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October 13, 2019

Mr. Gavin Finley, PE
Santa Clara County Roads & Airports Department
101 Skyport Drive
San Jose, CA 95110

RE: Traffic Impact Analysis Review for Bay Area Vipassana Center Gilroy

Dear Mr. Finley:

We have been retained to analyze traffic related impacts to a new Bay Area Vipassana Center (BAVC) Meditation Center located at 9201 El Matador Drive in Gilroy. The site (APN 75630024) is located at the westerly corner of Redwood Retreat Road and El Matador Drive just to the west of Watsonville Road and consists of approximately 54.6 acres.

Existing Site Conditions

The development is located at the westerly corner of Redwood Retreat Road and El Matador Drive just west of Watsonville Road. The surrounding development includes rural and suburban residential and agriculture. The property is approximately 54.6-acres and currently has a large barn. A majority of the property is heavily wooded and not planned for development. The northeasterly one-third of the site is where the development is planned.

Redwood Retreat Road is a County Minor Collector Rural two-lane road with approximate 10-foot travel lanes and no shoulders. El Matador Drive is a local road that is mainly unimproved with two 10-foot travel lanes and a roadside ditch.

Proposed Site Plan

The proposed site plan includes 18 buildings that total to approximately 52,290 square feet. Buildings include a meditation hall/cell complex at 12,200 square feet; two toilet blocks at 250 square feet each; kitchen and dining hall at 6,300 square feet; administrative office at 2,100 square feet; caretakers residence at 1,340 square feet; ten residence structures with 16 rooms at 2,600 square feet; instructor's residence at 1,800 square feet; and a maintenance building at 2,050 square feet. The buildings comprise the Meditation Center and will be the only use of the proposed development. It is important to understand the use of the site as all buildings are only for the 120 students and volunteers (maximum of 30). The residence structure are gender specific. No other uses occur on the site and at no time will there be more than 150 people on site.

The meditation center is a unique use that has very focused uses. The center's program typically consists of two 10-day silent retreats, called "courses", per month, with a 3-day period between courses for cleaning, course set-up, etc. Students are not permitted to leave the center during the 10-day retreat which are typically conducted Wednesday through Sunday. Thus the bulk of the traffic to and from the proposed center consists of trips to the center on two Wednesdays each month and trips from the center on two Sundays each month.

Existing Roadway and Traffic Conditions

The main routes to the site are along Watsonville Road to the north and south. Watsonville Road to the south connects with Hecker Pass (State Highway 152) which travels east into Gilroy and State Highway 101 (north and south) and west to coastal cities including Watsonville, Santa Cruz and Montery. State Highway 152 also continues east of Gilroy to serve the Central Valley and other outlying areas. Watsonville Road to the north ties into Morgan Hill and State Highway 101 including the Bay Area.

Watsonville Road is classified as a Minor Arterial Rural road with an ADT of 4,070 in 2015 according to the County Road Book (page 46, July 18, 2018). The intersection of Watsonville Road and Redwood Retreat is a tee intersection with a fully developed left turn lane for northbound traffic along Watsonville Road. A traffic count was performed mid-week on Wednesday, July 17, 2019 and included AM and PM peak hour counts (2-hour). The AM peak hour had 380 vehicles and the PM peak hour had 724 vehicles. A Sunday AM peak hour count was also performed on July 21, 2019 (3-hour) and showed 238 vehicles during the peak.

Redwood Retreat Road is classified as a Minor Collector Rural per the County Road Book with an ADT of 490 in 2011. A traffic count was performed on Wednesday, July 17, 2019 and included AM and PM peak hour counts (2-hour). The AM peak hour had 34 vehicles and the PM peak hour had 38 vehicles. A Sunday AM peak hour count was also performed on July 21, 2019 (3-hour) and showed 23 vehicles during the peak.

Estimated Trip Generation

Estimates of daily vehicle trip ends for the proposed development were based on empirical observations at similar developments. These observations are summarized in the standard reference *Trip Generation, 10th Edition*, published by the Institute of Transportation Engineers. Unfortunately, there are no specifics for a Meditation Center, much less one that provides only two 10-day courses per month. This analysis will contrast the closest institutional use available in the manual along with specifics for this unique use (applicant provided data).

The applicant provided data is based on several sites located throughout California and deal with the unique nature of this development. Besides the strong encouragement to carpool the development only serves a very specific group of people per 10-day session with little or no traffic coming or going outside of the arrival or departure days.

Sample Trip Generation Estimates					
Church (ITE Code 560)	Trips/Thousand Square Feet (TSF)	No. TSF	Trips		
			Total	Enter	Exit
				50%	50%
Daily	6.95	10.4	72	36	36
				45%	55%
PM Peak Hour	0.49	10.4	5	2	3
				60%	40%
AM Peak Hour	0.33	10.4	3	2	1
				50%	50%
Sunday Daily	27.63	10.4	287	144	143

Comparison of proposed use to that of a church or other institutional use:
The are no facilities in the Trip General Manual that are similar to this development. The closest use could be a church, but the ones studied had uses throughout the week.

A significant difference between this facility and a church (in terms of traffic impacts) is that a church typically has regular services on weekends and weekdays whereas a meditation center that offers 10-day courses only have traffic entering and exiting the site 4-days per month with the exception of minor traffic for food deliveries and other miscellaneous trips. This distinguishes this project from churches, where all worshippers are expected to arrive and depart within the same 15-20 minute time period.

Everything needed by persons receiving this training including meals and housing are provided by the facility and thus there is no need for anyone to leave the site during these sessions. The housing is only for use by those taking the 10-day training. Trips should be looked at during the meditation courses.

Use during Meditation Course:
Ten residential dormitories are planned for the site for a total of 154 beds. During meditation courses there will be as many as 12 full time staff in residence plus volunteers on-site during the full 10-days.

Courses begin on Wednesdays at 6 pm and finish eleven days later on Sundays at 6:30 am. Students arrive the day of the course with around 20 percent arriving before 1:00 PM; approximately 70 percent arriving between the hours of 1:00 and 6:00 PM; and the last 10 percent arriving after 6:00 PM. At the end of the course on Sunday students leave with a majority of them leaving before 9:00 AM. Staff and a few remaining students leave after the 9:00 AM hour.

Even though students attending the Retreats are housed on site and are not permitted to leave the facility there will be other activities that take place that will generate trips which include the following:

• During courses it can be expected that food deliveries will occur 1 time every 3 days.

• Persons from neighboring communities will oftentimes volunteer their time to help out at the facility during Retreats. This number of persons arriving and departing the site on a given day will not exceed six.

• There may also be a small number of administrative staff that will come each day, but this number will not exceed four.

Summary of trip generation:
Analysis of currently operating meditation centers show an average of 92 trips will be generated on the first and last day of the courses for a fully built-out center with 120 students and up to 30 volunteers. Courses are offered twice a month and start on Wednesday and end on Sunday. Using the existing counts, it is determined that departure traffic on Sunday falls outside the peak hour but will be applied during the AM peak to verify safety and capacity. The arrival trips on Wednesday have a majority of the cars arriving between 1:00 and 6:00 PM and a normal distribution was used to determine the peak hour impact (2 standard deviations, 68% of the total during this timeframe).

Trip generation is based on averages and not maximums. The table below represents a very reasonable average to be considered for this unique facility.

Proposed Trip Generation Estimates				
Meditation Center (ITE Code N/A)	Trips	Trips		
		Total	Enter	Exit
			100%	0%
Daily[1]	92	92	92	0
			100%	0%
PM Peak Hour	30	30	30	0
			0%	100%
AM Peak Hour	50	50	0	50
			0%	100%
Sunday Daily	92	92	0	92

Estimated Trip Distribution and Assignment
The site trip distribution is based upon existing traffic counts as well as engineering judgment and knowledge of the area. During the peak hours volumes split approximately 75% from the north and 25% from the south along Watsonville Road.

[1] The term "Daily" here, just like the Peak Hours, is used for analysis purposes only and does not represent the actual condition of only 4 days per month when these numbers will be reached.

The site is estimated to generate approximately 30 PM Peak hour trips and 50 AM Peak hour trips coming or going from the site. The trip distribution and assignment, along with existing turning movement counts are included at the end of this report and are listed as Figures 1-2 through 1.7.

Parking Analysis

The project's proposed site plan has 96 parking spaces shown which includes 10 handicap spaces. A loading zone is provided in front of the Kitchen/Dining Hall as well. Normally one would use a reference like the ITE Parking Generation Manual to determine the recommended number of parking stalls to serve a development. Because of the nature of this project there is not good reference documents available to provide a direct recommendation. At the same time there are several sites in California providing the same service and therefore can be a reliable source of data to contrast with ITE data and determine the adequate number of parking stalls needed.

The ITE Parking Generation Manual, 4th Edition, has several uses based on units like dwelling units, occupied rooms, employees, students and attendees. Using 150 for each of these units can provide some insight into the number of parking spaces that each would require on a peak day (like Sunday for a Church) and includes both an average and 85th percentile for occupied stalls.

	Total Stalls Occupied in Peak Period			
Description/ITE Code		**Units**	**Average**	85th **Percentile**
Church 560	Attendees	150	67.5	90
Synagogue 561	Attendees	150	61.5	--
Office Building 701	Employees	150	124.5	147
University/College, Suburban 550	School Population	150	49.5	57
High School, Suburban 530	Students	150	34.5	37.5
Hotel, Suburban 310	Occupied Rooms	150	180	231
Low/Mid-Rise Apartment, Suburban 221	Dwelling Units	150	184.5	291
Customer Provided Data	Students/Volunteers	150	92	92

The above table shows a significant difference in peak parking demand for various uses that involves students, attendees, employees and living facilities. Customer supplied data falls in the middle of average peak period and doesn't change over the duration of the 10-day courses. The supplied data is adequate and reasonable considering the very specific use and how it contrasts with other development types supplied by ITE. Therefore the 96 parking spaces will adequately meet the needs of the site and no further recommendations are required.

Recommendation

The proposed development generates 30 PM Peak hour and 50 AM Peak hour trips on the days when students are coming or going from the site (on average four days per month, two Wednesdays and two Sundays). This volume is very low and would not warrant an analysis at any controlled or uncontrolled intersection near the project following Santa Clara County requirements of 100 peak hour trips as a threshold for analysis. The threshold is stated on Page 6 of *the Santa Clara Valley*

Transportation Authority Transportation Impact Analysis Guidelines dated October 2014. Critical movements entering and exiting the site are very low and do not warrant turn lane analysis.

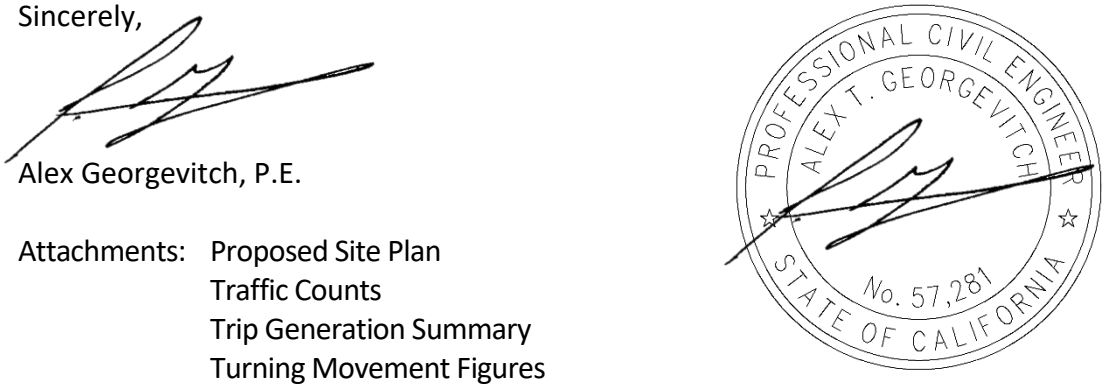
As part of our review of this project we also recommend the driveway be allowed on Redwood Retreat Road instead of El Matador Drive. The close proximity of El Matador Drive and Redwood Retreat Road with the intersection of Redwood Retreat Road and Watsonville Road dictates that a driveway on El Matador Drive is not ideal. A site distance analysis was performed for a driveway approximately 500-feet northwest of El Matador Drive and the driveway meets CALTRANS requirements at this location.

Syncrho 10 was used to analyze the intersection of Watsonville Road and Redwood Retreat Road; Redwood Retreat Road and El Matador Drive; and Redwood Retreat Road and the proposed driveway. Under existing and build conditions level of service (LOS) is more than adequate. Traffic volumes are very low on both El Matador Drive and Redwood Retreat Road and Watsonville Road is moderately busy during the peak hours. All intersections show that the existing traffic controls are operating well within reasonable LOS with most movements operating at LOS A or B. Only two movements operate at LOS C.

The project does not negatively impact any of the surrounding roadways and a conditional use permit should not be withheld due to traffic concerns. Further, access should be allowed on Redwood Retreat Road to best serve the site and the surrounding community.

Thank you and if you have any comments or questions, please let me know.

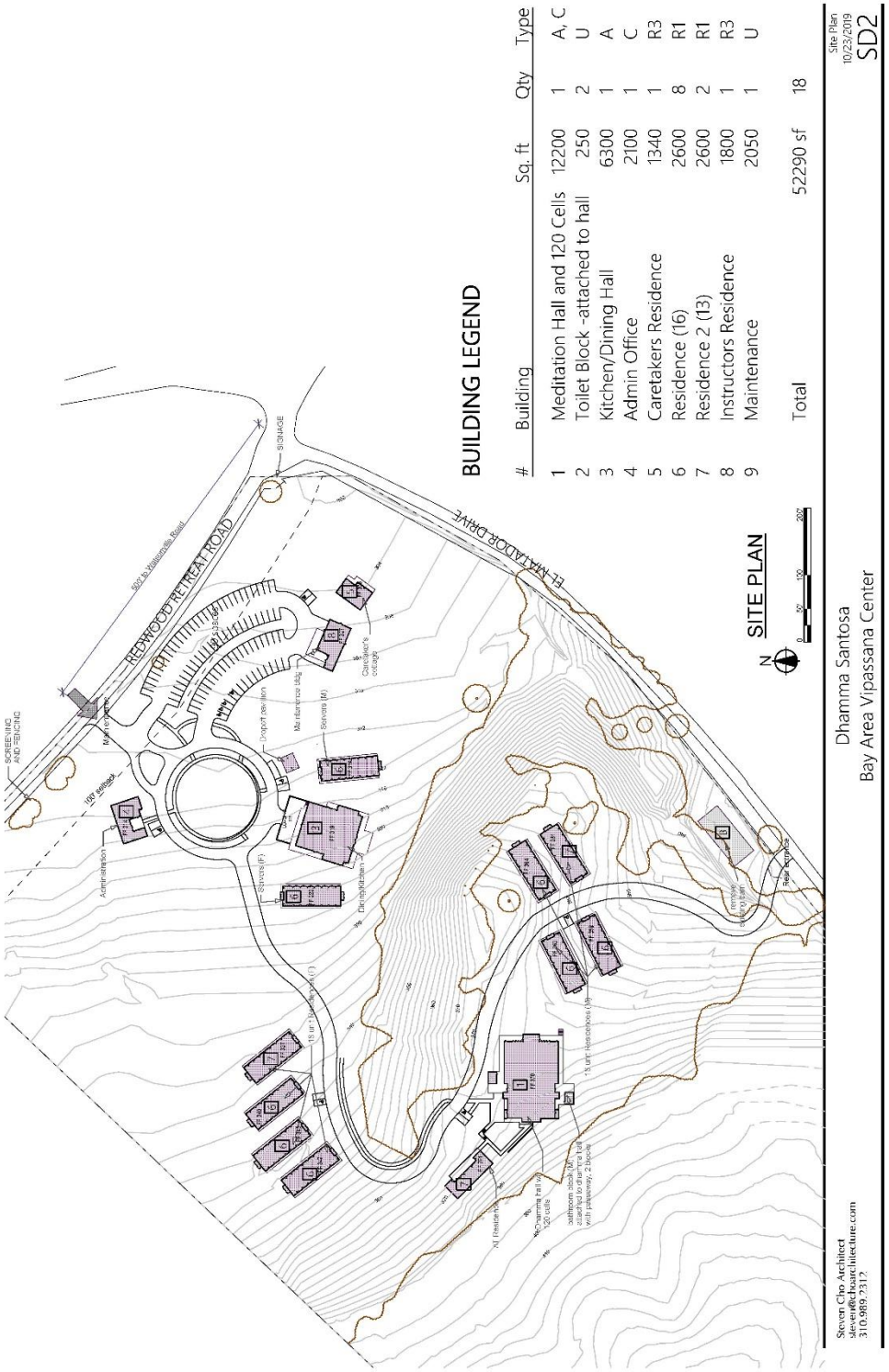
Sincerely,



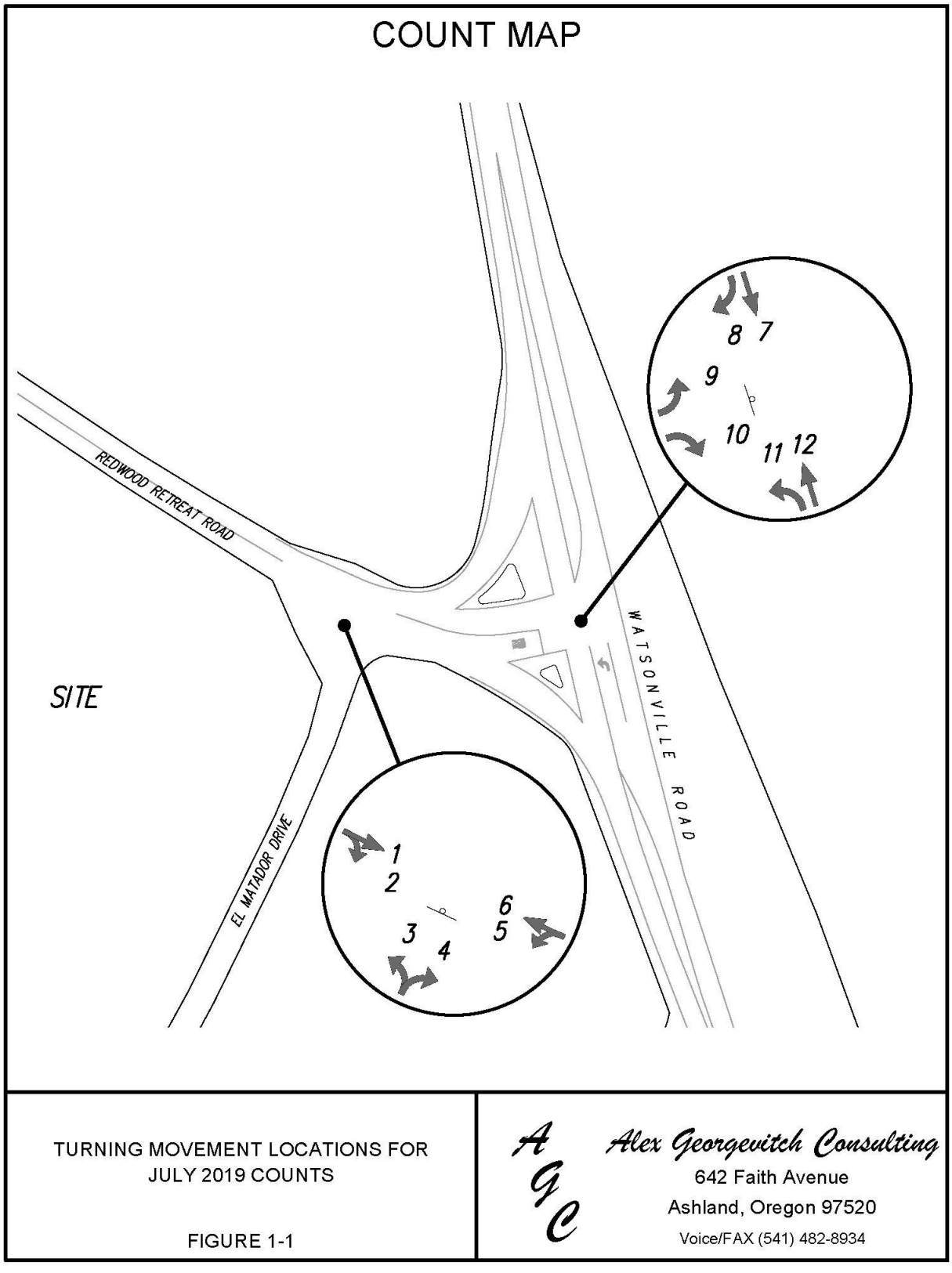
Alex Georgevitch, P.E.

Attachments: Proposed Site Plan
Traffic Counts
Trip Generation Summary
Turning Movement Figures
Synchro Outputs
Proposed Driveway Site Distance Analysis

Proposed Site Plan



Turning Movement Locations for Counts



Mid-Week Traffic Count Data

Time	Movement Number											Count Taken Wednesday 7/17/19
AM Peak	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
7:00	3	0	0	0	0	5	18	2	2	1	3	54
7:15	4	0	0	0	0	2	19	1	4	0	1	84
7:30	1	4	0	0	0	7	22	3	2	2	4	59
7:45	6	1	0	3	0	7	14	3	5	6	4	72
8:00	3	0	0	0	0	4	17	4	1	2	0	51
8:15	5	0	0	1	0	4	29	3	4	2	1	56
8:30	7	0	0	1	0	0	30	0	6	2	0	53
8:45	6	0	0	3	1	4	30	2	3	5	4	38
2-Hour Total	35	5	0	8	1	33	179	18	27	20	17	467
1-Hour Peak	14	5	0	3	0	20	72	11	12	10	9	266
PHF by Movement	0.58	0.31	N/A	0.25	N/A	0.71	0.82	0.69	0.60	0.42	0.56	0.79

PM Peak												
4:00	2	0	0	0	1	7	104	4	0	2	4	25
4:15	4	0	0	1	0	8	119	4	2	1	4	29
4:30	6	0	0	2	1	1	115	2	6	4	0	25
4:45	4	0	0	0	0	6	135	3	2	2	3	41
5:00	7	0	0	1	0	5	126	5	3	5	0	37
5:15	2	0	0	1	1	7	158	4	3	2	2	41
5:30	3	0	0	0	0	4	93	1	2	1	3	43
5:45	4	0	0	0	1	5	127	2	4	0	4	29
2-Hour Total	32	0	0	5	4	43	977	25	22	17	20	270
1-Hour Peak	19	0	0	4	2	19	534	14	14	13	5	144
PHF by Movement	0.68	N/A	N/A	0.50	0.50	0.68	0.84	0.70	0.58	0.65	0.42	0.88

Road Book

Redwood Retreat	490 ADT	2011 Count
Watsonville Road	3090 ADT	2013 Count
	PM Split	78% SB / 22% NB
	AM Split	22% SB / 78% NB

Manual Count

38 PM Peak	34 AM Peak	380 ADT	Calculated
724 PM Peak	380 AM Peak	7240 ADT	Calculated

Sunday Traffic Count Data

Time	Movement Number											Count Taken Wednesday 7/17/19
AM Peak	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
7:00	1	0	0	0	0	1	9	1	0	1	0	11
7:15	1	0	0	0	0	1	7	1	1	0	0	10
7:30	1	0	0	0	0	2	11	2	1	0	0	16
7:45	1	0	0	0	0	0	12	0	0	1	0	16
8:00	3	0	0	0	0	0	12	0	1	1	0	21
8:15	3	0	0	1	0	0	11	0	2	2	0	23
8:30	2	0	0	0	0	1	9	1	1	1	0	17
8:45	5	0	0	1	0	1	28	0	2	4	1	29
9:00	2	0	0	2	1	2	23	1	3	1	2	19
9:15	7	0	0	1	1	2	37	2	1	7	1	19
9:30	4	0	0	1	1	2	33	2	3	2	1	21
9:45	4	0	0	1	0	0	38	1	4	0	0	17
3-Hour Total	34	0	0	7	3	12	230	11	19	20	5	219
1-Hour Peak	17	0	0	5	3	6	131	6	11	10	4	76
PHF by Movement	0.61	N/A	N/A	0.63	0.75	0.75	0.86	0.75	0.69	0.36	0.50	0.90

Road Book			**Manual Count**		
Redwood Retreat	490 ADT	2011 Count	23 AM Peak	230 ADT	Calculated
Watsonville Road	3090 ADT	2013 Count	238 AM Peak	2380 ADT	Calculated

Trip Generation for Development

Trip Generation
for Bay Area Vipassana

92 Cars Average per session
Mid-Week (Wednesday) Arrival
20 Cars before 1:00 PM
65 Cars between 1:00-6:00 PM
7 Cars after 6:00 PM

Assume a Normal Distribution during the PM Peak Hour
68% is equivallent to one standard deviation each side of mean
44 Cars during 4:00-6:00 PM
Assume 30 /14 split for Peak Hours

Sunday Departure
90 Cars Before 9:00 AM
2 Cars After 9:00 AM

Assume 50 / 40 Split for Peak Hours

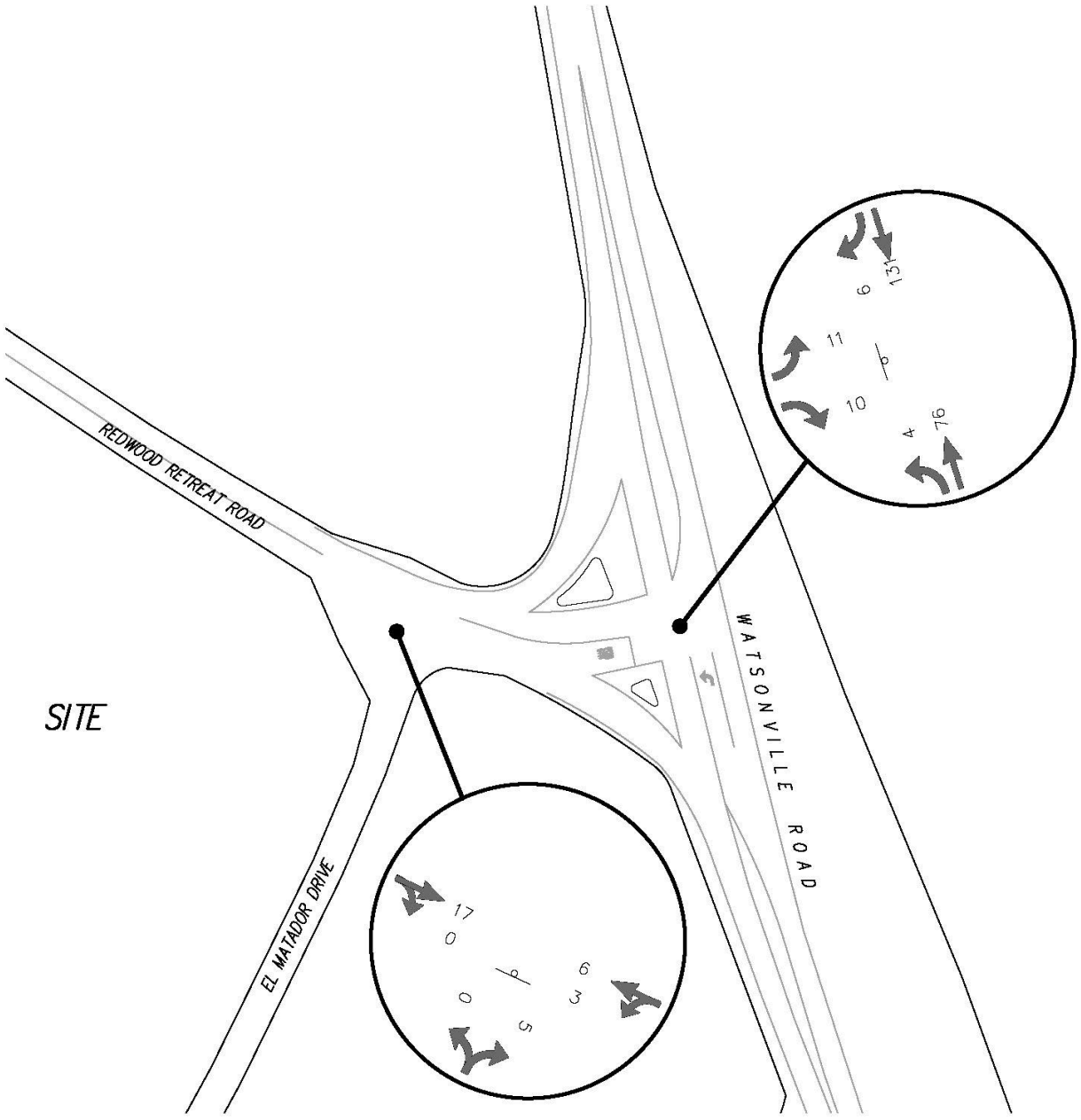
Drive time to San Jose almost identical using Watsonville Road or Hecker Pass Hwy.

PM Peak Hour	30 Left Turn	7 Right Turn	23	
AM Peak	50 Left Turn	39 Right Turn	11	

Existing and Existing + Project Turning Movement Exhibits

Figures 1-2 through 1.7

FIGURE 1-2



EXISTING
AM PEAK HOUR (SUNDAY) TRAFFIC VOLUMES
JULY 2019 COUNTS

FIGURE 1-2

AGC
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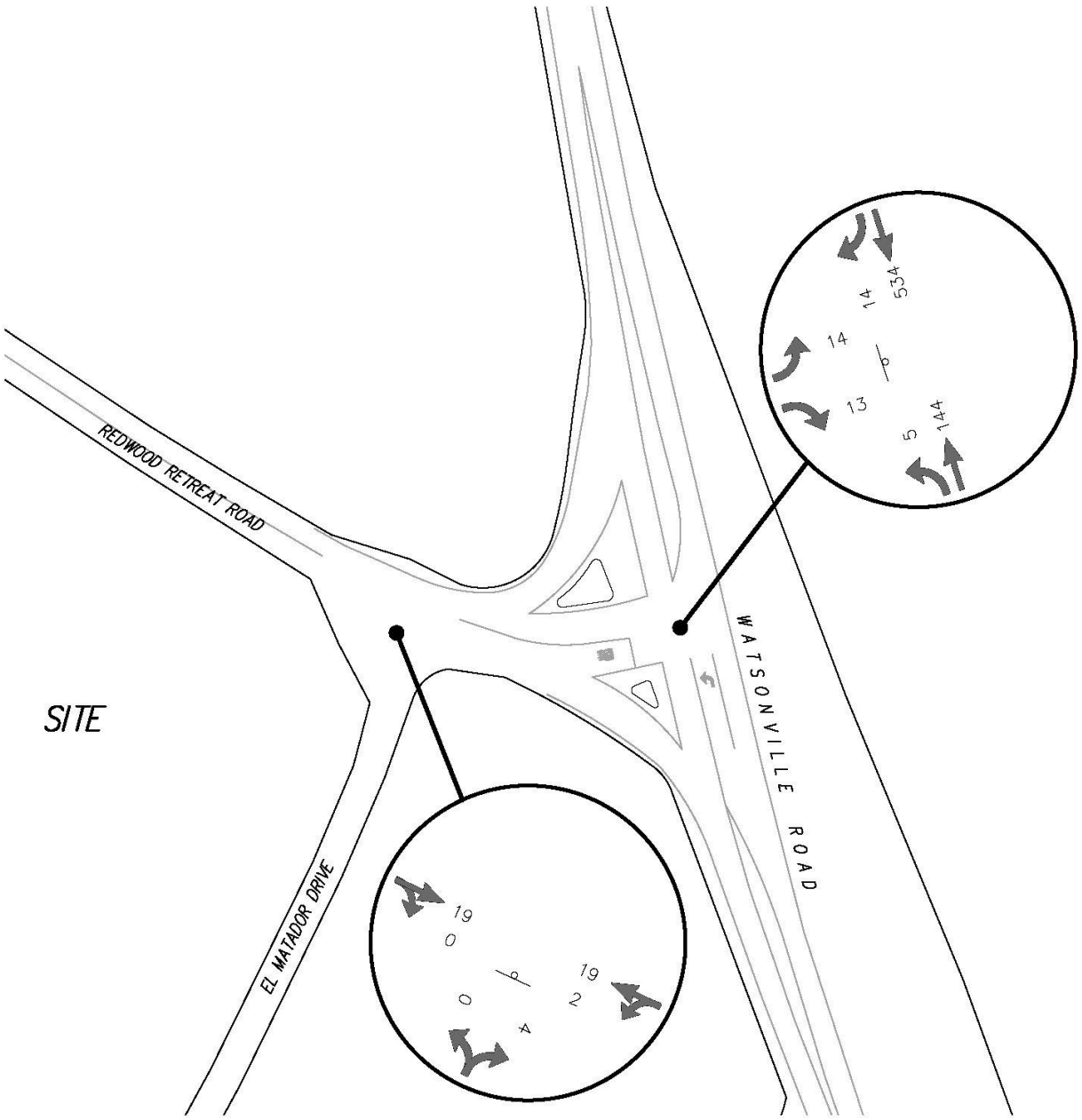
FIGURE 1-3



EXISTING
PM PEAK HOUR TRAFFIC VOLUMES
JULY 2019 COUNTS

FIGURE 1-3

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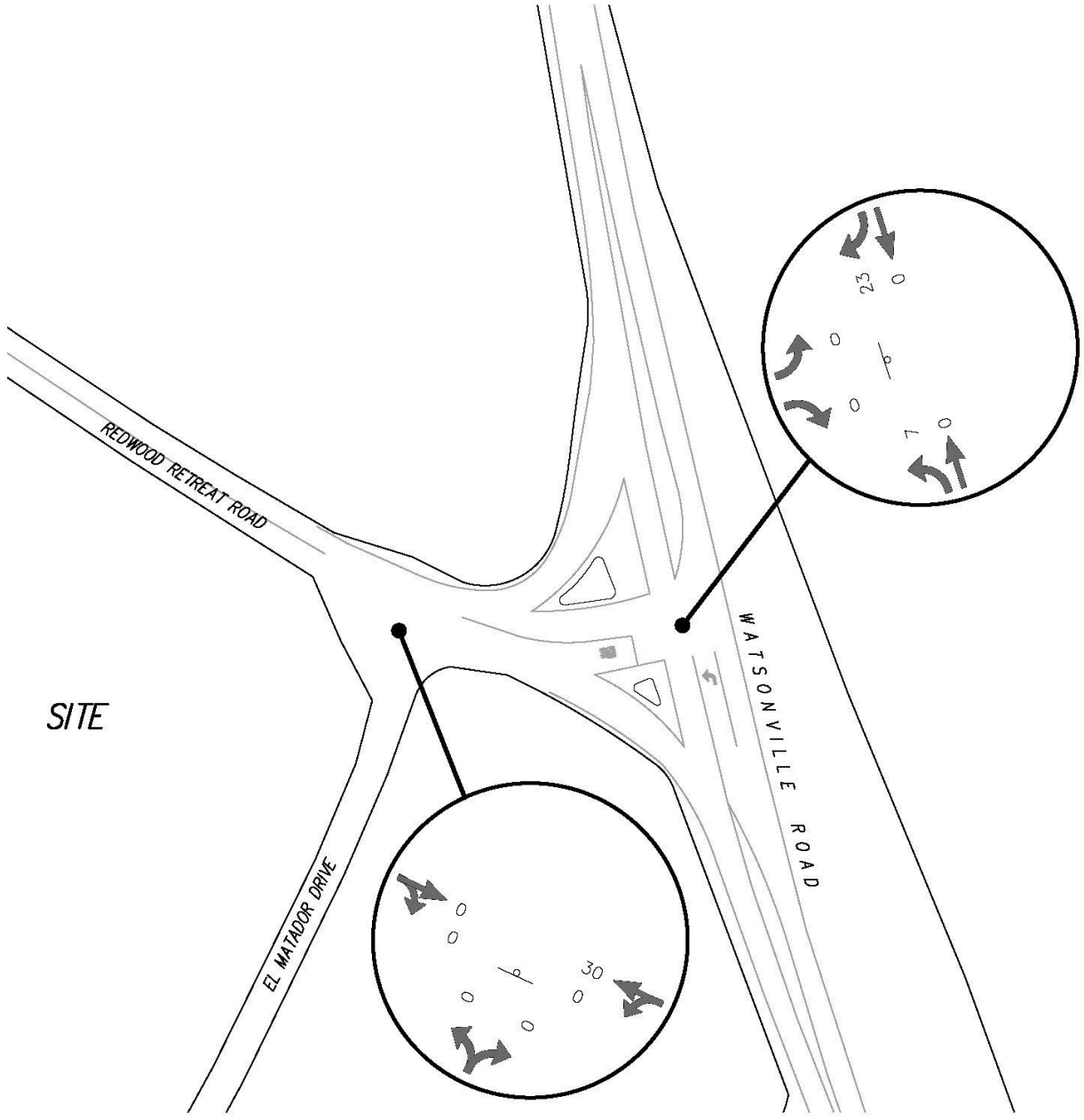
FIGURE 1-4



PROJECT
PM PEAK HOUR TRAFFIC VOLUMES
JULY 2019 COUNTS

FIGURE 1-4

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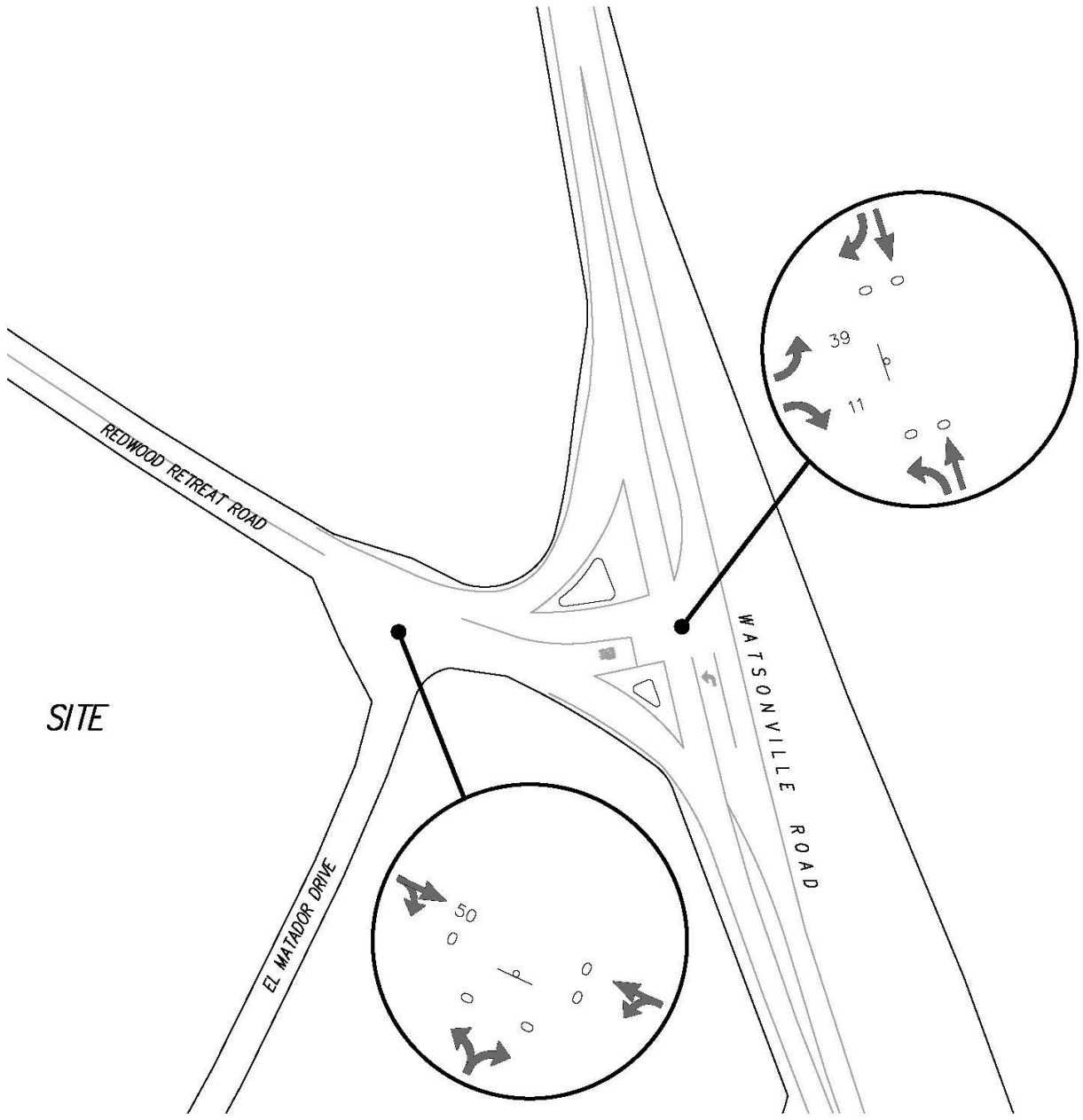
FIGURE 1-5



PROJECT
AM PEAK HOUR TRAFFIC VOLUMES
JULY 2019 COUNTS

FIGURE 1-5

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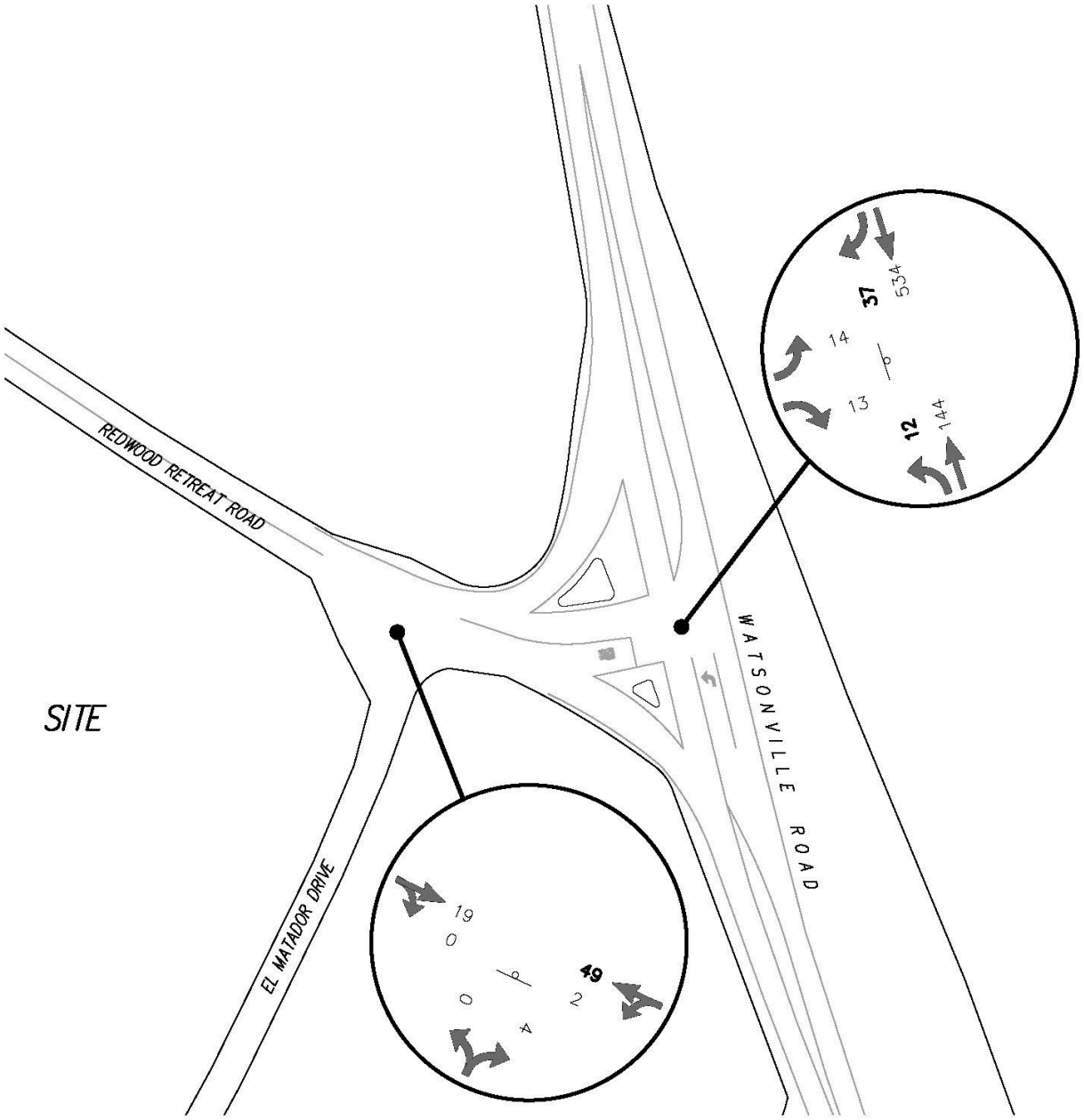
FIGURE 1-6



EXISTING+PROJECT
PM PEAK HOUR TRAFFIC VOLUMES
JULY 2019 COUNTS

FIGURE 1-6

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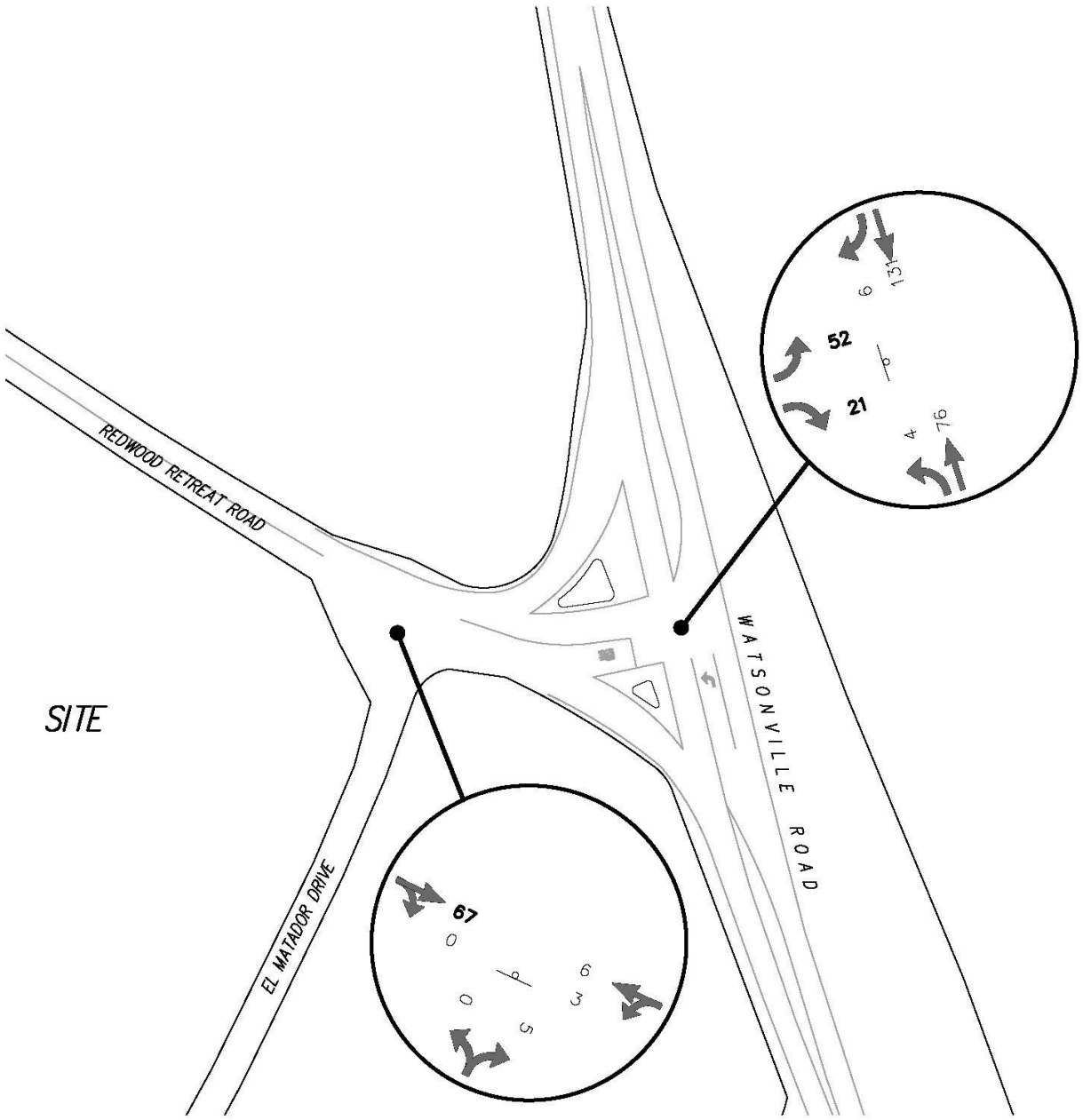
FIGURE 1-7



EXISTING+PROJECT
AM PEAK HOUR (SUNDAY) TRAFFIC VOLUMES
JULY 2019 COUNTS

FIGURE 1-7

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AM Peak Hour Sunday Synchro Analysis

HCM 6th TWSC
3: Watsonville Road & Redwood Retreat Road 07/24/2019

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	10	5	76	131	10
Future Vol, veh/h	13	10	5	76	131	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	0	0	70	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	36	50	90	86	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	19	28	10	84	152	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	263	159	165	0	-	0
Stage 1	159	-	-	-	-	-
Stage 2	104	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	726	886	1413	-	-	-
Stage 1	870	-	-	-	-	-
Stage 2	920	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	721	886	1413	-	-	-
Mov Cap-2 Maneuver	721	-	-	-	-	-
Stage 1	864	-	-	-	-	-
Stage 2	920	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.6	0.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1413	-	721	886	-	-
HCM Lane V/C Ratio	0.007	-	0.026	0.031	-	-
HCM Control Delay (s)	7.6	-	10.1	9.2	-	-
HCM Lane LOS	A	-	B	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	0.1	-	-

HCM 6th TWSC
6: El Matador & Redwood Retreat Road 07/24/2019

Intersection	
Int Delay, s/veh	2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↾	
Traffic Vol, veh/h	17	0	3	12	0	7
Future Vol, veh/h	17	0	3	12	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	61	61	75	75	63	63
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	0	4	16	0	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	28	0	52	28
Stage 1	-	-	-	-	28	-
Stage 2	-	-	-	-	24	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	0	1585	-	957	1047
Stage 1	-	0	-	-	995	-
Stage 2	-	0	-	-	999	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	1585	-	954	1047
Mov Cap-2 Maneuver	-	-	-	-	954	-
Stage 1	-	-	-	-	995	-
Stage 2	-	-	-	-	996	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	8.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	1047	-	1585	-
HCM Lane V/C Ratio	0.011	-	0.003	-
HCM Control Delay (s)	8.5	-	7.3	-
HCM Lane LOS	A	-	A	-
HCM 95th %tile Q(veh)	0	-	0	-

HCM 6th TWSC
7: Proposed Driveway & Redwood Retreat Road 07/24/2019

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↾	
Traffic Vol, veh/h	17	0	0	12	0	0
Future Vol, veh/h	17	0	0	12	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	61	61	61	61	63	63
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	0	0	20	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	48	28
Stage 1	-	-	-	-	28	-
Stage 2	-	-	-	-	20	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	-	0	0	-	962	1047
Stage 1	-	0	0	-	995	-
Stage 2	-	0	0	-	1003	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	962	1047
Mov Cap-2 Maneuver	-	-	-	-	962	-
Stage 1	-	-	-	-	995	-
Stage 2	-	-	-	-	1003	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	-	-	-

AM Peak Hour Sunday With Development
Synchro Analysis

HCM 6th TWSC
3: Watsonville Road & Redwood Retreat Road 07/24/2019

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	52	21	5	76	131	10
Future Vol, veh/h	52	21	5	76	131	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	0	0	70	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	36	50	90	86	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	75	58	10	84	152	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	263	159	165	0	-	0
Stage 1	159	-	-	-	-	-
Stage 2	104	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	726	886	1413	-	-	-
Stage 1	870	-	-	-	-	-
Stage 2	920	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	721	886	1413	-	-	-
Mov Cap-2 Maneuver	721	-	-	-	-	-
Stage 1	864	-	-	-	-	-
Stage 2	920	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10	0.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1413	-	721	886	-	-
HCM Lane V/C Ratio	0.007	-	0.105	0.066	-	-
HCM Control Delay (s)	7.6	-	10.6	9.3	-	-
HCM Lane LOS	A	-	B	A	-	-
HCM 95th %tile Q(veh)	0	-	0.3	0.2	-	-

HCM 6th TWSC
6: El Matador & Redwood Retreat Road 07/24/2019

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↾	
Traffic Vol, veh/h	67	0	3	12	0	7
Future Vol, veh/h	67	0	3	12	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	61	61	75	75	63	63
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	110	0	4	16	0	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	110	0	134	110
Stage 1	-	-	-	-	110	-
Stage 2	-	-	-	-	24	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	0	1480	-	860	943
Stage 1	-	0	-	-	915	-
Stage 2	-	0	-	-	999	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	1480	-	857	943
Mov Cap-2 Maneuver	-	-	-	-	857	-
Stage 1	-	-	-	-	915	-
Stage 2	-	-	-	-	996	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	943	-	1480	-
HCM Lane V/C Ratio	0.012	-	0.003	-
HCM Control Delay (s)	8.9	-	7.4	-
HCM Lane LOS	A	-	A	-
HCM 95th %tile Q(veh)	0	-	0	-

HCM 6th TWSC
7: Proposed Driveway & Redwood Retreat Road 07/24/2019

Intersection						
Int Delay, s/veh	5.4					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↱	
Traffic Vol, veh/h	17	0	0	12	0	50
Future Vol, veh/h	17	0	0	12	0	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	61	61	61	61	63	63
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	0	0	20	0	79

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	48	28
Stage 1	-	-	-	-	28	-
Stage 2	-	-	-	-	20	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	-	0	0	-	962	1047
Stage 1	-	0	0	-	995	-
Stage 2	-	0	0	-	1003	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	962	1047
Mov Cap-2 Maneuver	-	-	-	-	962	-
Stage 1	-	-	-	-	995	-
Stage 2	-	-	-	-	1003	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	1047	-	-
HCM Lane V/C Ratio	0.076	-	-
HCM Control Delay (s)	8.7	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-

PM Peak Hour Sunday Synchro Analysis

HCM 6th TWSC
3: Watsonville Road & Redwood Retreat Road 07/24/2019

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	13	5	144	534	14
Future Vol, veh/h	14	13	5	144	534	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	0	0	70	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	58	65	42	88	84	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	20	12	164	636	20

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	834	646	656	0	-	0
Stage 1	646	-	-	-	-	-
Stage 2	188	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	338	472	931	-	-	-
Stage 1	522	-	-	-	-	-
Stage 2	844	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	334	472	931	-	-	-
Mov Cap-2 Maneuver	334	-	-	-	-	-
Stage 1	515	-	-	-	-	-
Stage 2	844	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15	0.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	931	-	334	472	-	-
HCM Lane V/C Ratio	0.013	-	0.072	0.042	-	-
HCM Control Delay (s)	8.9	-	16.6	13	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	0.1	-	-

HCM 6th TWSC
6: El Matador & Redwood Retreat Road 07/24/2019

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↾	
Traffic Vol, veh/h	19	0	2	19	0	4
Future Vol, veh/h	19	0	2	19	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	68	92	50	50	92	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	0	4	38	0	8

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	28	0	74	28
Stage 1	-	-	-	-	28	-
Stage 2	-	-	-	-	46	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	0	1585	-	930	1047
Stage 1	-	0	-	-	995	-
Stage 2	-	0	-	-	976	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	1585	-	927	1047
Mov Cap-2 Maneuver	-	-	-	-	927	-
Stage 1	-	-	-	-	995	-
Stage 2	-	-	-	-	973	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	8.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	1047	-	1585	-
HCM Lane V/C Ratio	0.008	-	0.003	-
HCM Control Delay (s)	8.5	-	7.3	-
HCM Lane LOS	A	-	A	-
HCM 95th %tile Q(veh)	0	-	0	-

HCM 6th TWSC
7: Proposed Driveway & Redwood Retreat Road 07/24/2019

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	19	0	0	19	0	0
Future Vol, veh/h	19	0	0	19	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	68	68	50	68	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	0	0	28	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	56	28
Stage 1	-	-	-	-	28	-
Stage 2	-	-	-	-	28	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	-	0	0	-	952	1047
Stage 1	-	0	0	-	995	-
Stage 2	-	0	0	-	995	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	952	1047
Mov Cap-2 Maneuver	-	-	-	-	952	-
Stage 1	-	-	-	-	995	-
Stage 2	-	-	-	-	995	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	-	-	-

PM Peak Hour Sunday With Development
Synchro Analysis

HCM 6th TWSC
3: Watsonville Road & Redwood Retreat Road 07/21/2019

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	13	12	144	534	37
Future Vol, veh/h	14	13	12	144	534	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	0	0	70	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	58	65	42	88	84	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	20	29	164	636	53

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	885	663	689	0	-	0
Stage 1	663	-	-	-	-	-
Stage 2	222	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	315	461	905	-	-	-
Stage 1	512	-	-	-	-	-
Stage 2	815	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	305	461	905	-	-	-
Mov Cap-2 Maneuver	305	-	-	-	-	-
Stage 1	496	-	-	-	-	-
Stage 2	815	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.7	1.4	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	905	-	305	461	-	-
HCM Lane V/C Ratio	0.032	-	0.079	0.043	-	-
HCM Control Delay (s)	9.1	-	17.8	13.2	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	0.1	-	-

HCM 6th TWSC
6: El Matador & Redwood Retreat Road 07/21/2019

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↾	
Traffic Vol, veh/h	19	0	2	49	0	4
Future Vol, veh/h	19	0	2	49	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	68	92	50	50	92	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	0	4	98	0	8

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	28	0	134	28
Stage 1	-	-	-	-	28	-
Stage 2	-	-	-	-	106	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	0	1585	-	860	1047
Stage 1	-	0	-	-	995	-
Stage 2	-	0	-	-	918	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	1585	-	857	1047
Mov Cap-2 Maneuver	-	-	-	-	857	-
Stage 1	-	-	-	-	995	-
Stage 2	-	-	-	-	915	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	8.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	1047	-	1585	-
HCM Lane V/C Ratio	0.008	-	0.003	-
HCM Control Delay (s)	8.5	-	7.3	-
HCM Lane LOS	A	-	A	-
HCM 95th %tile Q(veh)	0	-	0	-

HCM 6th TWSC
7: Proposed Driveway & Redwood Retreat Road 07/21/2019

Intersection	
Int Delay, s/veh	3.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↾	
Traffic Vol, veh/h	19	0	30	19	0	0
Future Vol, veh/h	19	0	30	19	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	0	33	21	0	0

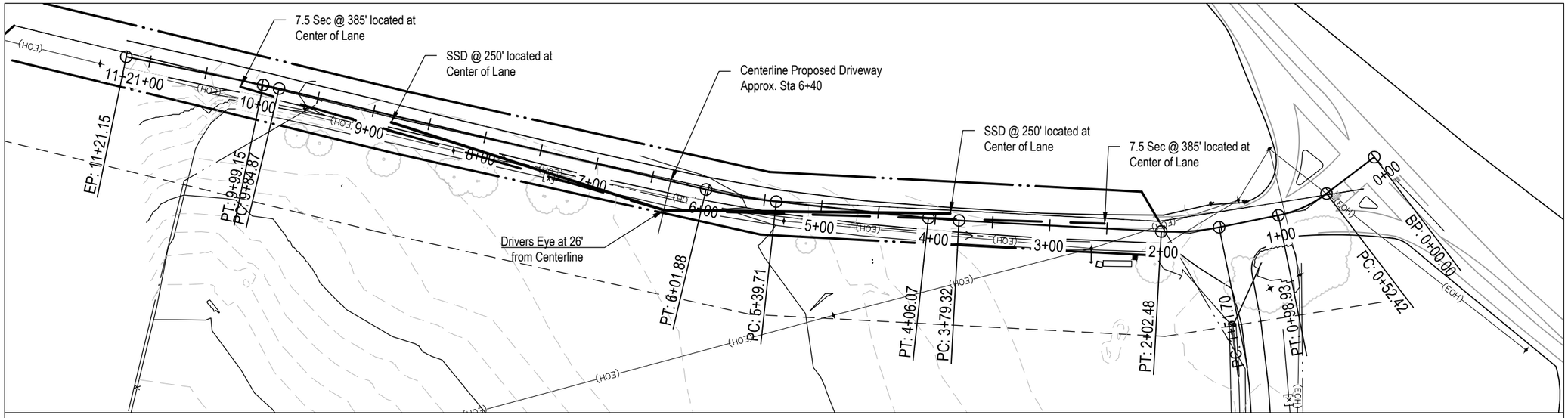
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	21	0	108	21
Stage 1	-	-	-	-	21	-
Stage 2	-	-	-	-	87	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	0	1595	-	889	1056
Stage 1	-	0	-	-	1002	-
Stage 2	-	0	-	-	936	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	1595	-	870	1056
Mov Cap-2 Maneuver	-	-	-	-	870	-
Stage 1	-	-	-	-	1002	-
Stage 2	-	-	-	-	916	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4.5	0
HCM LOS			A

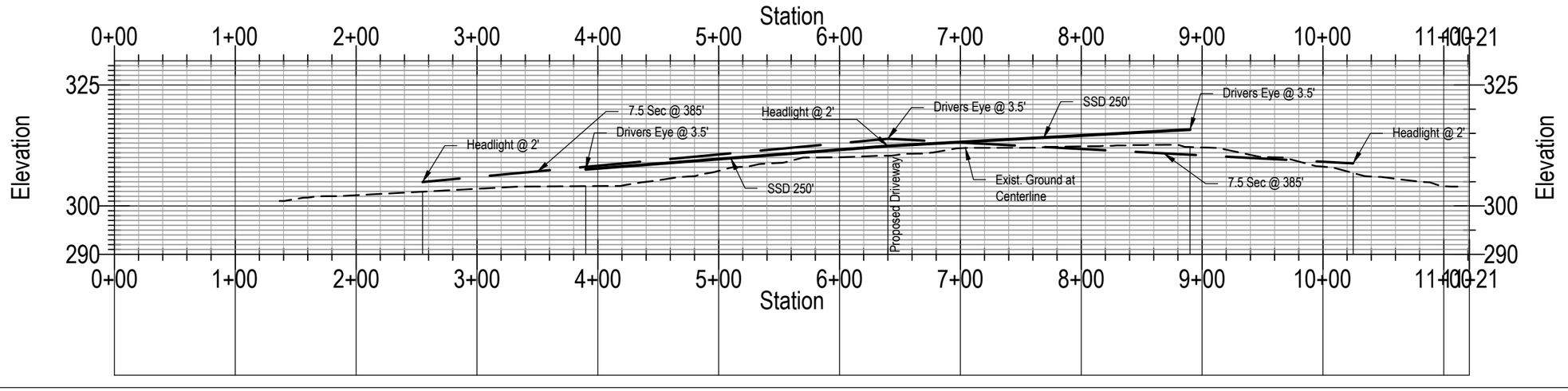
Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	-	-	1595	-
HCM Lane V/C Ratio	-	-	0.02	-
HCM Control Delay (s)	0	-	7.3	-
HCM Lane LOS	A	-	A	-
HCM 95th %tile Q(veh)	-	-	0.1	-

Proposed Driveway Site Distance Exhibit

DRIVEWAY SIGHT DISTANCE EXHIBIT



Profile View



PROFESSIONAL CIVIL ENGINEER
ALEX T. GEORGEVITCH
EXP. 12-31-19
No. 57,281
STATE OF CALIFORNIA

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