assisted Living and 30 Memory Care Units on the north-side of Old Mission Road east of Thoroughbred Lane/State Route 76 (SR-76) in the Bonsall Area in San Diego County. **Figure 1** is a Vicinity Map showing the project location and **Figure 2** is a copy of the Projects Site Plan.

The first step in the analysis requires the preparation of project trip generation for the project. Table 1 presents the anticipated trip generation for the project. The trip generation used in this report uses the ITE Code 254 for the Assisted Living and ITE Code 620 for the Memory Care Use.

Table 1 — Project Trip Generation Rates and Trip Generation									
a) TRIP GENERATION RATES									
Land Use	ITE Code	Daily ADT	AM PEAK			PM PEAK			
			Rate	In	Out	Rate	In	Out	
Senior Residential Care Assisted Living	254	2.60/per Bed	0.19/per Bed	63%	37%	0.26/per Bed	38%	62%	
Memory Care Nursing Home	620	3.06/per Bed	0.17/per Bed	72%	28%	0.22/per Bed	33%	67%	
TRIP GENERATION CALCULATIONS									
Land Use	ITE Code	Density	ADT	AM PEAK			PM PEAK		
				In	Out	Total	In	Out	Total
Senior Residential Care Assisted Living	254	56	146	7	4	11	6	9	15
Memory Care Nursing Home	620	30	92	3	2	5	2	7	7
Total:			238	10	6	16	8	14	22
Notes: ADT = Average Daily Traffic a) Rates per ITE Code									



LEGEND

 - PROJECT SITE

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FIGURE 1  
VICINITY MAP

PRELIMINARY GRADING PLAN  
FOR  
CAREFIELD SENIOR CARE FACILITY, BONSAI, CALIFORNIA



MARK A. FARRINGTON, P.E. NO. 30114  
 CIVIL ENGINEERING  
 1679 VIA FERRIS  
 SAN JOSE, CA 95128  
 (408) 675-4498

FIGURE 2 - PROPOSED PROJECT SITE PLAN

Review of Table 1 shows the project will generate 238 Daily, 16 AM peak hour trips (10 In/6 Out) and 22 PM peak hour trips (8 In/ 14 Out). The distribution of the project is presented on **Figure 3**.

### **County of San Diego Traffic Study Requirements**

The next step in the analysis is the comparison of project traffic to the County Guidelines.

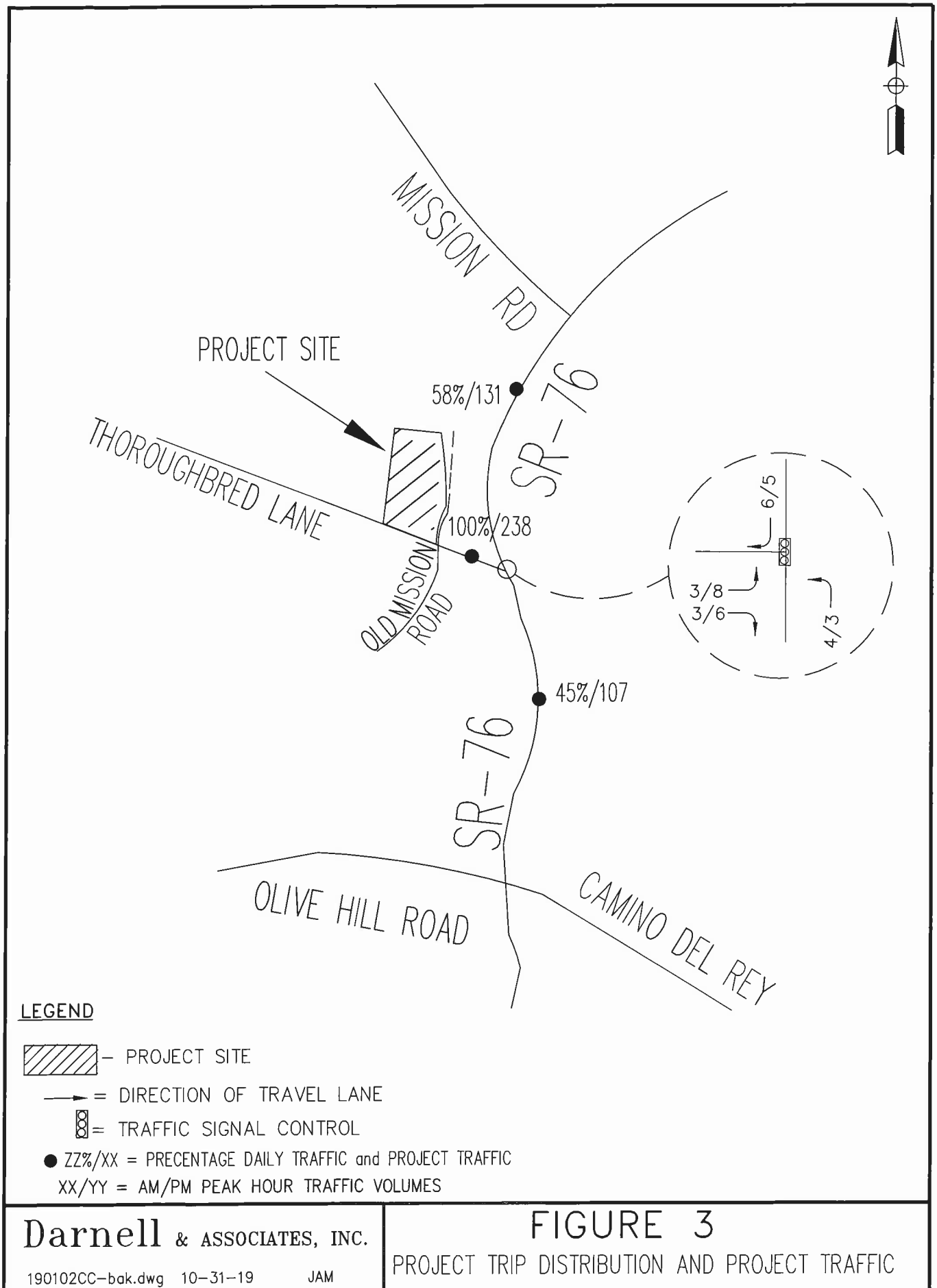
Section 2.1 of the County of San Diego Transportation and Traffic Report Format and Contents Requirements identifies criteria to determine the need to prepare and types of Traffic Impact Studies.

Table 2 presents the County of San Diego criteria to determine the need and content of required Traffic Impact Studies for the project. The project falls within the top 2 categories.

Table 2 - County Criteria for the Need to Prepare a Traffic Impact Study (TIS)				
Project Generated Traffic *	Issue Specific TIS	Focused TIS	Full TIS Needed	Congestion Management Analysis Needed
Less than 200 Average Daily Trips OR Less than 20 Peak Hour Trips	No*	No*	No	No
200-500 Average Daily Trips OR 20-50 Peak Hour Trips	Yes	No	No	No
500 Average Daily Trips OR 50 Peak Hour Trips	No	Yes	No	No
1,000 Average Daily Trips OR 100 Peak Hour Trips	No	No	Yes	No
2,400 Average Daily Trips OR 200 Peak Hour Trips	No	No	Yes	Yes
* Other situations could result in a request for an Issue Specific or Focused Traffic Impact Study. These include, but are not limited to, those issues addressed in this report. <b>NOTE:</b> Analysis of cumulative traffic impacts may require a Traffic Impact Study, even when the project generated traffic volumes alone do not.				

Comparison of the project traffic shown on **Figure 3** and Table 1 Trip Generation to the Table 2 County Criteria to prepare a Traffic Impact Study (TIS) identifies the project generates 238 daily trips, 16 AM peak hour trips (10 In/6 Out) and 22 PM peak hour trips (8 In/ 14 Out). Based on the County Criteria the projects daily 238 trips may identify the need to prepare a specific issue TIS. We also collected existing daily traffic on Thoroughbred Lane and Old Mission Road adjacent to the project site and the existing Old Mission Road west of Thoroughbred Lane that serves an existing small commercial center. **Figure 4** presents the existing daily traffic counts.

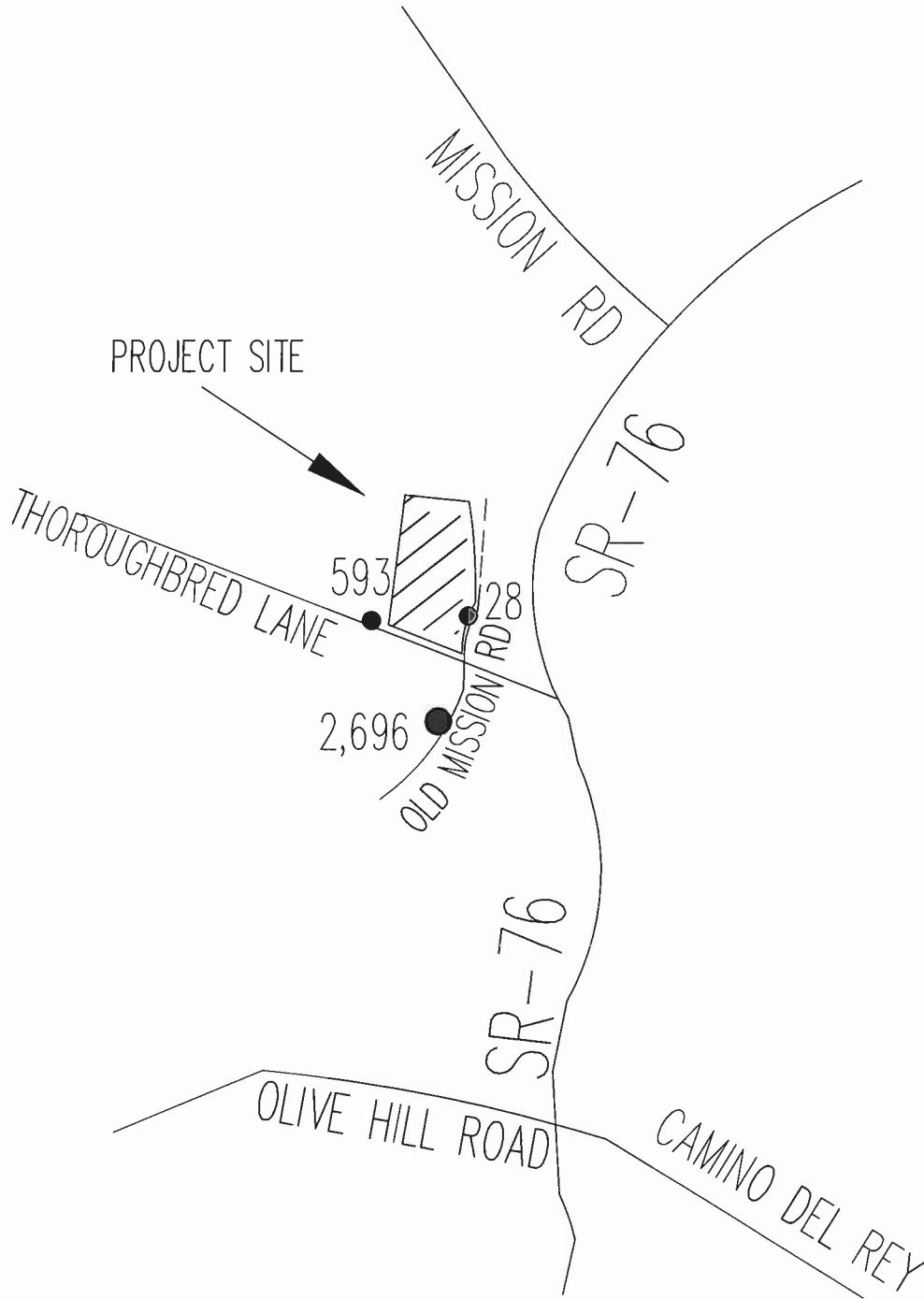
To determine if an Issue Specific TIS is required, based on Table 2 project generated traffic criteria. We then identified the amount of traffic to be added to the County of San Diego Mobility Element roadways, where 200-500 average daily trips (ADT) would be added.



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JAM



LEGEND

 - PROJECT SITE

● ZZZ = DAILY TRAFFIC VOLUMES

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**FIGURE 4**

EXISTING DAILY TRAFFIC VOLUMES

After coordination with County staff, it was verified that the intent of the Issue Specific TIS is to determine if the project will impact or alter the design of nearby intersections or road segments. Considering that this project is just over the threshold for requiring a TIS per County Guidelines, and the 2017 widening of the SR-76/Thoroughbred Lane intersection to its ultimate configuration, it was concluded that this project's added trips would not result in a significant impact and no further intersection or road segment analysis was required.

### **Corner Sight Distance Certification**

Based on the County of San Diego criteria the projects access is on Old Mission Road at Thoroughbred Lane. Based on County of San Diego criteria, Corner Sight Distance certification is required looking west on Thoroughbred Lane and looking east on thoroughbred Lane from Old Mission Road, based on the higher of the Design Speed or the Prevailing Speed of the roadway. Thoroughbred Lane is a Non-Mobility Element roadway with a County Design Speed of 30 mile per hour (MPH). Observations of traffic on Thoroughbred Lane approaching the projects Old Mission Road access concluded the 30 MPH Design Speed was recommended for corner sight distance certification, based on the volume of traffic on Thoroughbred Lane and the close proximity of State Route 76 (SR-76)/Thoroughbred Lane signalized intersection.

Based on this criteria, looking west on Thoroughbred Lane from Old Mission Road at eastbound traffic requires 300 feet of Corner Sight Distance, based on 10 feet times the 30 mile per hour requirement. Looking east on Thoroughbred Lane requires certification that the vehicles looking east to the State Route 76 (SR-76) intersection can observe traffic entering Thoroughbred Lane from Old Mission Road. **Figures 5 and 6** were then prepared showing the required Corner Sight Distance. Based on review of **Figures 5 and 6** it was concluded 300 feet of Corner Sight Distance for project traffic looking northwest on Thoroughbred Lane from Old Mission Road at eastbound traffic and project traffic looking southeast at traffic entering Thoroughbred Lane from Old Mission Road intersection can be certified. Photographs of the available corner sight distance is presented in Attachment B. A separate corner sight distance certification will be submitted.

### **Caltrans Requirements**

The final step in our analysis, we reviewed the Caltrans Guide for Preparation of Traffic Impact Studies. Review of the Caltrans Guide concluded that the addition of the projects 238 daily, 16 AM peak hour trips and the 22 PM peak hour trips to the State Route 76 (SR-76)/Thoroughbred Lane intersection would be less than the 50 peak hour Caltrans Criteria that would require any additional analysis. Therefore, it can be concluded that no additional traffic analysis is required, however a copy of the report will be forwarded to Caltrans for review and comment.





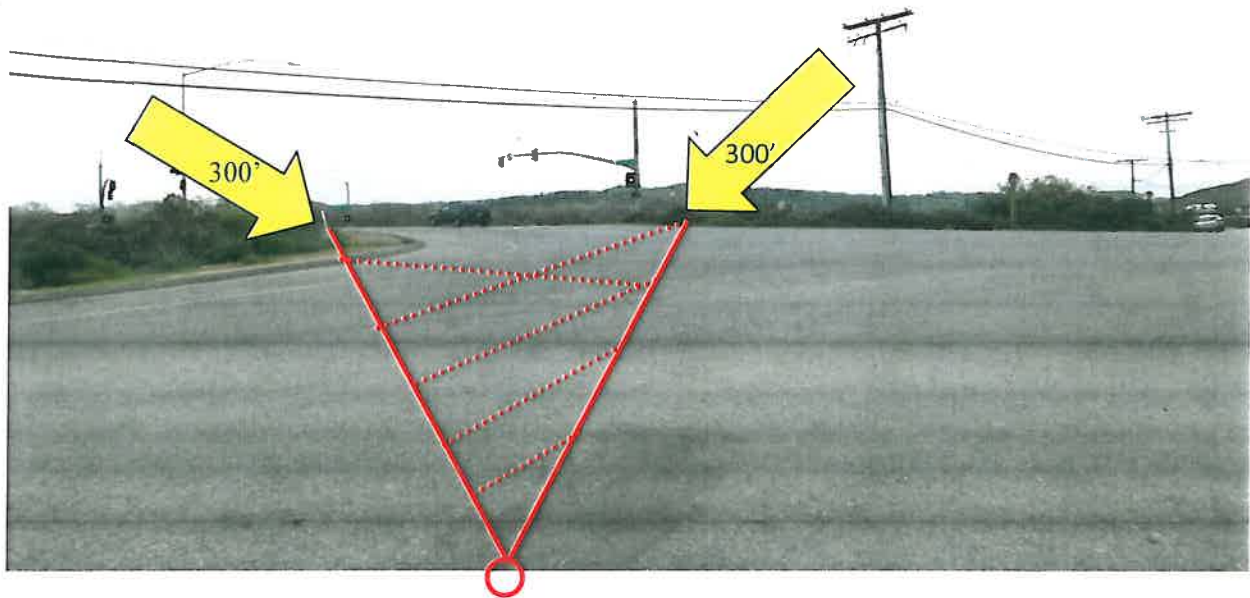
FIGURE 5

Corner Sight Distance

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Looking Southeast on Thoroughbred lane from Old Mission Road Access



Looking Northwest on Thoroughbred lane from Old Mission Road Access

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## FIGURE 6

Looking Northwest and Southeast on  
Thoroughbred lane from Old Mission Road  
Access to SR-79

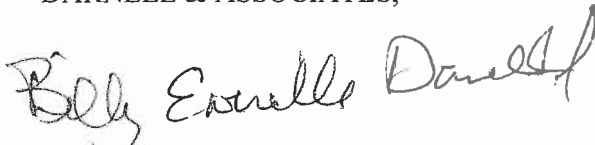
**Summary**

- The project is estimated to generate 238 daily, 16 AM peak hour trips (10 in/6 out) and the 22 PM peak hour trips (8 in/14 out).
- Corner Sight Distance Certification of 300 feet looking northwest and southeast on Thoroughbred Lane from Old Mission Road can be certified.
- Based on County and Caltrans criteria it is concluded that additional traffic analysis is not required.

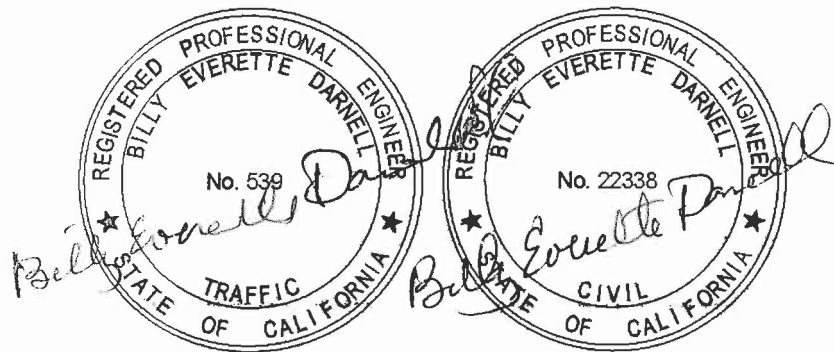
Excerpts from the County of San Diego Transportation and Traffic Report Format and Content and the guide for preparation of traffic Impact Studies and Caltrans Guide for Traffic Studies are attached.

Sincerely,

DARNELL & ASSOCIATES,

  
Billy E. Darnell, P.E.

RCE: 22338



10/31/2019  
(Date)

BED/jam

190102 -Revised Carefield Solana Assisted Care Facility Trip Generation Assessment Report 10-30-19

## ATTACHMENT A:

- Existing Daily Traffic Counts
- ITE Trip Generation Code 254 Assisted Living and Code 620  
Nursing Home Memory Care;
- Excerpts from the County of San Diego Transportation and Traffic Report  
Format and Content Requirements;
- Excerpts from Caltrans Guide of Preparation of Traffic Impact Studies

Prepared by NDS/ATD

**VOLUME**

Old Mission Rd N/O Thoroughbred Ln

Day: Tuesday  
Date: 3/5/2019City: Bonsall  
Project #: CA19\_4104\_001

DAILY TOTALS					NB	SB	EB	WB	Total		
					LS	RS	L	R	TS		
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL
00:00	0	0			0	12:00	0	0			0
00:15	0	0			0	12:15	0	0			0
00:30	0	0			0	12:30	0	2			2
00:45	0	0			0	12:45	0	0	2		2
01:00	0	0			0	13:00	0	0			0
01:15	0	0			0	13:15	0	0			0
01:30	0	0			0	13:30	0	0			0
01:45	0	0			0	13:45	2	2	1	1	3
02:00	0	0			0	14:00	0	0			0
02:15	0	0			0	14:15	0	0			0
02:30	0	0			0	14:30	1	0			1
02:45	0	0			0	14:45	0	1	1	1	2
03:00	0	0			0	15:00	0	0			0
03:15	0	0			0	15:15	0	0			0
03:30	0	0			0	15:30	0	0			0
03:45	0	0			0	15:45	0	1	1		1
04:00	0	0			0	16:00	1	0			1
04:15	0	0			0	16:15	0	0			0
04:30	0	0			0	16:30	0	0			0
04:45	0	0			0	16:45	0	1	0		1
05:00	0	0			0	17:00	0	0			0
05:15	0	0			0	17:15	1	0			1
05:30	0	0			0	17:30	0	0			0
05:45	0	0			0	17:45	0	1	0		1
06:00	0	0			0	18:00	0	0			0
06:15	0	0			0	18:15	0	0			0
06:30	0	0			0	18:30	0	0			0
06:45	0	0			0	18:45	0	0			0
07:00	0	0			0	19:00	1	0			1
07:15	0	0			0	19:15	0	1			1
07:30	0	0			0	19:30	0	0			0
07:45	0	0			0	19:45	0	1	0	1	2
08:00	0	0			0	20:00	0	0			0
08:15	0	0			0	20:15	0	0			0
08:30	0	0			0	20:30	0	0			0
08:45	1	1	0		1	20:45	0	0			0
09:00	2	0			2	21:00	0	0			0
09:15	0	1			1	21:15	0	0			0
09:30	0	0			0	21:30	0	0			0
09:45	1	3	0	1	1	21:45	0	0			0
10:00	0	0			0	22:00	0	0			0
10:15	0	0			0	22:15	0	0			0
10:30	0	1			1	22:30	0	0			0
10:45	0	1	2		1	22:45	0	0			0
11:00	2	1			3	23:00	1	1			2
11:15	1	2			3	23:15	0	0			0
11:30	1	0			1	23:30	0	0			0
11:45	0	4	0	3	0	23:45	0	1	0	1	2
TOTALS	8	6			14	TOTALS	7	7			14
SPLIT %	57.1%	42.9%			50.0%	SPLIT %	50.0%	50.0%			50.0%

DAILY TOTALS					NB	SB	EB	WB	Total
					LS	RS	L	R	TS

DAILY TOTALS					NB	SB	EB	WB	Total
					LS	RS	L	R	TS
AM Peak Hour	10:45	10:30			10:30	PM Peak Hour	13:45	12:00	13:45
AM Pk Volume	4	5			8	PM Pk Volume	3	2	4
Pk Hr Factor	0.500	0.625			0.667	Pk Hr Factor	0.375	0.250	0.333
7-9 Volume	1				1	4-6 Volume	2		2
7-9 Peak Hour	08:00				08:00	4-6 Peak Hour	16:00		16:00
7-9 Pk Volume	1				1	4-6 Pk Volume	1		1
Pk Hr Factor	0.250				0.250	Pk Hr Factor	0.250		0.250



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**VOLUME**

Thoroughbred Ln W/O Old Mission Rd

Day: Tuesday

Date: 3/5/2019

City: Bonsall

Project #: CA19\_4104\_002

DAILY TOTALS					NS	SS	ES	WS	TOTAL		
					0	0	298	298	596		
AM Period	NS	SS	ES	WS	TOTAL	PM Period	NS	SS	ES	WS	TOTAL
00:00			0	0	0	12:00			4	3	7
00:15			0	0	0	12:15			2	5	7
00:30			0	0	0	12:30			5	7	12
00:45			0	0	0	12:45			4	15	19
01:00			0	0	0	13:00			4	6	10
01:15			0	0	0	13:15			5	4	9
01:30			0	0	0	13:30			3	3	6
01:45			0	0	0	13:45			4	16	20
02:00			0	0	0	14:00			5	4	9
02:15			0	0	0	14:15			3	4	7
02:30			0	0	0	14:30			4	7	11
02:45			0	0	0	14:45			6	18	24
03:00			0	0	0	15:00			2	4	6
03:15			0	0	0	15:15			3	5	8
03:30			0	0	0	15:30			5	10	15
03:45			0	0	0	15:45			7	17	24
04:00			0	0	0	16:00			6	6	12
04:15			2	0	2	16:15			3	9	12
04:30			1	0	1	16:30			2	9	11
04:45			4	7	11	16:45			4	15	19
05:00			0	0	0	17:00			8	13	21
05:15			0	0	0	17:15			8	5	13
05:30			5	0	5	17:30			6	9	15
05:45			2	7	9	17:45			4	26	30
06:00			5	1	6	18:00			5	11	16
06:15			10	2	12	18:15			2	3	5
06:30			7	1	8	18:30			1	7	8
06:45			6	28	34	18:45			3	11	14
07:00			8	1	9	19:00			0	2	2
07:15			8	1	9	19:15			1	2	3
07:30			5	2	7	19:30			0	1	1
07:45			6	27	33	19:45			2	3	5
08:00			9	6	15	20:00			1	4	5
08:15			5	4	9	20:15			1	6	7
08:30			9	4	13	20:30			5	2	7
08:45			7	30	37	20:45			0	7	7
09:00			11	3	14	21:00			1	3	4
09:15			2	2	4	21:15			0	3	3
09:30			8	2	10	21:30			1	5	6
09:45			4	25	29	21:45			2	4	6
10:00			4	3	7	22:00			0	2	2
10:15			6	1	7	22:15			0	0	0
10:30			8	4	12	22:30			0	0	0
10:45			6	24	30	22:45			0	1	1
11:00			4	2	6	23:00			1	3	4
11:15			6	5	11	23:15			1	0	1
11:30			2	7	9	23:30			0	0	0
11:45			4	16	20	23:45			0	2	2
TOTALS			164	67	231	TOTALS			134	228	362
SPLIT %			71.0%	29.0%	39.0%	SPLIT %			37.0%	63.0%	61.0%

DAILY TOTALS					NS	SS	ES	WS	TOTAL
					0	0	298	298	596
AM Peak Hour	08:15	11:15	07:45	PM Peak Hour	16:45	16:15	17:00		
AM Pk Volume	32	18	46	PM Pk Volume	26	38	61		
Pk Hr Factor	0.727	0.643	0.767	Pk Hr Factor	0.813	0.731	0.726		
7 - 9 Volume	57	22	79	4 - 6 Volume	41	66	107		
7 - 9 Peak Hour	08:00	07:45	07:45	4 - 6 Peak Hour	16:45	16:15	17:00		
7 - 9 Pk Volume	30	17	46	4 - 6 Pk Volume	26	38	61		
Pk Hr Factor	0.833	0.708	0.767	Pk Hr Factor	0.813	0.731	0.726		

Prepared by NDS/ATD

**VOLUME**

Old Mission Rd S/O Thoroughbred Ln

Day: Tuesday

Date: 3/5/2019

City: Bonsall

Project #: CA19\_4104\_003

DAILY TOTALS					NS	SE	ES	WB	TOTAL		
					1,425	1,158	0	0	2,583		
AM Period	NS	SE	ES	WB	TOTAL	PM Period	NS	SE	ES	WB	TOTAL
00:00	2	1			3	12:00	35	38			73
00:15	3	2			5	12:15	42	38			80
00:30	0	0			0	12:30	30	27			57
00:45	0	5	0	3	8	12:45	25	132	24	127	49
01:00	0	0			0	13:00	22	15			37
01:15	0	0			0	13:15	22	22			44
01:30	0	0			0	13:30	21	26			47
01:45	1	1	1	1	2	13:45	16	81	22	85	38
02:00	0	0			0	14:00	35	30			65
02:15	0	0			0	14:15	29	34			63
02:30	0	0			0	14:30	25	35			60
02:45	0	1	1		1	14:45	30	119	34	133	64
03:00	0	0			0	15:00	35	29			64
03:15	0	0			0	15:15	39	38			77
03:30	0	0			0	15:30	32	35			67
03:45	1	1	1	1	2	15:45	25	131	28	130	58
04:00	0	0			0	16:00	27	38			65
04:15	0	0			0	16:15	21	30			51
04:30	1	2			3	16:30	25	25			50
04:45	4	5	5	7	9	16:45	33	106	25	118	58
05:00	1	1			2	17:00	22	27			49
05:15	1	3			4	17:15	33	30			63
05:30	4	5			9	17:30	28	15			43
05:45	3	9	8	17	11	17:45	17	100	15	87	32
06:00	7	8			15	18:00	17	18			35
06:15	9	11			20	18:15	17	17			34
06:30	9	17			26	18:30	17	13			30
06:45	17	42	17	53	34	18:45	16	67	12	60	28
07:00	8	10			18	19:00	9	11			20
07:15	10	10			20	19:15	14	5			19
07:30	17	23			40	19:30	4	4			8
07:45	10	45	16	59	26	19:45	8	35	11	31	19
08:00	19	14			33	20:00	11	6			17
08:15	10	10			20	20:15	7	7			14
08:30	12	18			30	20:30	15	9			24
08:45	14	55	16	58	30	20:45	11	44	4	26	15
09:00	19	24			43	21:00	9	8			17
09:15	15	20			35	21:15	4	5			9
09:30	21	24			45	21:30	10	9			19
09:45	17	72	31	99	48	21:45	4	27	2	24	6
10:00	26	24			50	22:00	2	1			3
10:15	30	28			58	22:15	3	3			6
10:30	29	28			57	22:30	7	5			12
10:45	21	106	27	107	48	22:45	1	13	3	12	4
11:00	20	24			44	23:00	2	5			7
11:15	29	32			61	23:15	2	2			4
11:30	42	32			74	23:30	0	1			1
11:45	36	127	31	119	67	23:45	1	5	2	10	3
TOTALS	468	525			993	TOTALS	860	843			1703
SPLIT %	47.1%	52.9%			36.8%	SPLIT %	50.5%	49.5%			63.2%

DAILY TOTALS					NS	SE	ES	WB	Total
					1,425	1,158	0	0	2,583

AM Peak Hour	11:30	11:30	11:30	PM Peak Hour	14:45	15:15	14:45
AM Pk Volume	155	139	294	PM Pk Volume	136	139	272
Pk Hr Factor	0.923	0.914	0.919	Pk Hr Factor	0.872	0.914	0.883
7 - 9 Volume	100	117	217	4 - 6 Volume	206	205	411
7 - 9 Peak Hour	07:15	07:15	07:15	4 - 6 Peak Hour	16:45	16:00	16:00
7 - 9 Pk Volume	56	63	119	4 - 6 Pk Volume	116	118	224
Pk Hr Factor	0.737	0.685	0.744	Pk Hr Factor	0.879	0.776	0.862



## **Land Use: 254 Assisted Living**

### **Description**

An assisted living complex is a residential setting that provides either routine general protective oversight or assistance with activities necessary for independent living to mentally or physically limited persons. It commonly has separate living quarters for residents. Its services typically include dining, housekeeping, social and physical activities, medication administration, and transportation. Alzheimer's and ALS care are commonly offered by these facilities, though the living quarters for these patients may be located separately from the other residents. Assisted care commonly bridges the gap between independent living and nursing homes. In some areas of the country, assisted living residences may be called personal care, residential care, or domiciliary care. Staff may be available at an assisted care facility 24 hours a day, but skilled medical care—which is limited in nature—is not required. Congregate care facility (Land Use 253), continuing care retirement community (Land Use 255), and nursing home (Land Use 620) are related uses.

### **Additional Data**

The rooms in these facilities may be private or shared accommodations, consisting of either a single room or a small apartment-style unit with a kitchenette and living space.

Time-of-day distribution data for this land use are presented in Appendix A. For the four general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 11:30 a.m. and 12:30 p.m. and 12:30 and 1:30 p.m., respectively.

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in New Jersey, New York, Oregon, Pennsylvania, Tennessee, and Texas.

### **Source Numbers**

244, 573, 581, 611, 725, 876, 877, 912

## Assisted Living (254)

Vehicle Trip Ends vs: Beds  
On a: Weekday

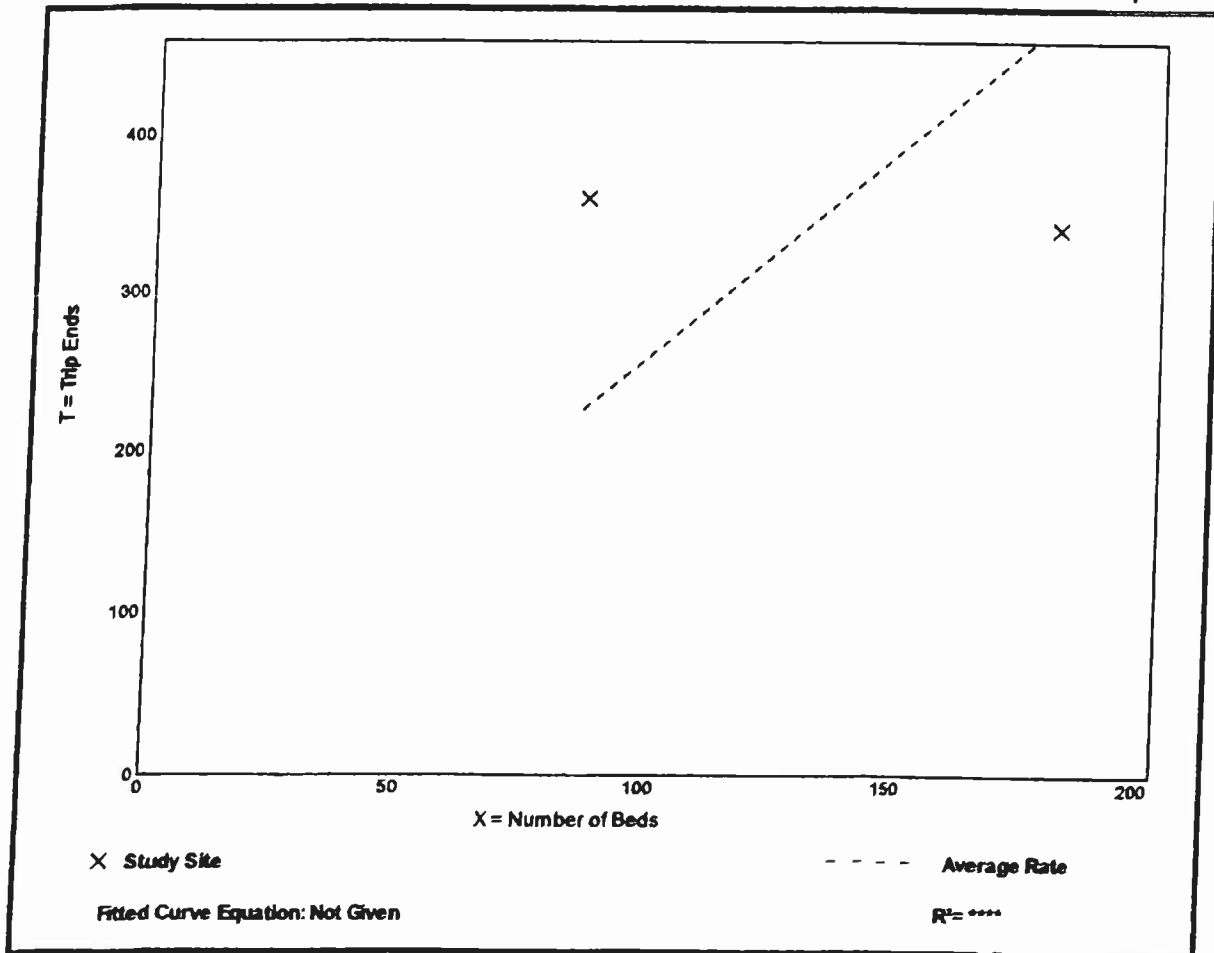
Setting/Location: General Urban/Suburban  
Number of Studies: 2  
Avg. Num. of Beds: 135  
Directional Distribution: 50% entering, 50% exiting

### Vehicle Trip Generation per Bed

Average Rate	Range of Rates	Standard Deviation
2.60	1.86 - 4.14	*

### Data Plot and Equation

*Caution – Small Sample Size*



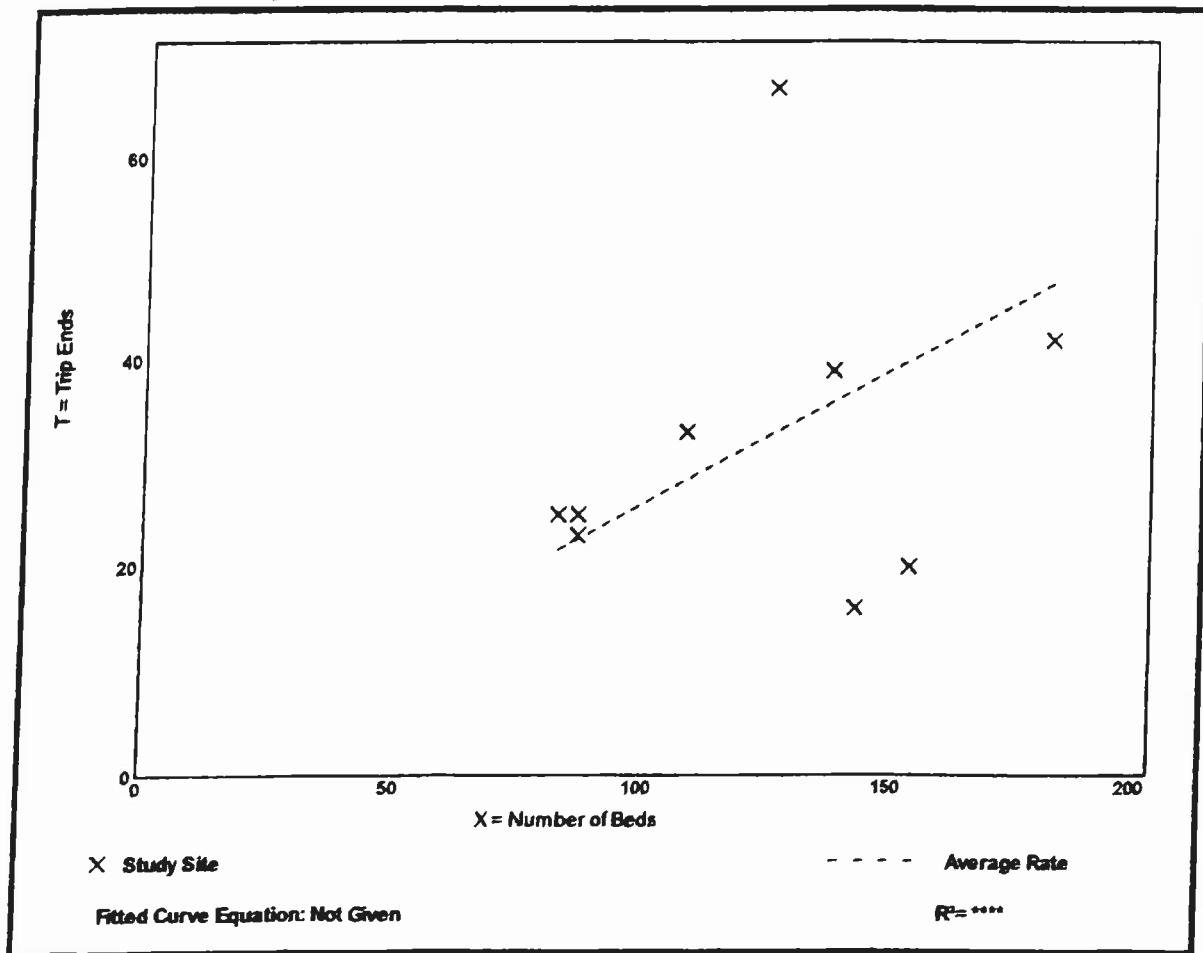
## Assisted Living (254)

Vehicle Trip Ends vs: **Beds**  
 On a: **Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 4 and 6 p.m.**  
 Setting/Location: **General Urban/Suburban**  
 Number of Studies: **9**  
 Avg. Num. of Beds: **123**  
 Directional Distribution: **38% entering, 62% exiting**

### Vehicle Trip Generation per Bed

Average Rate	Range of Rates	Standard Deviation
0.26	0.11 - 0.53	0.13

### Data Plot and Equation



## Nursing Home (620)

Vehicle Trip Ends vs: Beds  
On a: Weekday

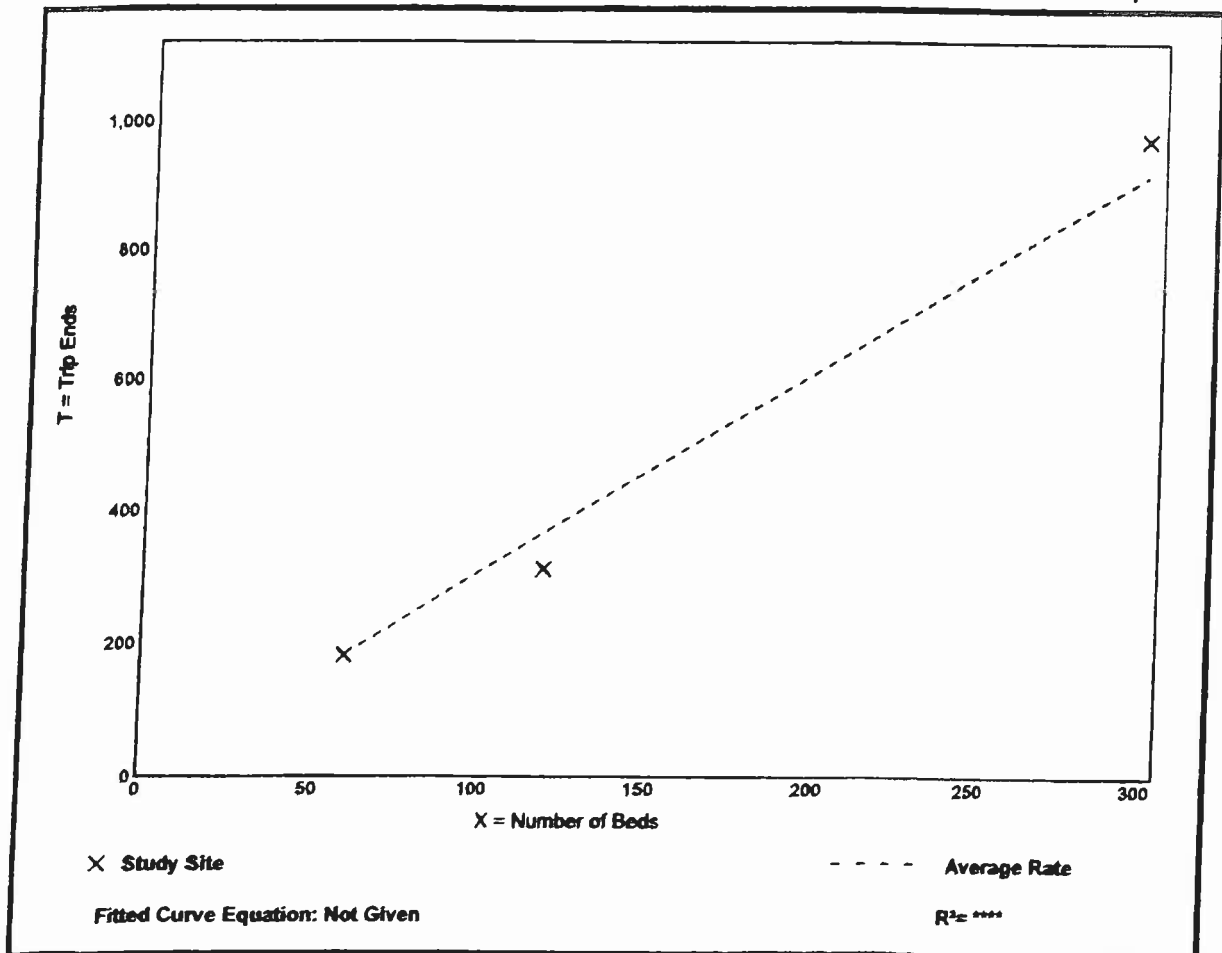
Setting/Location: General Urban/Suburban  
Number of Studies: 3  
Avg. Num. of Beds: 160  
Directional Distribution: 50% entering, 50% exiting

### Vehicle Trip Generation per Bed

Average Rate	Range of Rates	Standard Deviation
3.06	2.60 - 3.25	3.64

### Data Plot and Equation

*Caution - Small Sample Size*



## Nursing Home (620)

Vehicle Trip Ends vs: Beds

On a: Weekday,

Peak Hour of Adjacent Street Traffic,  
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 3

Avg. Num. of Beds: 100

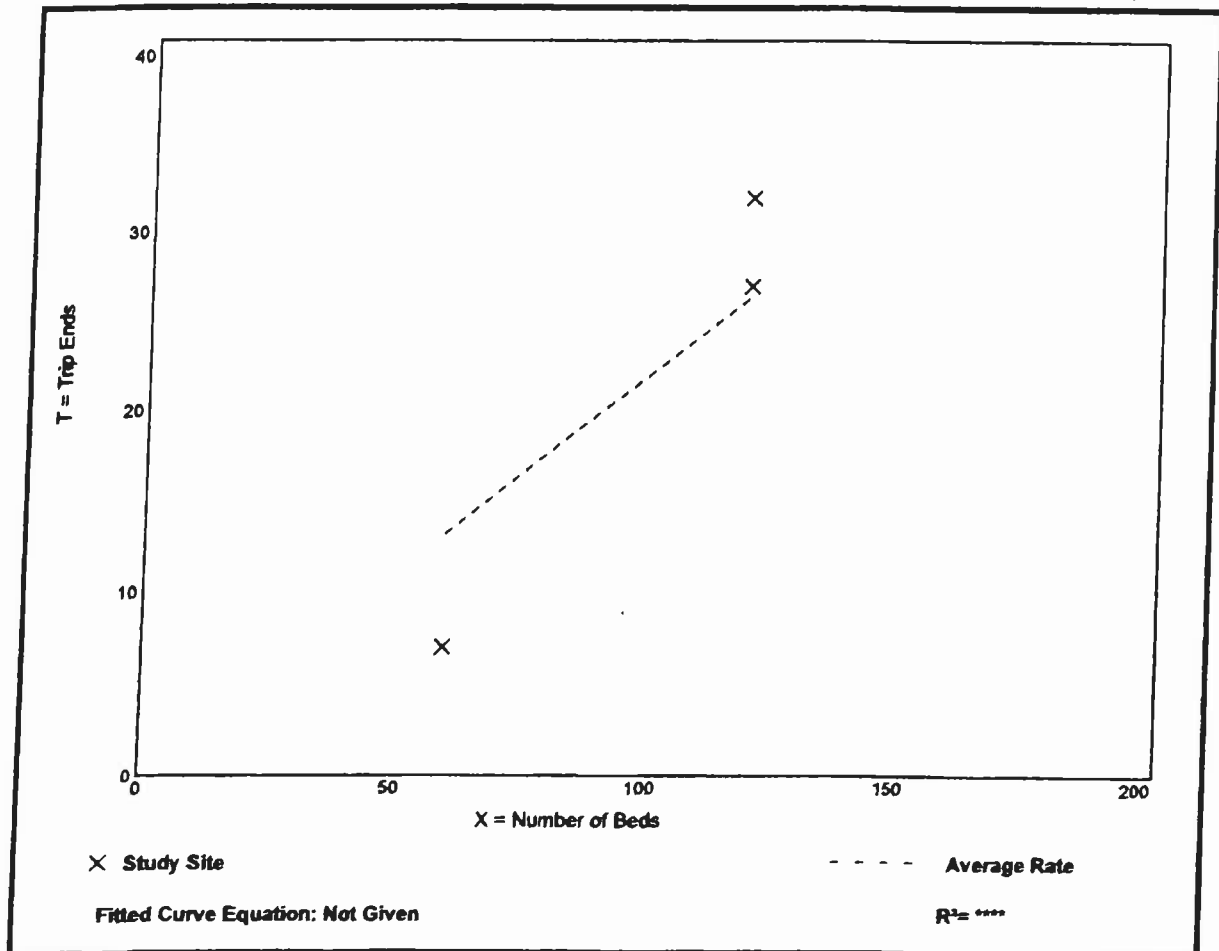
Directional Distribution: 33% entering, 67% exiting

### Vehicle Trip Generation per Bed

Average Rate	Range of Rates	Standard Deviation
0.22	0.12 - 0.27	0.26

### Data Plot and Equation

*Caution – Small Sample Size*



## **1.0 INTRODUCTION**

The purpose of a traffic impact study is to evaluate potential project level and cumulative traffic impacts that may result from a proposed project. Substantial traffic volume increases on roadways or intersections may cause congestion at existing or future roads and intersections. Traffic volume increases may occur from trips generated by the proposed project or a redistribution of traffic that would result from the proposed project. A detailed analysis of the traffic generated or redirected by a proposed project, assessment of potential impacts, and identification of mitigation measures for significant traffic impacts are the main focus of a traffic impact study.

For all discretionary development and public works projects, County staff will evaluate the need for a Traffic Impact Study (TIS). Guidelines for determining when a traffic study is needed and the type of traffic study required are provided in Section 2.1 below (and in Attachment B for road improvement projects). These are intended to serve as a guideline and are not intended to replace sound traffic engineering judgment. The analysis of traffic issues, evaluation of traffic impacts, and development of mitigation measures for traffic impacts are complex tasks. The type and scope of a traffic impact study will vary based upon the size of a project, its location and other factors. Typically, a traffic impact study will include several components as outlined in Section 3.1.

## **2.0 TRAFFIC IMPACT STUDY GUIDANCE**

### **Existing Conditions**

Documentation of the existing traffic volumes, levels of service, and geometrics for roads and intersections that may be potentially impacted by the proposed project must be provided. This assessment is typically based upon traffic counts that are less than two years old, unless it can be demonstrated that traffic volumes have not significantly changed since prior counts were taken. The scope of updated counts may vary depending on the extent of traffic changes. In some cases, only counts for certain segments may need to be updated or it may be adequate to manually update/factor up counts for key intersections or circulation element roads.

Under CEQA, traffic impacts will be evaluated for every discretionary land use project, however not all projects require a TIS. The different types of traffic impact studies and the typical criteria that trigger them are discussed below:

### **2.1 Criteria for Need to Prepare & Types of Traffic Impact Studies**

All discretionary projects and public works projects are required to be evaluated to determine the potential for project-level (direct) or cumulative traffic impacts that may result from implementation of the proposed project. Table 1 below, highlights the typical criteria used (based on ADT) to determine if a TIS is required and what type of TIS is most appropriate. Figure 1 - Significant Project Traffic Impact Assessment Flow Chart is also a useful tool for assessing traffic impacts.



identified. Improvements to mitigate the added delay caused by the project would need to be identified. A traffic assessment to assist in the identification of appropriate mitigation may be required. Refer to attachment C for detailed discussion on the required scope of the cumulative analysis. If the proposed project is located adjacent to another jurisdiction or in close proximity to a freeway ramp, the applicant should coordinate with those jurisdictions or agencies regarding any potential need for traffic studies and/or mitigation.

### **2.1.2 Focused Traffic Impact Study (TIS)**

A Focused TIS shall be prepared for all discretionary projects that generate between 500 and 1,000 total average daily trips (ADT) or between 50 and 100 peak-hour trips. The focused TIS shall assess potential traffic impacts to nearby local roads (streets) and intersections. The scope of the assessment of direct and cumulative traffic impacts should include the assessment of transportation facilities that would receive 25 or more peak hour trips from the proposed project. The 25 peak hour trip threshold should be based on the combined two-way (i.e. both directions, 2-way peak hour total) traffic volume of the roadway segment for either the AM or PM peak period. Other criteria for determining whether a focused traffic analysis is required may include the following:

- The proposed project includes a driveway to be located on a Circulation Element Road within 150 feet of an intersection with another Circulation Element Road.
- The proximity of transportation facilities currently operating at LOS E or F.
- The project includes a driveway that intersects an on-street bicycle lane or crosswalk in an area of high pedestrian activity.
- There are access risks or deficiencies associated with the adjoining street system due to curves, slopes, walls or other barriers to adequate lines of sight.
- The proposed project will result in a road alignment or design, which is inconsistent with the General Plan or community plan for the area or does not align with adjoining or proposed roads.

If the proposed project is located adjacent to another jurisdiction or in close proximity to a freeway ramp, additional cumulative traffic impacts outside the unincorporated area and not identified in the County's TIF program may occur. The applicant should coordinate with those jurisdictions or agencies regarding any potential need for traffic studies or mitigation. Refer to Attachment C for additional direction on determining the required scope of the cumulative analysis.

If the applicant/proposed project proposes to opt out of the County's TIF Program a full, complete and detailed cumulative traffic assessment will be required. Scoping of the detailed cumulative traffic assessment will extend beyond the 25 peak hour trip (2-way peak hour total) limit specified above and should include all roads and intersections that



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**GUIDE FOR THE PREPARATION**

**OF**

**TRAFFIC IMPACT STUDIES**

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**STATE OF CALIFORNIA**  
**DEPARTMENT OF TRANSPORTATION**

**December 2002**

## **PREFACE**

*The California Department of Transportation (Caltrans) has developed this "Guide for the Preparation of Traffic Impact Studies" in response to a survey of cities and counties in California. The purpose of that survey was to improve the Caltrans local development review process (also known as the Intergovernmental Review/California Environmental Quality Act or IGR/CEQA process). The survey indicated that approximately 30 percent of the respondents were not aware of what Caltrans required in a traffic impact study (TIS).*

*In the early 1990s, the Caltrans District 6 office located in Fresno identified a need to provide better quality and consistency in the analysis of traffic impacts generated by local development and land use change proposals that effect State highway facilities. At that time, District 6 brought together both public and private sector expertise to develop a traffic impact study guide. The District 6 guide has proven to be successful at promoting consistency and uniformity in the identification and analysis of traffic impacts generated by local development and land use changes.*

*The guide developed in Fresno was adapted for statewide use by a team of Headquarters and district staff. The guide will provide consistent guidance for Caltrans staff who review local development and land use change proposals as well as inform local agencies of the information needed for Caltrans to analyze the traffic impacts to State highway facilities. The guide will also benefit local agencies and the development community by providing more expeditious review of local development proposals.*

*Even though sound planning and engineering practices were used to adapt the Fresno TIS guide, it is anticipated that changes will occur over time as new technologies and more efficient practices become available. To facilitate these changes, Caltrans encourages all those who use this guide to contact their nearest district office (i.e., IGR/CEQA Coordinator) to coordinate any changes with the development team.*

## **ACKNOWLEDGEMENTS**

*The District 6 traffic impact study guide provided the impetus and a starting point for developing the statewide guide. Special thanks is given to Marc Birnbaum for recognizing the need for a TIS guide and for his valued experience and vast knowledge of land use planning to significantly enhance the effort to adapt the District 6 guide for statewide use. Randy Treece from District 6 provided many hours of coordination, research and development of the original guide and should be commended for his diligent efforts. Sharri Bender Ehlert of District 6 provided much of the technical expertise in the adaptation of the District 6 guide and her efforts are greatly appreciated.*

*A special thanks is also given to all those Cities, Counties, Regional Agencies, Congestion Management Agencies, Consultants, and Caltrans Employees who reviewed the guide and provided input during the development of this Guide for the Preparation of Traffic Impact Studies.*

## I. INTRODUCTION

Caltrans desires to provide a safe and efficient State transportation system for the citizens of California pursuant to various Sections of the California Streets and Highway Code. This is done in partnership with local and regional agencies through procedures established by the California Environmental Quality Act (CEQA) and other land use planning processes. The intent of this guide is to provide a starting point and a consistent basis in which Caltrans evaluates traffic impacts to State highway facilities. The applicability of this guide for local streets and roads (non-State highways) is at the discretion of the effected jurisdiction.

Caltrans reviews federal, State, and local agency development projects<sup>1</sup>, and land use change proposals for their potential impact to State highway facilities. The primary objectives of this guide is to provide:

- ❑ guidance in determining if and when a traffic impact study (TIS) is needed,
- ❑ consistency and uniformity in the identification of traffic impacts generated by local land use proposals,
- ❑ consistency and equity in the identification of measures to mitigate the traffic impacts generated by land use proposals,
- ❑ lead agency<sup>2</sup> officials with the information necessary to make informed decisions regarding the existing and proposed transportation infrastructure (see Appendix A, Minimum Contents of a TIS)
- ❑ TIS requirements early in the planning phase of a project (i.e., initial study, notice of preparation, or earlier) to eliminate potential delays later,
- ❑ a quality TIS by agreeing to the assumptions, data requirements, study scenarios, and analysis methodologies prior to beginning the TIS, and
- ❑ early coordination during the planning phases of a project to reduce the time and cost of preparing a TIS.

## II. WHEN A TRAFFIC IMPACT STUDY IS NEEDED

The level of service<sup>3</sup> (LOS) for operating State highway facilities is based upon measures of effectiveness (MOEs). These MOEs (see Appendix “C-2”) describe the measures best suited for analyzing State highway facilities (i.e., freeway segments, signalized intersections, on- or off-ramps, etc.). Caltrans endeavors to maintain a target LOS at the transition between LOS “C” and LOS “D” (see Appendix “C-3”) on State highway facilities, however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. If an existing State highway facility is operating at less than the appropriate target LOS, the existing MOE should be maintained.

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<sup>1</sup> "Project" refers to activities directly undertaken by government, financed by government, or requiring a permit or other approval from government as defined in Section 21065 of the Public Resources Code and Section 15378 of the California Code of Regulations.

<sup>2</sup> "Lead Agency" refers to the public agency that has the principal responsibility for carrying out or approving a project. Defined in Section 21165 of the Public Resources Code, the "California Environmental Quality Act, and Section 15367 of the California Code of Regulations.

<sup>3</sup> "Level of service" as defined in the latest edition of the Highway Capacity Manual, Transportation Research Board, National Research Council.

## **A. Trip Generation Thresholds**

The following criterion is a starting point in determining when a TIS is needed. When a project:

1. Generates over 100 peak hour trips assigned to a State highway facility
2. Generates 50 to 100 peak hour trips assigned to a State highway facility – and, affected State highway facilities are experiencing noticeable delay; approaching unstable traffic flow conditions (LOS “C” or “D”).
3. Generates 1 to 49 peak hour trips assigned to a State highway facility – the following are examples that may require a full TIS or some lesser analysis<sup>4</sup>:
  - a. Affected State highway facilities experiencing significant delay; unstable or forced traffic flow conditions (LOS “E” or “F”).
  - b. The potential risk for a traffic incident is significantly increased (i.e., congestion related collisions, non-standard sight distance considerations, increase in traffic conflict points, etc.).
  - c. Change in local circulation networks that impact a State highway facility (i.e., direct access to State highway facility, a non-standard highway geometric design, etc.).

Note: A traffic study may be as simple as providing a traffic count to as complex as a microscopic simulation. The appropriate level of study is determined by the particulars of a project, the prevailing highway conditions, and the forecasted traffic.

## **B. Exceptions**

Exceptions require consultation between the lead agency, Caltrans, and those preparing the TIS. When a project’s traffic impact to a State highway facility can clearly be anticipated without a study and all the parties involved (lead agency, developer, and the Caltrans district office) are able to negotiate appropriate mitigation, a TIS may not be necessary.

## **C. Updating An Existing Traffic Impact Study**

A TIS requires updating when the amount or character of traffic is significantly different from an earlier study. Generally a TIS requires updating every two years. A TIS may require updating sooner in rapidly developing areas and not as often in slower developing areas. In these cases, consultation with Caltrans is strongly recommended.

# **III. SCOPE OF TRAFFIC IMPACT STUDY**

Consultation between the lead agency, Caltrans, and those preparing the TIS is recommended before commencing work on the study to establish the appropriate scope. At a minimum, the TIS should include the following:

## **A. Boundaries of the Traffic Impact Study**

All State highway facilities impacted in accordance with the criteria in Section II should be studied. Traffic impacts to local streets and roads can impact intersections with State highway facilities. In these cases, the TIS should include an analysis of adjacent local facilities, upstream and downstream, of the intersection (i.e., driveways, intersections, and interchanges) with the State highway.

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<sup>4</sup> A “lesser analysis” may include obtaining traffic counts, preparing signal warrants, or a focused TIS, etc.

## ATTACHMENT B:

- Corner Sight Distance Photographs at Thoroughbred Lane/Private Road.



➤ Sight Distance Photos



Looking West on Thoroughbred Lane from Old Mission Road Access to SR-76.



Looking Westt on Thoroughbred Lane from Old Mission Road Access to SR-76. (Zoomed)

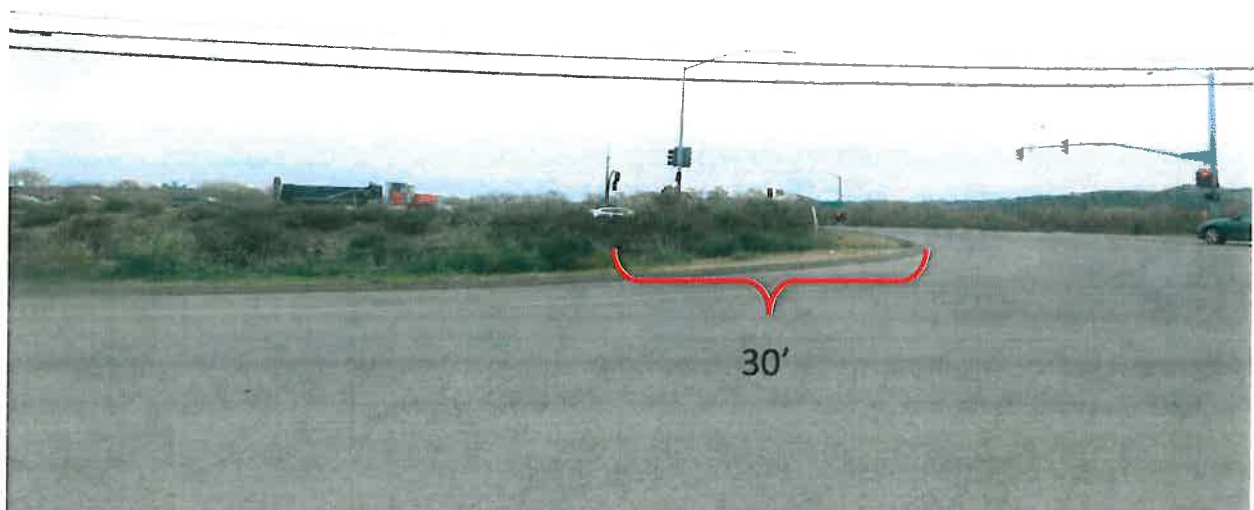
Darnell & ASSOCIATES

190102-AA.dwg 10/31/19 vla/jam

Looking West on Thoroughbred Lane from Old  
Mission Road Access to SR-79



Looking Southeast on Thoroughbred Lane from Old Mission Road Access to SR-76.



Recommended location of landscaping to be trimmed to 30 inches in height.





Darnell & ASSOCIATES, INC.

190102-AA.dwg 10-31-19 vla/jam

Recommended Trimming of Existing Landscaping to Maximum Height of 30 Inches