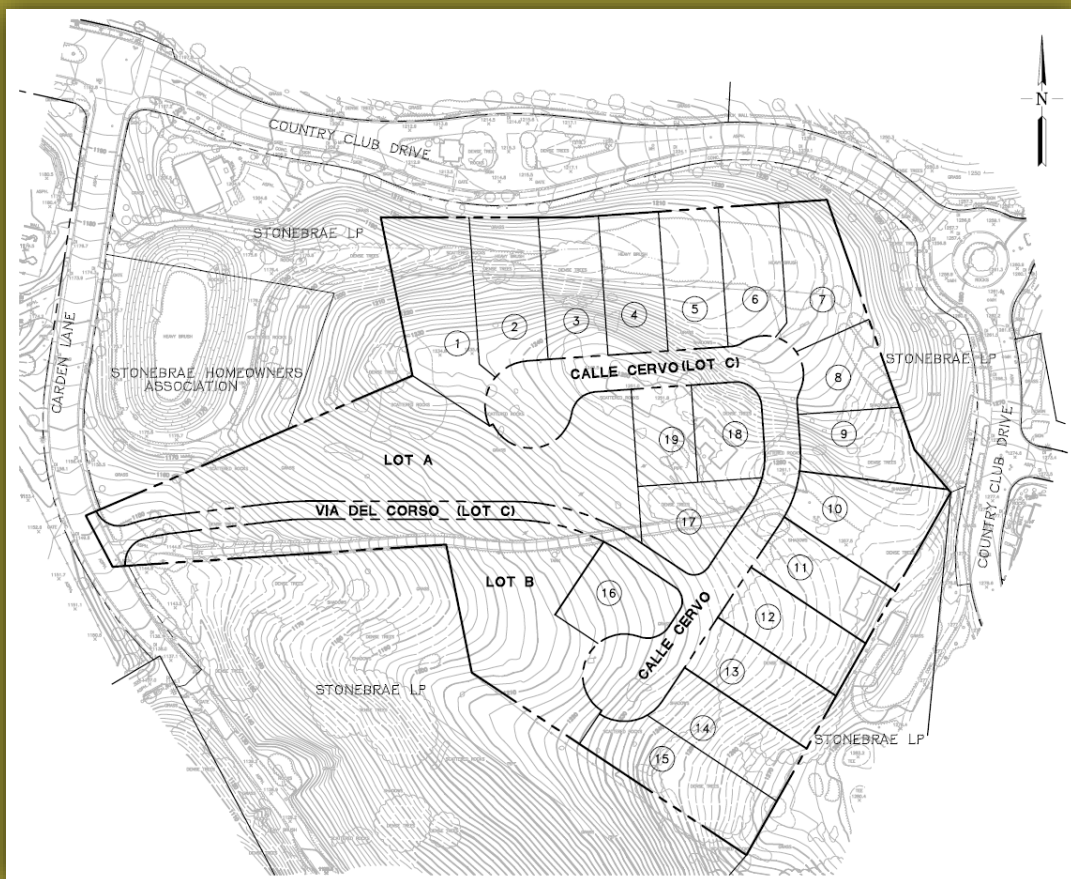


APPENDIX E
TRAFFIC IMPACT STUDY

Final Report Traffic Impact Study of Proposed Cavallo Highlands Subdivision at 29080 Fairview Avenue

In the City of Hayward

February 22, 2019





**Traffic Impact Study of Proposed
Cavallo Highlands Subdivision at 29080
Fairview Avenue
in Hayward, CA**

Final Report

Prepared for:
The City of Hayward

Prepared by:
AMG Consulting Services

February 22, 2019

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1.0 INTRODUCTION AND EXECUTIVE SUMMARY

Introduction

The purpose of this traffic impact analysis study is to evaluate potential impacts of the proposed Cavallo Highlands Subdivision at 29080 Fairview Avenue in Hayward, California. The proposed project is a 19-lot single family residential subdivision.

Summary

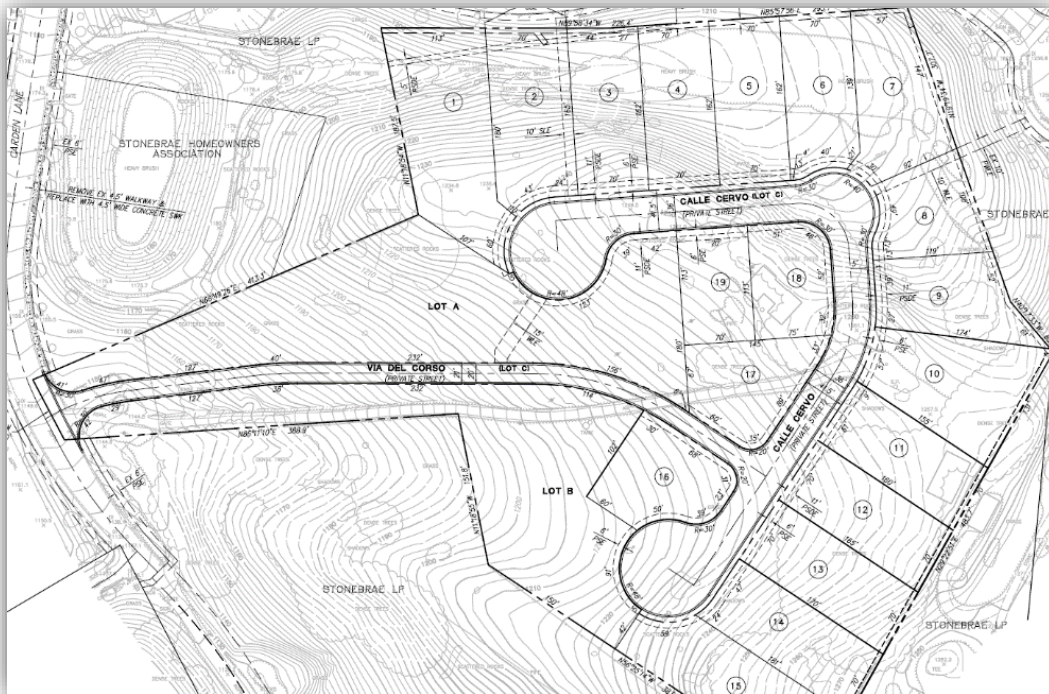
Based on the results of the analysis, the following is a summary of our findings:

Existing Condition

- Three intersections were selected for analysis. Under the existing conditions, the LOS for all the intersections operates at acceptable LOS E or better.

Existing plus Proposed Project

- It is estimated that the project will generate approximately 14 trips during the AM peak hour and 19 trips during the PM peak hour.
- Under the Existing plus Project Conditions, the LOS for all the intersections will continue to operate at acceptable LOS E or better.
- Peak Hour Signal Warrants are not met at the intersections of Carden Lane/Stonebrae Elementary School Driveway and Carden Lane/ Stonebrae Road.
- The estimated queue increases for the study intersections are not considered to be significant.
- The proposed site access and circulation is considered acceptable.
- Based on the results of the analysis as indicated above, it could be concluded that the addition of project traffic would not exacerbate conditions to create an impact under CEQA, and therefore no mitigation is needed.



2.0 PURPOSE OF PROJECT AND STUDY APPROACH

2.1 PROJECT OBJECTIVES DESCRIPTION

The purpose of this traffic impact study is to evaluate potential traffic impacts of the proposed 19-lot single family residential subdivision. The proposed project is shown in **Figure 1**. And a site plan is shown in **Figure 2**.

2.2 STUDY APPROACH

The following are key steps of the study approach:

- Conduct traffic counts to establish baseline traffic conditions
- Conduct trip generation and distribution of project trips
- Determine the Existing, and Existing Plus Project traffic condition

3.0 SETTING

The following section describes the existing transportation conditions in the vicinity of the study area, including descriptions of the existing street system and intersection operating conditions.

3.1 EXISTING STREET SYSTEM

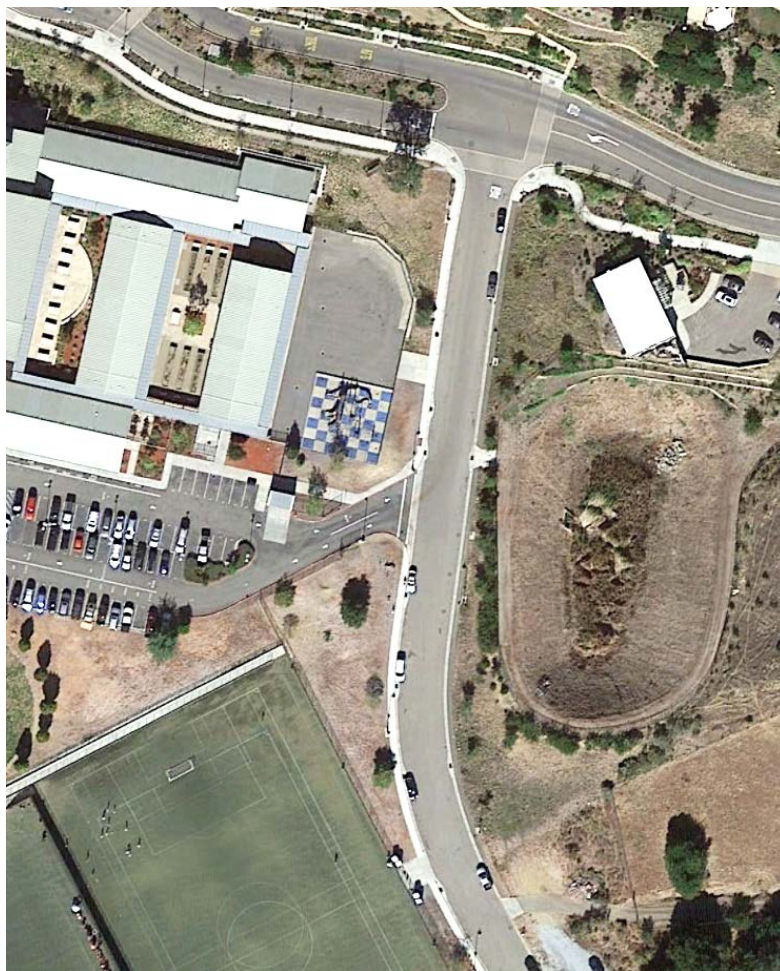
The Project site is located on the southeast quadrant of the intersection of Carden Lane and Stonebrae Road.

Hayward Boulevard is a major east-west arterial that starts from Mission Boulevard in the west and ends in the east where the street name changes to Fairview Avenue as it becomes a north-south street. Near the proposed project it is primarily a two-lane roadway.

Fairview Avenue is a two-lane north-south arterial that connects from Hayward Boulevard in the south to Five Canyons Parkway in the north.

Stonebrae Road is a two-lane east-west collector street that leads from the roundabout intersection of Hayward Boulevard/ Fairview Avenue in the west and leads to the Stonebrae gold course subdivision in the east.

Carden Lane is a two-lane north-south local street that starts from Stonebrae Road in the north and ends at approximately 750 feet to the south (gated entry to the Garin Park). Currently it primarily provides access to the Stonebrae Elementary School.



Traffic Impact Study for Proposed Cavallo Highlands Subdivision at 29080 Fairview Avenue in Hayward, CA



FIGURE 1: EXISTING PEAK HOUR VOLUMES AND LANE CONFIGURATION

Legend

- xx(XX) AM (PM) Peak Hour Turning Movement Volumes
- Study Intersections
- Stop Control Intersections

[illegible]

3.2 ROADWAY AND INTERSECTION OPERATING CONDITIONS

This section summarizes existing roadway and intersection operating conditions.

Traffic Data Collection

Based on discussions with City staff,¹ the following three study intersections were selected for analysis:

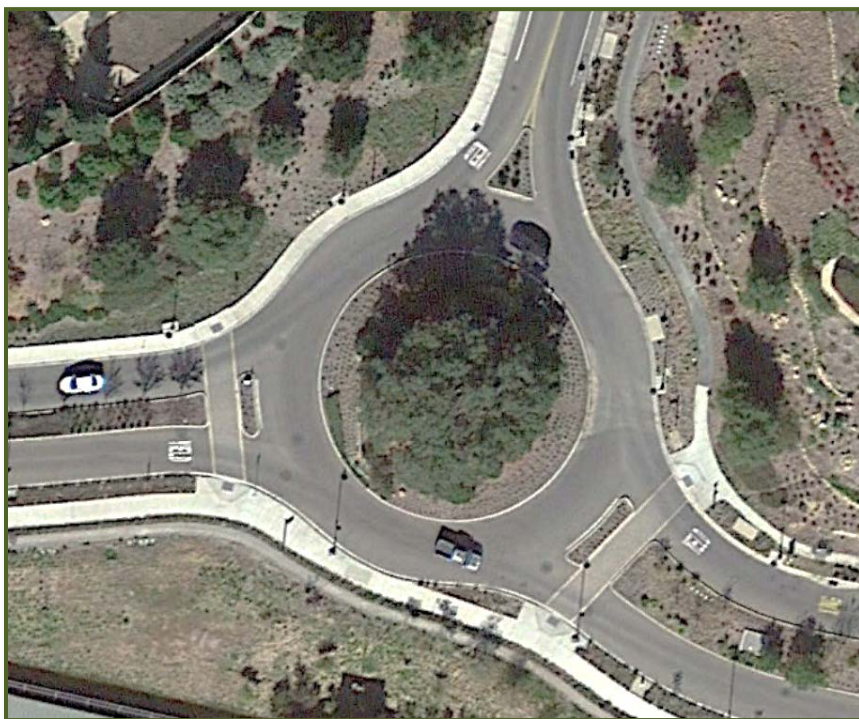
1. Carden Lane/Stonebrae Elementary School Driveway
2. Carden Lane/ Stonebrae Road
3. Stonebrae Road/Hayward Boulevard

The intersection of Carden Lane/Stonebrae Elementary School Driveway is a T-intersection with One Way Stop control on the side street school driveway.

The intersection of Carden Lane/ Stonebrae Road is a T-intersection with All Way Stop control. The westbound approach has its own left-turn pocket.

The intersection of Stonebrae Road/Hayward Boulevard is a three-legged roundabout with yield control. Crosswalks exit on the south and west leg of the intersection.

Figure 1 shows the turning movement volumes at each study intersection. Intersection turning movement counts collected by AMG are included in **Appendix A**.



3.3 LEVEL OF SERVICE METHODOLOGY

Level of Service is a qualitative index of the performance of an element of the transportation system. Level of Service (LOS) is a rating scale running from A to F, with A indicating no congestion of any kind, and F indicating intolerable congestion and delays.

The 2000 Highway Capacity Manual (HCM) is the standard reference published by the Transportation Research Board and contains the specific criteria and methods to be used in assessing LOS. There are several software packages that have been developed to implement HCM. In this study the Synchro software was used to calculate the LOS at the study intersections.

UNSIGNALIZED INTERSECTIONS

The method of unsignalized intersection capacity analysis used in this study is from Chapter 10, "Unsignalized Intersections" of the Highway Capacity Manual, Special report No. 209, Transportation

¹ Conversation with Sai Midididdi, T.E., City of Hayward Public Works, July 2016

Research Board, updated October 2000. This method applies to two-way STOP sign or YIELD sign-controlled intersections (or one-way STOP sign or YIELD sign-controlled intersections at three-way intersections). At such intersections, drivers on the minor street are forced to use judgment when selecting gaps in the major flow through which to execute crossings or turning maneuvers. Thus, the capacity of the controlled legs of an intersection is based on three factors:

1. The distribution of gaps in the major street traffic stream.
2. Driver judgment in selecting gaps through which to execute their desired maneuvers.
3. Follow-up time required to move into the front-of-queue position.

The level of service criterion for Two-Way STOP controlled intersections is somewhat different from the criterion used for signalized intersections. The primary reason for this is the difference that drivers expect a signalized intersection to carry higher traffic volumes than unsignalized intersections. Additionally, several driver behavior conditions combine to make delays at signalized intersections less onerous than at unsignalized intersections.

The LOS is reported for the minor approach. Depending on the availability of gaps, the minor approach might be operating at LOS D, E, or F while the overall intersection operates at LOS C or better. A minor approach that operates at LOS D, E, or F does not automatically translate into a need for a traffic signal. A signal warrant would still need to be met. There are many instances where only a few vehicles are experiencing LOS D, E, or F on the minor approach while the whole intersection operates at an acceptable LOS. A signal is usually not warranted under such conditions.

Table 1 summarizes the relationship between delay and LOS for unsignalized intersections. At side-street stop-controlled intersections, the delay is calculated for each stop-controlled movement, the left-turn movement from the major street, as well as the intersection average. The intersection average delay and highest movement/approach delay are reported for side street stop-controlled intersections.

3.4 SIGNIFICANCE CRITERIA

Since the Project lies within City jurisdiction and all of the transportation facilities that may be affected lie within the city, the City of Hayward's impact criteria will be used to assess the Project's impacts. The City of Hayward Interim Traffic Study Impact Guidelines² indicated to report the LOS and delay for unsignalized intersections and determine if any of the following are met:

- a.) Traffic Signal Warrant (peak hour)
- b.) Pedestrian Signal Warrant
- c.) STOP-sign Warrant

It stated that meeting any of the above warrants does not necessarily result in a significant impact. In addition, for both signalized and unsignalized intersections, the project would result in a potentially significant impact if:

The intersection operates at Level of Service F without the project under Existing, Background or Cumulative conditions and the addition of the project under Existing plus Project, Project or Cumulative plus

**Table 1: Unsignalized Intersection
LOS Criteria**

LOS	Driver's Perception and Traffic Operation Description	Delay in Seconds
A	Little or no delays	< 10
B	Short traffic delays	> 10 – 15
C	Average traffic delays	> 15 - 25
D	Long traffic delays	> 25 – 35
E	Very long traffic delays	> 35 - 50
F	Extreme traffic delays with intersection capacity exceeded	> 50

² City of Hayward Interim Traffic Study Guidelines, October 2015; revised December 2015

Project conditions results in an increase in the average control delay of 5.0 seconds or greater when compared to the associated no project condition.

3.4.1 Intersection Level of Service

The results of the LOS analysis for the existing intersections are shown in **Table 2**. The LOS for all the intersections operates at acceptable LOS E or better. Detailed level of service worksheets are provided in **Appendix B**.

Table 2: Existing LOS of Study Intersections

ID	Intersection	Existing Control	Existing Conditions			
			A.M.		P.M.	
			Delay	LOS	Delay	LOS
1	Carden Lane/Stonebrae Elem Sch. Driveway	One Way Stop ¹	37.6	E	9.7	A
2	Carden Lane/ Stonebrae Road	All Way Stop	18.9	C	8.6	A
3	Stonebrae Road/Hayward Boulevard	Roundabout ²	-	C	-	A

Note 1: Delay reported for worst movement for one-way stop-controlled intersections. Overall intersection operation is acceptable.

Note 2: HCM 2000 for roundabouts uses ICU used for LOS calculation rather than delay

School Traffic

Similar to many schools, it is our understanding that Stonebrae Elementary School has experienced congestion issues during the AM drop-off and PM pick-up periods.

During the morning peak hour, it was observed that a constant stream of vehicles was observed to arrive at different times and the drop-off period finished around 8:30 AM. Vehicles were observed to form long queues and occasionally extend beyond the driveway and overflow onto Carden Lane.



AM - Inbound School Traffic

During the PM pick-up period, the peak queueing in the parking lot and around adjacent streets occur at approximately 2:50 PM. Long queues were observed to form in the parking lot and could extend out to Carden Lane and beyond towards Stonebrae Road.



PM - Inbound School Traffic

4.0 TRIP GENERATION AND DISTRIBUTION METHODOLOGY

The proposed project consists of 19 single family dwelling units. The proposed project site plan is shown on **Figure 2**.

4.1 TRIP GENERATION

Trip generation is defined as the number of “vehicle trips” produced by a particular land use or project. A trip is defined as a one-direction vehicle movement. The total number of trips generated by each land use includes the inbound and outbound trips.

The trip generation estimates for the proposed project were calculated using the standard reference Trip Generation, 10th Edition, published by the Institute of Transportation Engineers (ITE). As shown in the site plan, the proposed project consists of 19 single family dwelling units. The estimated potential trip generation of the proposed project is shown in **Table 3**. It is estimated that the project will generate approximately 14 trips during the AM peak hour and 19 trips during the PM peak hour.

Table 3: Proposed Project Trip Generation

Land Use	ITE Code	Size		A.M. Peak				P.M. Peak			
				Rate	In	Out	Total	Rate	In	Out	Total
Residential	ITE 210 ^a	19	units	0.74	4	10	14	0.99	12	7	19
Total					4	10	14		12	7	19

Source: ITE Trip Generation Manual 10th Edition, 2017

^a Detached Units

4.2 TRIP DISTRIBUTION

Trip distribution is a process that determines in what proportion vehicles would be expected to travel between a project site and various destinations outside the project study area. The process of trip assignment determines the various routes that vehicles would take from the project site to each destination using the estimated trip distribution.

Trip distribution percentages were developed based on the location of the site, surrounding land uses, known regional travel routes and particularly based on the current traffic turning movements. The trip distribution percentages are assumed as follows:

- 60% to/from Hayward Boulevard
- 35% to/from Fairview Avenue
- 5% to/from Stonebrae Elementary School

5.0 EXISTING PLUS PROJECT TRAFFIC CONDITION

This section presents the assessment of potential transportation impacts of proposed project.

5.1 LEVEL OF SERVICE ANALYSIS

Figure 3 shows the Existing plus Project peak hour turning movement volumes and lane geometry. Detailed level of service worksheets are provided in **Appendix C**.

Table 4 shows the levels of service and change in delay under Existing plus Project conditions. Similar to the existing condition, the LOS for all the intersections operates at acceptable LOS E or better. The change in delay or LOS due to project traffic is not considered potentially significant.

Table 4: Existing plus Project Intersections LOS

ID	Intersection	Existing Control	Existing Conditions				Existing Plus Project Conditions			
			A.M.		P.M.		A.M.		P.M.	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	Carden Lane/Stonebrae Elem School Driveway	One Way Stop ¹	37.6	E	9.7	A	41.5	E	9.9	A
2	Carden Lane/ Stonebrae Road	All Way Stop	18.9	C	8.6	A	19.8	C	8.7	A
3	Stonebrae Road/Hayward Boulevard	Roundabout ²	-	C	-	A	-	C	-	A

Note 1: Delay reported for worst movement for one-way stop-controlled intersections. Overall intersection operation acceptable.

Note 2: HCM 2000 for roundabouts uses ICU used for LOS calculation rather than delay

Signal Warrant Analysis

The intersection of Carden Lane/Stonebrae Elementary School Driveway and Carden Lane/ Stonebrae Road are currently unsignalized. AMG conducted a peak hour signal warrant analysis. The analysis indicated that signal warrants are not met for both intersections. Detailed results are provided in **Appendix C**.

Vehicle Queues

Potential vehicle queuing impact was checked for all the intersections. Vehicle queuing was estimated based on the 95th percentile queue length reported in Simtraffic and is shown in **Table 5**. With the added project traffic, it was estimated that the highest queue increases is for the southbound through and right-turn movements at the intersection of Carden Lane/Stonebrae Elementary School Driveway during the AM peak hour. The estimated increase is approximately 10 feet which is less than a half-car length. The estimated project traffic would be proceeding past the school driveway and not add to the right-turn queue going into the school. The estimated queue increases or decreases for the other locations are not considered to be significant. It could be concluded that the addition of project traffic would not exacerbate conditions to create an impact under CEQA, and therefore no mitigation is needed.

Detailed results are provided in **Appendix C**.

Table 5: Existing plus Project Intersections Queuing Analysis 95th Percentile Queue (ft.)

ID	Intersection	Turning Movement	Existing Conditions		Existing + Project Conditions		Difference (Ex + P minus Ex)	
			A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
1	Carden Lane/Stonebrae Elementary School Driveway	EBLR	90'	49'	91'	49'	1'	'
		NBLT	18'	-	17'	-	-1'	'
		SBTR	61'	7'	71'	8'	10'	1'
2	Carden Lane/ Stonebrae Road	EBTR	137'	73'	138'	76'	1'	3'
		WBL	40'	27'	40'	27'	'	'
		WBT	83'	57'	90'	57'	7'	'
		NBLR	81'	47'	85'	46'	4'	-1'
3	Stonebrae Road/Hayward Boulevard	EB	76'	52'	72'	52'	-4'	'
		SB	61'	37'	61'	36'	'	-1'
		WVB	69'	30'	70'	37'	1'	7'

Traffic Impact Study for Proposed Cavallo Highlands Subdivision at 29080 Fairview Avenue in Hayward, CA



FIGURE 3: EXISTING PLUS PROJECT PEAK HOUR VOLUMES AND LANE CONFIGURATION

Legend

XX(XX) AM (PM) Peak Hour Turning Movement Volumes



Study Intersections



Stop Control Intersections

5.2 PROPOSED ACCESS AND CIRCULATION

The proposed project access roadway is located at approximately 650 feet to the south of the intersection of Carden Lane/ Stonebrae Road. The proposed roadway (Via Del Corso) is shown to be more than six percent grade. The proposed intersection driveway at Carden Lane is approximately 30-feet wide which is considered acceptable to accommodate two-way inbound and outbound traffic.

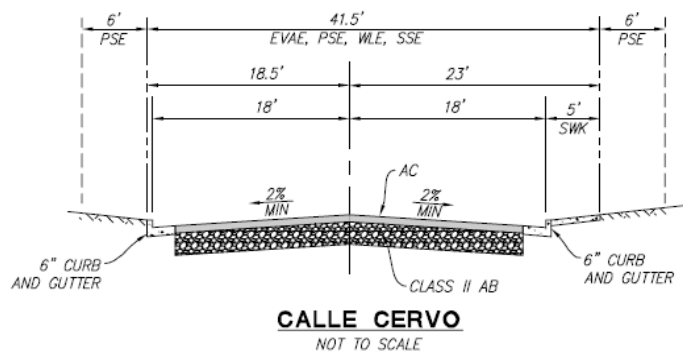
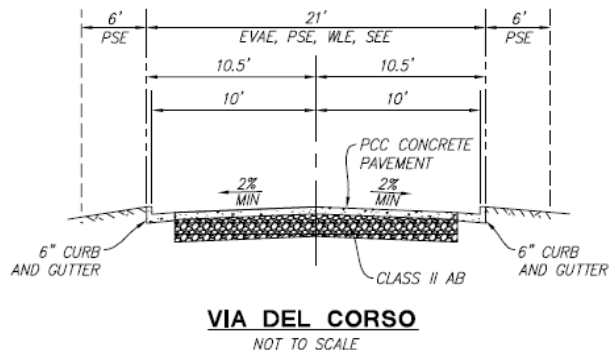
The proposed intersection is at level grade and sight visibility is clear.

Internal private streets are shown to be 36-feet which would allow for two-way travel and on-street parking on both sides of the street.

The proposed circulation is considered acceptable.



Proposed Project Access Road on Carden Lane



Proposed Roadway Cross Section

6.0 CONCLUSION

The proposed project is a 19-lot single family residential subdivision. Based on the results of the analysis, the following is a summary of our findings:

Existing Condition

- Three intersections were selected for analysis. Under the existing conditions, the LOS for all the intersections operates at acceptable LOS E or better.

Existing plus Proposed Project

- It is estimated that the project will generate approximately 14 trips during the AM peak hour and 19 trips during the PM peak hour.
- Under the Existing plus Project Conditions, the LOS for all the intersections will continue to operate at acceptable LOS E or better.
- Peak Hour Signal Warrants are not met at the intersections of Carden Lane/Stonebrae Elementary School Driveway and Carden Lane/ Stonebrae Road.
- The estimated queue increases for the study intersections are not considered to be significant.
- The proposed site access and circulation is considered acceptable.
- Based on the results of the analysis as indicated above, it could be concluded that the addition of project traffic would not exacerbate conditions to create an impact under CEQA, and therefore no mitigation is needed.

Appendix A Traffic Volume Counts

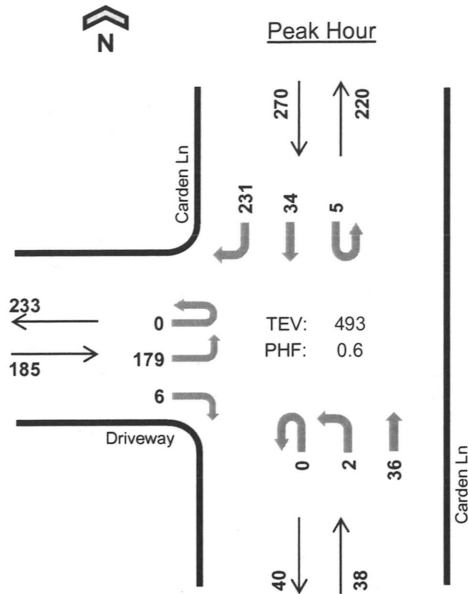
Carden Ln Driveway



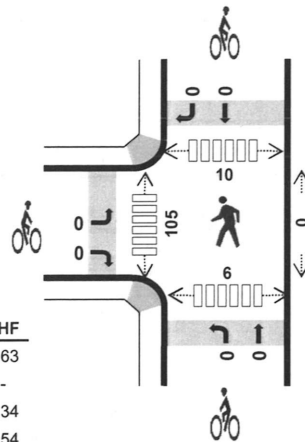
Date: 09/13/2016

Count Period: 7:00 AM to 9:00 AM

Peak Hour: 7:30 AM to 8:30 AM



	HV %:	PHF
EB	0.5%	0.63
WB	-	-
NB	0.0%	0.34
SB	0.7%	0.54
TOTAL	0.6%	0.60



Two-Hour Count Summaries

Interval Start	Driveway				0				Carden Ln				Carden Ln				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	7	0
7:15 AM	0	8	0	0	0	0	0	0	0	0	0	0	0	1	0	0	13	22	0
7:30 AM	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	3	21	29	0
7:45 AM	0	39	0	2	0	0	0	0	0	0	0	2	0	4	0	8	70	125	183
8:00 AM	0	70	0	4	0	0	0	0	0	0	0	8	0	1	0	17	106	206	382
8:15 AM	0	65	0	0	0	0	0	0	0	0	2	26	0	0	0	6	34	133	493
8:30 AM	0	9	0	0	0	0	0	0	0	0	0	2	0	1	0	1	2	15	479
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3	357
Count Total	0	199	0	6	0	0	0	0	0	0	2	40	0	7	0	36	250	540	0
Peak Hour	All	0	179	0	6	0	0	0	0	0	2	36	0	5	0	34	231	493	0
	HV	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	0
	HV%	-	1%	-	0%	-	-	-	-	-	0%	0%	-	0%	-	0%	1%	1%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	2	4
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	10	3	0	13
8:00 AM	0	0	0	1	1	0	0	0	0	0	0	63	0	4	67
8:15 AM	1	0	0	1	2	0	0	0	0	0	0	30	7	0	37
8:30 AM	1	0	0	0	1	0	0	0	0	0	0	1	1	1	3
8:45 AM	0	0	0	0	0	0	0	0	1	1	0	0	0	1	1
Count Total	3	0	0	2	5	0	0	0	1	1	0	107	11	8	126
Peak Hr	1	0	0	2	3	0	0	0	0	0	0	105	10	6	121

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Driveway				0				Carden Ln				Carden Ln				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	
8:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	
8:30 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	
Count Total	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	2	5	
Peak Hour	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	

Two-Hour Count Summaries - Bikes																		
Interval Start	Driveway				0				Carden Ln				Carden Ln				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	LT	TH	RT		LT	TH	RT		LT	TH	RT		LT	TH	RT			
7:00 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	
7:15 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	
7:30 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	
7:45 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	
8:00 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	
8:15 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	
8:30 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	
8:45 AM	0	0	0		0	0	0		0	0	0		0	1	0		1	
Count Total	0	0	0		0	0	0		0	0	0		0	1	0		0	
Peak Hour	0	0	0		0	0	0		0	0	0		0	0	0		0	

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

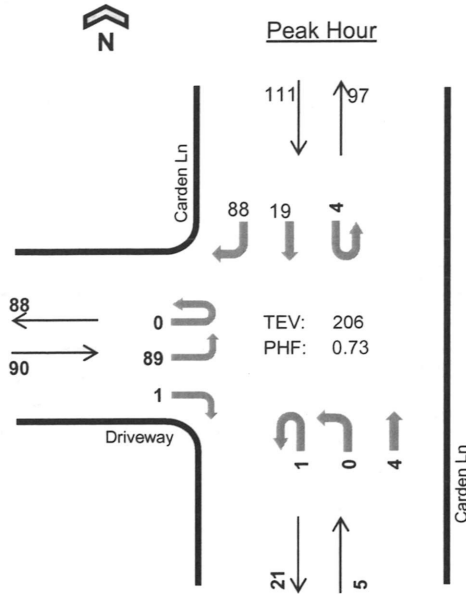
Carden Ln Driveway



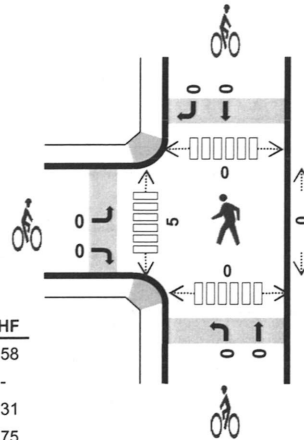
Date: 09/13/2016

Count Period: 2:00 PM to 4:00 PM

Peak Hour: 2:00 PM to 3:00 PM



	HV %:	PHF
EB	1.1%	0.58
WB	-	-
NB	0.0%	0.31
SB	0.0%	0.75
TOTAL	0.5%	0.73



Two-Hour Count Summaries

Interval Start	Driveway				0				Carden Ln Northbound				Carden Ln Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	13	0	0	0	0	0	0	1	0	3	0	2	0	11	10	40	0
2:15 PM	0	15	0	0	0	0	0	0	0	0	0	0	1	0	4	32	52	0
2:30 PM	0	38	0	1	0	0	0	0	0	0	1	0	0	0	2	28	70	0
2:45 PM	0	23	0	0	0	0	0	0	0	0	0	0	1	0	2	18	44	206
3:00 PM	0	9	0	0	0	0	0	0	0	1	0	0	0	0	0	9	19	185
3:15 PM	0	10	0	0	0	0	0	0	0	0	1	0	0	0	0	7	18	151
3:30 PM	0	11	0	0	0	0	0	0	0	0	0	0	0	0	3	6	20	101
3:45 PM	0	7	0	0	0	0	0	0	0	0	3	0	0	0	7	9	26	83
Count Total	0	126	0	1	0	0	0	0	1	1	8	0	4	0	29	119	289	0
Peak Hour	All	0	89	0	1	0	0	0	1	0	4	0	4	0	19	88	206	0
	HV	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	HV%	-	1%	-	0%	-	-	-	0%	-	0%	-	0%	-	0%	0%	1%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	1	0	0	0	1	0	0	0	0	0	0	5	0	0	5
Peak Hr	1	0	0	0	1	0	0	0	0	0	0	5	0	0	5

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Driveway				0				Carden Ln				Carden Ln				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Count Total	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	
Peak Hour	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	

Two-Hour Count Summaries - Bikes																		
Interval Start	Driveway				0				Carden Ln				Carden Ln				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	LT	TH	RT		LT	TH	RT		LT	TH	RT		LT	TH	RT			
2:00 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	
2:15 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	
2:30 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	
2:45 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	
3:00 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	
3:15 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	
3:30 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	
3:45 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	
Count Total	0	0	0		0	0	0		0	0	0		0	0	0		0	
Peak Hour	0	0	0		0	0	0		0	0	0		0	0	0		0	

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Carden Ln Hayward Blvd

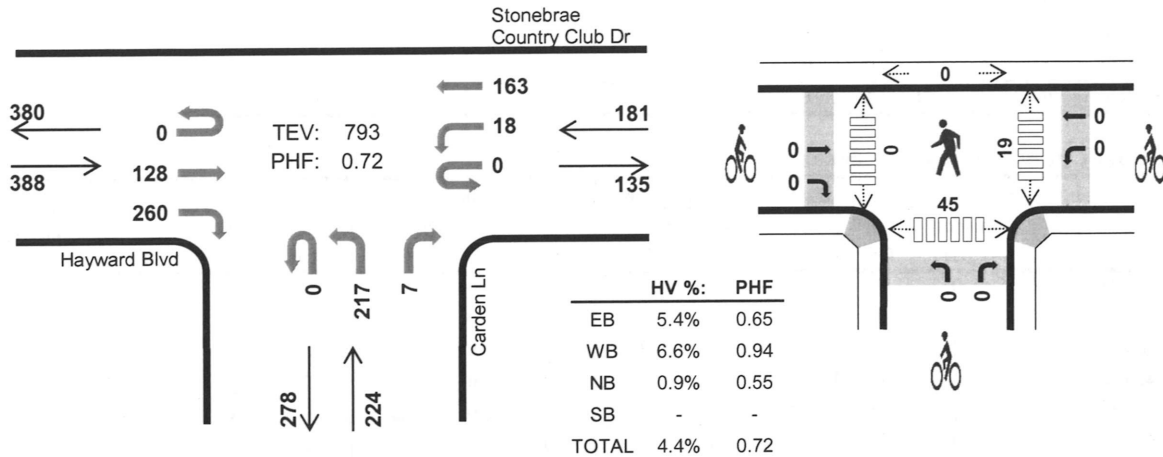


Peak Hour

Date: 09/13/2016

Count Period: 7:00 AM to 9:00 AM

Peak Hour: 7:30 AM to 8:30 AM



Two-Hour Count Summaries

Interval Start		Hayward Blvd				Stonebrae Country Club Dr				Carden Ln				0				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	0	44	3	0	1	53	0	0	1	0	0	0	0	0	0	102	0
7:15 AM		0	0	30	13	0	2	51	0	0	9	0	1	0	0	0	0	106	0
7:30 AM		0	0	38	25	0	1	47	0	0	5	0	0	0	0	0	0	116	0
7:45 AM		0	0	28	82	0	7	41	0	0	36	0	1	0	0	0	0	195	519
8:00 AM		0	0	29	120	0	7	37	0	0	78	0	3	0	0	0	0	274	691
8:15 AM		0	0	33	33	0	3	38	0	0	98	0	3	0	0	0	0	208	793
8:30 AM		0	0	30	3	0	0	39	0	0	13	0	0	0	0	0	0	85	762
8:45 AM		0	0	35	2	0	0	31	0	0	0	0	1	0	0	0	0	69	636
Count Total		0	0	267	281	0	21	337	0	0	240	0	9	0	0	0	0	1,155	0
Peak Hour	All	0	0	128	260	0	18	163	0	0	217	0	7	0	0	0	0	793	0
	HV	0	0	19	2	0	0	12	0	0	2	0	0	0	0	0	0	35	0
	HV%	-	-	15%	1%	-	0%	7%	-	-	1%	-	0%	-	-	-	-	4%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0
7:15 AM	2	0	1	0	3	0	0	0	0	0	0	0	0	0	0
7:30 AM	7	0	0	0	7	0	0	0	0	0	0	0	0	0	0
7:45 AM	5	4	0	0	9	0	0	0	0	0	3	0	0	0	3
8:00 AM	3	5	0	0	8	0	0	0	0	0	8	0	0	26	34
8:15 AM	6	3	2	0	11	0	0	0	0	0	8	0	0	19	27
8:30 AM	5	1	1	0	7	0	0	0	0	0	1	0	0	2	3
8:45 AM	6	5	0	0	11	0	0	0	0	0	0	0	0	0	0
Count Total	36	18	4	0	58	0	0	0	0	0	20	0	0	47	67
Peak Hr	21	12	2	0	35	0	0	0	0	0	19	0	0	45	64

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Hayward Blvd				Stonebrae Country Club Dr				Carden Ln				0				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
7:15 AM	0	0	2	0	0	0	0	0	0	1	0	0	0	0	0	0	3	0
7:30 AM	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0
7:45 AM	0	0	5	0	0	0	4	0	0	0	0	0	0	0	0	0	9	21
8:00 AM	0	0	2	1	0	0	5	0	0	0	0	0	0	0	0	0	8	27
8:15 AM	0	0	5	1	0	0	3	0	0	2	0	0	0	0	0	0	11	35
8:30 AM	0	0	5	0	0	0	1	0	0	1	0	0	0	0	0	0	7	35
8:45 AM	0	0	5	1	0	0	5	0	0	0	0	0	0	0	0	0	11	37
Count Total	0	0	33	3	0	0	18	0	0	4	0	0	0	0	0	0	58	0
Peak Hour	0	0	19	2	0	0	12	0	0	2	0	0	0	0	0	0	35	0

Two-Hour Count Summaries - Bikes

Interval Start	Hayward Blvd			Stonebrae Country Club Dr			Carden Ln			0			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Carden Ln Hayward Blvd

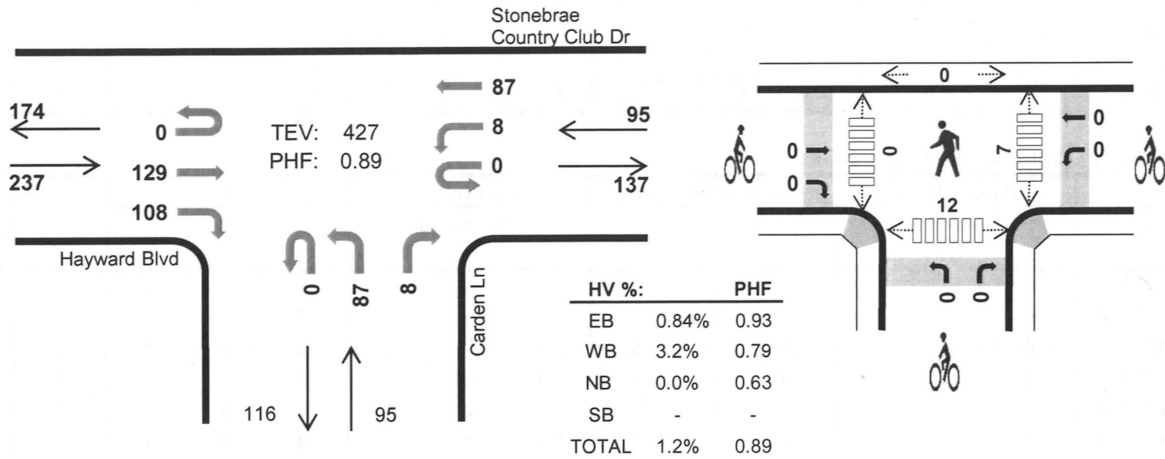


Peak Hour

Date: 09/13/2016

Count Period: 2:00 PM to 4:00 PM

Peak Hour: 2:00 PM to 3:00 PM



Two-Hour Count Summaries

Interval Start		Hayward Blvd				Stonebrae Country Club Dr				Carden Ln				0				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM		0	0	31	25	0	2	22	0	0	13	0	3	0	0	0	0	96	0
2:15 PM		0	0	27	37	0	0	30	0	0	18	0	0	0	0	0	0	112	0
2:30 PM		0	0	32	28	0	2	19	0	0	38	0	0	0	0	0	0	119	0
2:45 PM		0	0	39	18	0	4	16	0	0	18	0	5	0	0	0	0	100	427
3:00 PM		0	0	17	7	0	2	27	0	0	9	0	1	0	0	0	0	63	394
3:15 PM		0	0	31	7	0	0	19	0	0	11	0	0	0	0	0	0	68	350
3:30 PM		0	0	26	9	0	0	66	0	0	10	0	0	0	0	0	0	111	342
3:45 PM		0	0	23	13	0	2	20	0	0	10	0	0	0	0	0	0	68	310
Count Total		0	0	226	144	0	12	219	0	0	127	0	9	0	0	0	0	737	0
Peak Hour	All	0	0	129	108	0	8	87	0	0	87	0	8	0	0	0	0	427	0
	HV	0	0	1	1	0	0	3	0	0	0	0	0	0	0	0	0	5	0
	HV%	-	-	1%	1%	-	0%	3%	-	-	0%	-	0%	-	-	-	-	1%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:00 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	3	5
2:15 PM	1	1	0	0	2	0	0	0	0	0	3	0	0	5	8
2:30 PM	1	1	0	0	2	0	0	0	0	0	2	0	0	4	6
2:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2
3:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Count Total	3	4	0	0	7	0	0	0	0	0	8	0	0	13	21
Peak Hr	2	3	0	0	5	0	0	0	0	0	7	0	0	12	19

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Hayward Blvd				Stonebrae Country Club Dr				Carden Ln				0				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0
2:30 PM	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	2	0
2:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	5
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
3:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	4
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
3:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
Count Total	0	0	2	1	0	0	4	0	0	0	0	0	0	0	0	0	7	0
Peak Hour	0	0	1	1	0	0	3	0	0	0	0	0	0	0	0	0	5	0

Two-Hour Count Summaries - Bikes

Interval Start	Hayward Blvd			Stonebrae Country Club Dr			Carden Ln			0			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

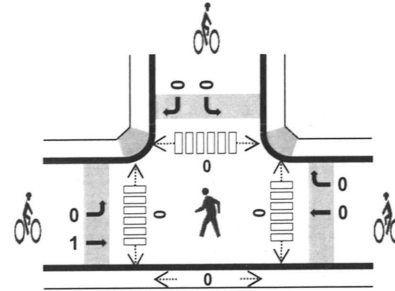
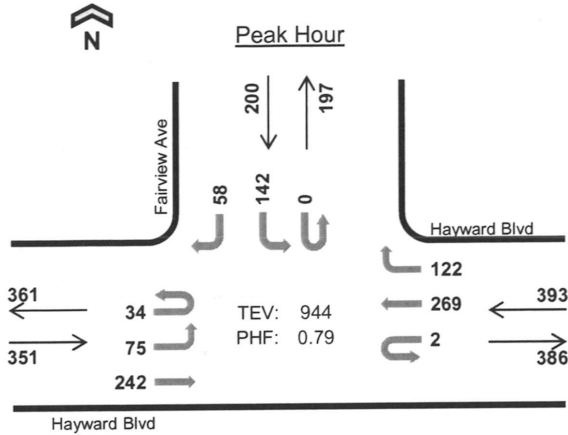
Fairview Ave Hayward Blvd



Date: 09/13/2016

Count Period: 7:00 AM to 9:00 AM

Peak Hour: 7:30 AM to 8:30 AM



	HV %:	PHF
EB	7.4%	0.69
WB	3.6%	0.69
NB	-	-
SB	1.5%	0.70
TOTAL	4.6%	0.79

Two-Hour Count Summaries

Interval Start	Hayward Blvd				Hayward Blvd				0				Fairview Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	1	19	30	0	0	0	30	27	0	0	0	0	0	15	0	3	125	0	
7:15 AM	1	22	16	0	0	0	33	26	0	0	0	0	0	27	0	13	138	0	
7:30 AM	0	17	36	0	0	0	35	23	0	0	0	0	0	24	0	15	150	0	
7:45 AM	6	19	64	0	0	0	54	22	0	0	0	0	0	51	0	20	236	649	
8:00 AM	14	15	99	0	1	0	84	31	0	0	0	0	0	45	0	9	298	822	
8:15 AM	14	24	43	0	1	0	96	46	0	0	0	0	0	22	0	14	260	944	
8:30 AM	1	19	16	0	0	0	37	14	0	0	0	0	0	16	0	19	122	916	
8:45 AM	0	15	18	0	0	0	17	14	0	0	0	0	0	16	0	10	90	770	
Count Total	37	150	322	0	2	0	386	203	0	0	0	0	0	216	0	103	1,419	0	
Peak Hour	All	34	75	242	0	2	0	269	122	0	0	0	0	0	142	0	58	944	0
	HV	7	0	19	0	0	0	13	1	0	0	0	0	0	1	0	2	43	0
	HV%	21%	0%	8%	-	0%	-	5%	1%	-	-	-	-	-	1%	-	3%	5%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

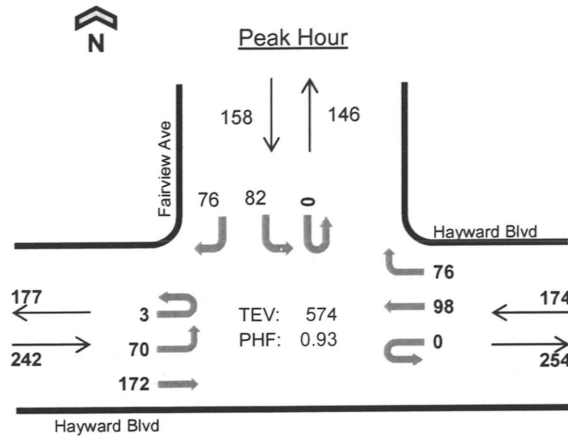
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
7:15 AM	4	1	0	1	6	0	0	0	0	0	1	0	0	0	1
7:30 AM	6	0	0	1	7	0	0	0	0	0	0	0	0	0	0
7:45 AM	8	4	0	0	12	0	0	0	0	0	0	0	0	0	0
8:00 AM	5	5	0	2	12	1	0	0	0	1	0	0	0	0	0
8:15 AM	7	5	0	0	12	0	0	0	0	0	0	0	0	0	0
8:30 AM	5	2	0	0	7	0	0	0	1	1	0	1	0	0	1
8:45 AM	4	5	0	0	9	0	0	0	1	1	1	0	0	0	1
Count Total	39	22	0	5	66	1	0	0	2	3	2	1	0	0	3
Peak Hr	26	14	0	3	43	1	0	0	0	1	0	0	0	0	0

Two-Hour Count Summaries - Heavy Vehicles																			
Interval Start	Hayward Blvd				Hayward Blvd				0				Fairview Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0
7:15 AM	1	1	2	0	0	0	1	0	0	0	0	0	0	0	0	0	1	6	0
7:30 AM	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	1	7	0
7:45 AM	4	0	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	12	26
8:00 AM	1	0	4	0	0	0	4	1	0	0	0	0	0	0	1	0	1	12	37
8:15 AM	2	0	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0	12	43
8:30 AM	0	0	5	0	0	0	2	0	0	0	0	0	0	0	0	0	0	7	43
8:45 AM	0	0	4	0	0	0	4	1	0	0	0	0	0	0	0	0	0	9	40
Count Total	8	1	30	0	0	0	20	2	0	0	0	0	0	0	2	0	3	66	0
Peak Hour	7	0	19	0	0	0	13	1	0	0	0	0	0	0	1	0	2	43	0

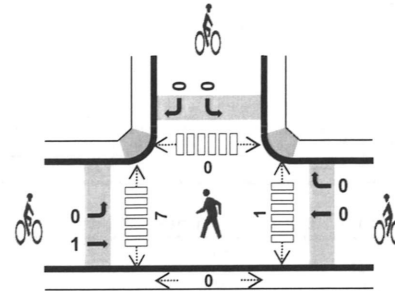
Two-Hour Count Summaries - Bikes																		
Interval Start	Hayward Blvd				Hayward Blvd				0				Fairview Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	LT	TH	RT		LT	TH	RT		LT	TH	RT		LT	TH	RT			
7:00 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	0
7:15 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	0
7:30 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	0
7:45 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	0
8:00 AM	0	1	0		0	0	0		0	0	0		0	0	0		1	1
8:15 AM	0	0	0		0	0	0		0	0	0		0	0	0		0	1
8:30 AM	0	0	0		0	0	0		0	0	0		0	0	1		1	2
8:45 AM	0	0	0		0	0	0		0	0	0		1	0	0		1	3
Count Total	0	1	0		0	0	0		0	0	0		1	0	1		3	0
Peak Hour	0	1	0		0	0	0		0	0	0		0	0	0		1	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Fairview Ave Hayward Blvd



Date: 09/13/2016
Count Period: 2:00 PM to 4:00 PM
Peak Hour: 2:00 PM to 3:00 PM



	HV %:	PHF
EB	1.2%	0.86
WB	2.3%	0.78
NB	-	-
SB	0.0%	0.86
TOTAL	1.3%	0.93

Two-Hour Count Summaries

Interval Start		Hayward Blvd				Hayward Blvd				0				Fairview Ave				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM		1	21	43	0	0	0	18	1205	0	0	0	0	0	0	0	16	134	0
2:15 PM		1	20	50	0	0	0	25	24	0	0	0	0	0	12	0	19	151	0
2:30 PM		0	17	38	0	0	0	31	25	0	0	0	0	0	27	0	17	155	0
2:45 PM		1	12	41	0	0	0	24	12	0	0	0	0	0	23	0	24	137	577
3:00 PM		1	14	12	0	0	0	23	13	0	0	0	0	0	10	0	14	87	530
3:15 PM		2	22	23	0	0	0	13	18	0	0	0	0	0	14	0	9	101	480
3:30 PM		1	17	20	0	1	0	38	35	0	0	0	0	0	13	0	17	142	467
3:45 PM		0	19	26	0	1	0	18	13	0	0	0	0	0	9	0	17	103	433
Count Total		7	142	253	0	2	0	190	155	0	0	0	0	0	128	0	133	1010	0
Peak Hour	All	3	70	172	0	0	0	98	76	0	0	0	0	0	0	0	76	577	0
	HV	1	1	1	0	0	0	2	2	0	0	0	0	0	0	0	0	7	0
	HV%	33%	1%	1%	-	-	-	2%	3%	-	-	-	-	-	0%	-	0%	1%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:00 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
2:15 PM	3	2	0	0	5	0	0	0	0	0	1	4	0	0	5
2:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3
3:00 PM	0	1	0	0	1	1	0	0	0	1	0	0	0	0	0
3:15 PM	1	1	0	1	3	0	0	0	0	0	0	0	2	0	2
3:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
3:45 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0
Count Total	6	7	0	1	14	2	0	0	0	2	1	7	2	0	10
Peak Hr	3	4	0	0	7	1	0	0	0	1	1	7	0	0	8

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Hayward Blvd				Hayward Blvd				0				Fairview Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	1	1	1	0	0	0	0	0	2	0	0	0	0	0	0	0	1	5
2:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
2:45 PM	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
3:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
3:15 PM	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
3:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
3:45 PM	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Count Total	2	2	2	0	0	0	4	3	0	0	0	0	0	0	0	0	1	14
Peak Hour	1	1	1	0	0	0	2	2	0	0	0	0	0	0	0	0	0	7

Two-Hour Count Summaries - Bikes																		
Interval Start	Hayward Blvd				Hayward Blvd				0				Fairview Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	LT	TH	RT		LT	TH	RT		LT	TH	RT		LT	TH	RT			
2:00 PM	0	1	0		0	0	0		0	0	0		0	0	0		1	0
2:15 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	0
2:30 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	0
2:45 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	1
3:00 PM	1	0	0		0	0	0		0	0	0		0	0	0		1	1
3:15 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	1
3:30 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	1
3:45 PM	0	0	0		0	0	0		0	0	0		0	0	0		0	1
Count Total	1	1	0		0	0	0		0	0	0		0	0	0		2	0
Peak Hour	0	1	0		0	0	0		0	0	0		0	0	0		1	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.



Location: Carden Ln B/N Stonebrae & Driveway
Date Range: 9/13/2016 - 9/19/2016
Site Code: 01

Time	Tuesday			Wednesday			Thursday			Friday			Saturday			Sunday			Monday			Mid-Week Average		
	9/13/2016			9/14/2016			9/15/2016			9/16/2016			9/17/2016			9/18/2016			9/19/2016			9/18/2016		
	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total
12:00 AM	2	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	4
1:00 AM	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	3
2:00 AM	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
3:00 AM	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
4:00 AM	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
5:00 AM	0	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	1	1
6:00 AM	6	9	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	9	15
7:00 AM	66	132	198	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	66	132	198
8:00 AM	174	172	346	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	174	172	346
9:00 AM	3	10	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	10	13
10:00 AM	13	11	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	11	24
11:00 AM	6	18	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	18	24
12:00 PM	60	52	112	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	52	112
1:00 PM	15	22	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	22	37
2:00 PM	101	114	215	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	101	114	215
3:00 PM	77	48	125	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	77	48	125
4:00 PM	40	43	83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	43	83
5:00 PM	102	95	197	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	102	95	197
6:00 PM	27	25	52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	27	25	52
7:00 PM	49	25	74	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	49	25	74
8:00 PM	4	8	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	8	12
9:00 PM	18	3	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	3	21
10:00 PM	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2
11:00 PM	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	4
Total	766	796	1,562	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	766	796	1,562
Percent	49%	51%		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	49%	51%	

1. Mid-week average includes data between Tuesday and Thursday.

Denis Wu 925-895-0380
W & S Solutions, LLC
09/15/16 12:54:17










Appendix B Intersection LOS Analysis: Existing LOS Calculation Sheets

HCM Unsignalized Intersection Capacity Analysis

1: Carden Ln











29080 Fairview Ave TIS

Existing AM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	179	6	2	36	39	231
Future Volume (Veh/h)	179	6	2	36	39	231
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.60	0.60	0.60	0.60	0.60	0.60
Hourly flow rate (vph)	298	10	3	60	65	385
Pedestrians	105			111	115	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	3.5			3.5	3.5	
Percent Blockage	10			11	11	
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	544	474	555			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	544	474	555			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	26	98	100			
cM capacity (veh/h)	401	479	923			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	308	63	450			
Volume Left	298	3	0			
Volume Right	10	0	385			
cSH	403	923	1700			
Volume to Capacity	0.76	0.00	0.26			
Queue Length 95th (ft)	158	0	0			
Control Delay (s)	37.6	0.5	0.0			
Lane LOS	E	A				
Approach Delay (s)	37.6	0.5	0.0			
Approach LOS	E					
Intersection Summary						
Average Delay		14.1				
Intersection Capacity Utilization		41.5%		ICU Level of Service	A	
Analysis Period (min)		15				









HCM Unsignalized Intersection Capacity Analysis
2: Carden Ln & Stonebrae Rd

29080 Fairview Ave TIS
Existing AM

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	128	260	18	163	217	7
Future Volume (vph)	128	260	18	163	217	7
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Hourly flow rate (vph)	178	361	25	226	301	10
Direction, Lane #	EB 1	WB 1	WB 2	NB 1		
Volume Total (vph)	539	25	226	311		
Volume Left (vph)	0	25	0	301		
Volume Right (vph)	361	0	0	10		
Hadj (s)	-0.31	0.50	0.12	0.19		
Departure Headway (s)	5.2	6.8	6.4	6.1		
Degree Utilization, x	0.78	0.05	0.40	0.53		
Capacity (veh/h)	679	501	533	545		
Control Delay (s)	23.8	8.9	12.4	15.9		
Approach Delay (s)	23.8	12.0		15.9		
Approach LOS	C	B		C		
Intersection Summary						
Delay			18.9			
Level of Service			C			
Intersection Capacity Utilization			45.1%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
3: Stonebrae Rd & Hayward Blvd & Fairview Ave

29080 Fairview Ave TIS
Existing AM

								
Movement	EBU	EBL	EBR	SBL	SBR	NWU	NWL	NWR
Right Turn Channelized								
Traffic Volume (veh/h)	34	75	242	142	58	2	269	122
Future Volume (veh/h)	34	75	242	142	58	2	269	122
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	43	95	306	180	73	3	341	154
Approach Volume (veh/h)	444		253		498			
Crossing Volume (veh/h)	183		387		138			
High Capacity (veh/h)	1200		1021		1243			
High v/c (veh/h)	0.37		0.25		0.40			
Low Capacity (veh/h)	993		833		1033			
Low v/c (veh/h)	0.45		0.30		0.48			
Intersection Summary								
Maximum v/c High			0.40					
Maximum v/c Low			0.48					
Intersection Capacity Utilization			64.8%		ICU Level of Service		C	

Queuing and Blocking Report

Intersection: 1: Carden Ln

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	114	30	76
Average Queue (ft)	51	3	25
95th Queue (ft)	90	18	61
Link Distance (ft)	157	283	220
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Carden Ln & Stonebrae Rd

Movement	EB	WB	WB	NB
Directions Served	TR	L	T	LR
Maximum Queue (ft)	183	38	100	107
Average Queue (ft)	79	14	51	49
95th Queue (ft)	137	40	83	81
Link Distance (ft)	228		435	220
Upstream Blk Time (%)	0			
Queuing Penalty (veh)	0			
Storage Bay Dist (ft)		255		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Stonebrae Rd & Hayward Blvd & Fairview Ave

Movement	EB	SB	NW
Directions Served	ULR	ULR	ULR
Maximum Queue (ft)	88	70	86
Average Queue (ft)	32	28	27
95th Queue (ft)	76	61	69
Link Distance (ft)	751	398	228
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary










Network wide Queuing Penalty: 0

HCM Unsignalized Intersection Capacity Analysis

1: Carden Ln











29080 Fairview Ave TIS

Existing PM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	89	1	1	4	23	88
Future Volume (Veh/h)	89	1	1	4	23	88
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	120	1	1	5	31	119
Pedestrians	5			5	5	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	3.5			3.5	3.5	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	108	100	155			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	108	100	155			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	86	100	100			
cM capacity (veh/h)	883	951	1431			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	121	6	150			
Volume Left	120	1	0			
Volume Right	1	0	119			
cSH	884	1431	1700			
Volume to Capacity	0.14	0.00	0.09			
Queue Length 95th (ft)	12	0	0			
Control Delay (s)	9.7	1.3	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.7	1.3	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			4.3			
Intersection Capacity Utilization			21.0%	ICU Level of Service		A
Analysis Period (min)			15			








HCM Unsignalized Intersection Capacity Analysis
2: Carden Ln & Stonebrae Rd

29080 Fairview Ave TIS
Existing PM

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	129	108	8	87	87	8
Future Volume (vph)	129	108	8	87	87	8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	143	120	9	97	97	9
Direction, Lane #	EB 1	WB 1	WB 2	NB 1		
Volume Total (vph)	263	9	97	106		
Volume Left (vph)	0	9	0	97		
Volume Right (vph)	120	0	0	9		
Hadj (s)	-0.26	0.50	0.05	0.13		
Departure Headway (s)	4.2	5.5	5.0	4.8		
Degree Utilization, x	0.30	0.01	0.14	0.14		
Capacity (veh/h)	846	632	690	692		
Control Delay (s)	9.0	7.4	7.6	8.6		
Approach Delay (s)	9.0	7.6	8.6			
Approach LOS	A	A	A			
Intersection Summary						
Delay			8.6			
Level of Service			A			
Intersection Capacity Utilization			29.8%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 3: Stonebrae Rd & Hayward Blvd & Fairview Ave

29080 Fairview Ave TIS
Existing PM

							
Movement	EBU	EBL	EBR	SBL	SBR	NWL	NWR
Right Turn Channelized							
Traffic Volume (veh/h)	3	70	172	82	76	98	76
Future Volume (veh/h)	3	70	172	82	76	98	76
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	3	73	179	85	79	102	79
Approach Volume (veh/h)	255		164		181		
Crossing Volume (veh/h)	85		105		76		
High Capacity (veh/h)	1296		1276		1305		
High v/c (veh/h)	0.20		0.13		0.14		
Low Capacity (veh/h)	1080		1062		1089		
Low v/c (veh/h)	0.24		0.15		0.17		
Intersection Summary							
Maximum v/c High			0.20				
Maximum v/c Low			0.24				
Intersection Capacity Utilization			45.1%		ICU Level of Service		A

Queuing and Blocking Report

Intersection: 1: Carden Ln

Movement	EB	SB
Directions Served	LR	TR
Maximum Queue (ft)	59	14
Average Queue (ft)	29	1
95th Queue (ft)	49	7
Link Distance (ft)	157	220
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Carden Ln & Stonebrae Rd

Movement	EB	WB	WB	NB
Directions Served	TR	L	T	LR
Maximum Queue (ft)	82	31	70	55
Average Queue (ft)	47	6	36	31
95th Queue (ft)	73	27	57	47
Link Distance (ft)	228		435	220
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		255		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Stonebrae Rd & Hayward Blvd & Fairview Ave

Movement	EB	SB	NW
Directions Served	ULR	ULR	ULR
Maximum Queue (ft)	65	48	35
Average Queue (ft)	17	10	7
95th Queue (ft)	52	37	30
Link Distance (ft)	751	398	228
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 0

Appendix C Intersection LOS Analysis: Existing plus Project LOS Calculation Sheets

Peak Hour Signal Warrants










Queuing Analysis

Short-Term Recommendations

HCM Unsignalized Intersection Capacity Analysis

1: Carden Ln











Fairview
Existing Plus Project AM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	179	6	3	45	43	231
Future Volume (Veh/h)	179	6	3	45	43	231
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.60	0.60	0.60	0.60	0.60	0.60
Hourly flow rate (vph)	298	10	5	75	72	385
Pedestrians	105			111	115	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	3.5			3.5	3.5	
Percent Blockage	10			11	11	
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	570	480	562			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	570	480	562			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	23	98	99			
cM capacity (veh/h)	387	475	917			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	308	80	457			
Volume Left	298	5	0			
Volume Right	10	0	385			
cSH	389	917	1700			
Volume to Capacity	0.79	0.01	0.27			
Queue Length 95th (ft)	171	0	0			
Control Delay (s)	41.5	0.6	0.0			
Lane LOS	E	A				
Approach Delay (s)	41.5	0.6	0.0			
Approach LOS	E					
Intersection Summary						
Average Delay		15.2				
Intersection Capacity Utilization		41.6%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

2: Carden Ln & Stonebrae Rd









Fairview
Existing Plus Project AM

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	128	264	18	163	226	7
Future Volume (vph)	128	264	18	163	226	7
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Hourly flow rate (vph)	178	367	25	226	314	10
Direction, Lane #	EB 1	WB 1	WB 2	NB 1		
Volume Total (vph)	545	25	226	324		
Volume Left (vph)	0	25	0	314		
Volume Right (vph)	367	0	0	10		
Hadj (s)	-0.31	0.50	0.12	0.19		
Departure Headway (s)	5.2	6.8	6.5	6.2		
Degree Utilization, x	0.79	0.05	0.41	0.56		
Capacity (veh/h)	672	494	526	544		
Control Delay (s)	25.3	9.0	12.6	16.7		
Approach Delay (s)	25.3	12.2	16.7			
Approach LOS	D	B	C			
Intersection Summary						
Delay			19.8			
Level of Service			C			
Intersection Capacity Utilization			45.4%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: Stonebrae Rd & Hayward Blvd & Fairview Ave

Fairview
Existing Plus Project AM

								
Movement	EBU	EBL	EBR	SBL	SBR	NWU	NWL	NWR
Right Turn Channelized								
Traffic Volume (veh/h)	34	75	245	143	58	2	275	125
Future Volume (veh/h)	34	75	245	143	58	2	275	125
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	43	95	310	181	73	3	348	158
Approach Volume (veh/h)	448		254		509			
Crossing Volume (veh/h)	184		394		138			
High Capacity (veh/h)	1199		1016		1243			
High v/c (veh/h)	0.37		0.25		0.41			
Low Capacity (veh/h)	993		828		1033			
Low v/c (veh/h)	0.45		0.31		0.49			
Intersection Summary								
Maximum v/c High			0.41					
Maximum v/c Low			0.49					
Intersection Capacity Utilization			65.6%		ICU Level of Service		C	

Queuing and Blocking Report

Intersection: 1: Carden Ln

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	116	31	95
Average Queue (ft)	50	3	30
95th Queue (ft)	91	17	71
Link Distance (ft)	157	283	220
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Carden Ln & Stonebrae Rd

Movement	EB	WB	WB	NB
Directions Served	TR	L	T	LR
Maximum Queue (ft)	175	35	124	114
Average Queue (ft)	80	14	51	50
95th Queue (ft)	138	40	90	85
Link Distance (ft)	228		435	220
Upstream Blk Time (%)	0			
Queuing Penalty (veh)	0			
Storage Bay Dist (ft)		255		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Stonebrae Rd & Hayward Blvd & Fairview Ave

Movement	EB	SB	NW
Directions Served	ULR	ULR	ULR
Maximum Queue (ft)	88	74	98
Average Queue (ft)	30	30	27
95th Queue (ft)	72	61	70
Link Distance (ft)	751	398	228
Upstream Blk Time (%)			0
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary










Network wide Queuing Penalty: 0

HCM Unsignalized Intersection Capacity Analysis

1: Carden Ln











29080 Fairview Ave TIS

Existing Plus Project PM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	89	2	1	11	34	88
Future Volume (Veh/h)	89	2	1	11	34	88
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	120	3	1	15	46	119
Pedestrians	5			5	5	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	3.5			3.5	3.5	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	132	116	170			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	132	116	170			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	86	100	100			
cM capacity (veh/h)	855	933	1413			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	123	16	165			
Volume Left	120	1	0			
Volume Right	3	0	119			
cSH	857	1413	1700			
Volume to Capacity	0.14	0.00	0.10			
Queue Length 95th (ft)	13	0	0			
Control Delay (s)	9.9	0.5	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.9	0.5	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			4.0			
Intersection Capacity Utilization			21.5%	ICU Level of Service		A
Analysis Period (min)			15			








HCM Unsignalized Intersection Capacity Analysis 2: Carden Ln & Stonebrae Rd

29080 Fairview Ave TIS
Existing Plus Project PM

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	129	119	8	87	94	8
Future Volume (vph)	129	119	8	87	94	8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	143	132	9	97	104	9
Direction, Lane #	EB 1	WB 1	WB 2	NB 1		
Volume Total (vph)	275	9	97	113		
Volume Left (vph)	0	9	0	104		
Volume Right (vph)	132	0	0	9		
Hadj (s)	-0.27	0.50	0.05	0.14		
Departure Headway (s)	4.2	5.5	5.1	4.9		
Degree Utilization, x	0.32	0.01	0.14	0.15		
Capacity (veh/h)	844	627	684	687		
Control Delay (s)	9.1	7.4	7.7	8.8		
Approach Delay (s)	9.1	7.6	8.8			
Approach LOS	A	A	A			
Intersection Summary						
Delay			8.7			
Level of Service			A			
Intersection Capacity Utilization			30.7%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
3: Stonebrae Rd & Hayward Blvd & Fairview Ave

29080 Fairview Ave TIS
Existing Plus Project PM

							
Movement	EBU	EBL	EBR	SBL	SBR	NWL	NWR
Right Turn Channelized							
Traffic Volume (veh/h)	3	70	179	86	76	102	79
Future Volume (veh/h)	3	70	179	86	76	102	79
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	3	73	186	90	79	106	82
Approach Volume (veh/h)	262		169		188		
Crossing Volume (veh/h)	90		109		76		
High Capacity (veh/h)	1291		1272		1305		
High v/c (veh/h)	0.20		0.13		0.14		
Low Capacity (veh/h)	1076		1058		1089		
Low v/c (veh/h)	0.24		0.16		0.17		
Intersection Summary							
Maximum v/c High			0.20				
Maximum v/c Low			0.24				
Intersection Capacity Utilization			46.1%		ICU Level of Service		A

Queuing and Blocking Report

Intersection: 1: Carden Ln

Movement	EB	SB
Directions Served	LR	TR
Maximum Queue (ft)	60	16
Average Queue (ft)	30	1
95th Queue (ft)	49	8
Link Distance (ft)	157	220
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Carden Ln & Stonebrae Rd

Movement	EB	WB	WB	NB
Directions Served	TR	L	T	LR
Maximum Queue (ft)	91	31	70	55
Average Queue (ft)	48	6	35	32
95th Queue (ft)	76	27	57	46
Link Distance (ft)	228		435	220
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		255		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Stonebrae Rd & Hayward Blvd & Fairview Ave

Movement	EB	SB	NW
Directions Served	ULR	ULR	ULR
Maximum Queue (ft)	64	48	52
Average Queue (ft)	18	10	9
95th Queue (ft)	52	36	37
Link Distance (ft)	751	398	228
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 0