FEHR PEERS

TECHNICAL MEMORANDUM

Date: August 26, 2011

To: Jeannie Young, City of Redwood City
Claudia Olalla, City of Redwood City

From: Robert Eckols, Fehr & Peers
Colin Burgett, Nelson\Nygaard

Subject: ***Traffic Operations Analysis for Crosswalks at the Woodside Road (SR 84) & Middlefield Road Intersection***

SJ10-1195

This memorandum summarizes the findings of a traffic operations analysis from the effects of installing crosswalks across Woodside Road at the intersection with Middlefield Road in Redwood City, California. The purpose of the analysis is to support the preparation of an encroachment permit to implement at-grade pedestrian crossings of both Middlefield and Woodside Roads. The intersection crosswalk improvements may be included in an upcoming roadway improvement project within the Middlefield Road Corridor.

BACKGROUND

The *Hoover Area Community Mobility Plan* completed in 2009 was funded by a Caltrans Environmental Justice Transportation Planning grant and the Redevelopment Agency of Redwood City (Agency). The mobility study identified Woodside Road as the most significant barrier to pedestrian travel within the Hoover Area. The neighborhood includes many amenities that are accessible on foot – including the Hoover School (K-8), Boys and Girls Club, Library, Senior Center, Community Center, Costco and local stores. However, pedestrians are currently prohibited from legally crossing Woodside Road at-grade within the neighborhood. Instead, pedestrians must use a pedestrian bridge at Stambaugh Road, located one block east of the Woodside Road / Middlefield Road intersection. Safety and convenience issues have been raised by the residents concerning the bridge since the bridge crossing includes segments that are not visible from the adjoining streets. In addition, the current prohibition of pedestrian crossings at the Woodside Road / Middlefield Road intersection results in jaywalking at this location.

Figure 1 provides an aerial view of the Middlefield Road corridor where it intersects Woodside Road, and shows the distance between marked crosswalks.

On September 16, 2008, an initial meeting was held between the Agency and Caltrans staff concerning the installation of crosswalks on Woodside Road. Fehr & Peers prepared a subsequent analysis of the traffic signal operations for four crosswalk options that were all designed to provide an at-grade crossing with minimal impact to the operations of Woodside Road. The results of the analysis were summarized in a technical memorandum dated April 2, 2009. Caltrans provided comments on this report that included a request to consider additional alternatives. The most recent analysis was documented in a technical memorandum dated February 1, 2011. Based on these two alternative analyses and a meeting with Caltrans staff on February 15, 2011, the Agency requested that Caltrans select a crosswalk design in order for the Agency and City of Redwood City to submit an encroachment permit. Caltrans staff recommended that the Agency use a standard intersection lane configuration and provide information on four crosswalk / signal phasing variations. Caltrans staff requested that the operations analyses be resubmitted using the standard intersection design with crosswalks on all four legs with no slip lanes for both split phase and protected left turns on the north / south approaches (Middlefield Road).

LEGEND:

- Hoover Area Boundary
- Existing Bus Stop
- Stambaugh Pedestrian Overpass
- School
- Library
- Community Center
- Existing Marked Crosswalk
- Pedestrian Crossing Prohibited
- Existing Traffic Signal
- 500’ — Distance Between Marked Crosswalk

N

0 — 500 feet

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Hoover Area Community Mobility Study

WOODSIDE AND MIDDLEFIELD ROAD DISTANCE BETWEEN MARKED CROSSWALKS

FIGURE 1

STUDY METHODOLOGY

The Level of Service (LOS) calculations were made using the Synchro Version 7 software, which takes into account signal phasing and pedestrian timings. The technical analysis is based on intersection operations for both the AM and PM peak hour analysis time periods. **Table 1** summarizes the intersection level of service definitions from the Highway Capacity Manual for LOS A, free flow conditions, through LOS F, where intersection operations break down.

TABLE 1
SIGNALIZED INTERSECTION LEVEL OF SERVICE DEFINITIONS
USING AVERAGE CONTROL VEHICULAR DELAY

Level of Service	Description	Average Control Delay Per Vehicle (Seconds)
A	Operations with very low delay occurring with favorable progression and/or short cycle lengths.	≤ 10.0
B	Operations with low delay occurring with good progression and/or short cycle lengths.	10.1 to 20.0
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	20.1 to 35.0
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, and high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	35.1 to 55.0
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.	55.1 to 80.0
F	Operations with delays unacceptable to most drivers occurring due to over-saturation, poor progression, or very long cycle lengths.	> 80.0

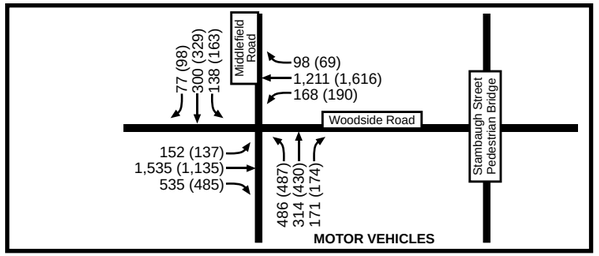
Source: *Highway Capacity Manual*, Transportation Research Board, 2000.

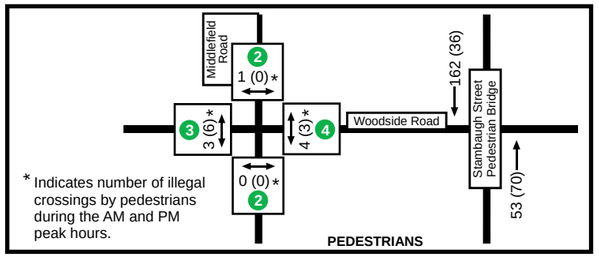
Figure 2 shows the traffic and pedestrian volumes at the Woodside Road / Middlefield Road intersection, as well as the traffic signal phasing. The potential volume of pedestrians that would cross Woodside Road at street level during the AM and PM peak hours (if crosswalks were installed at the intersection with Middlefield Road) was estimated, based on counts of pedestrians crossing Woodside Road via the Stambaugh Pedestrian Bridge in April 2008. The pedestrian volumes used for the analysis include the pedestrians and bicyclists using the Stambaugh Pedestrian Bridge or counted as jaywalkers at the at-grade intersection. **Figure 3** presents the existing configuration of the Woodside Road / Middlefield Road intersection.

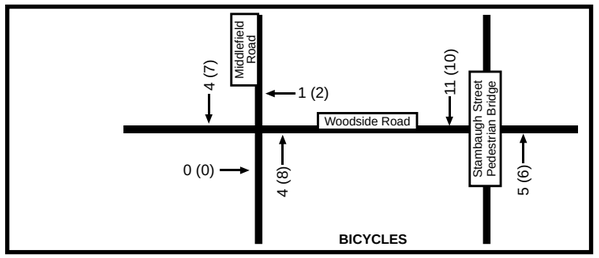
DESIGN / SIGNAL PHASING VARIATIONS

The preferred crosswalk design would provide crosswalks on all four legs of the Woodside Road / Middlefield Road intersection. The existing “pork chop islands” would be removed on the northeast and northwest corners to eliminate potential pedestrian/vehicle conflicts for right-turning vehicles. The preferred design would also maintain the existing split phase operation on the Middlefield Road north / south approaches. The design variation would exclude the crosswalk on the west approach across Woodside Road. The signal phasing variation would consider protected left turn phases on Middlefield Road rather than the existing split phase operation. **Figures 4** through **7** show the design variations. **Table 3** summarizes the differences in the crosswalk design variations.

EXISTING PEAK HOUR TRAFFIC VOLUMES







LEGEND:

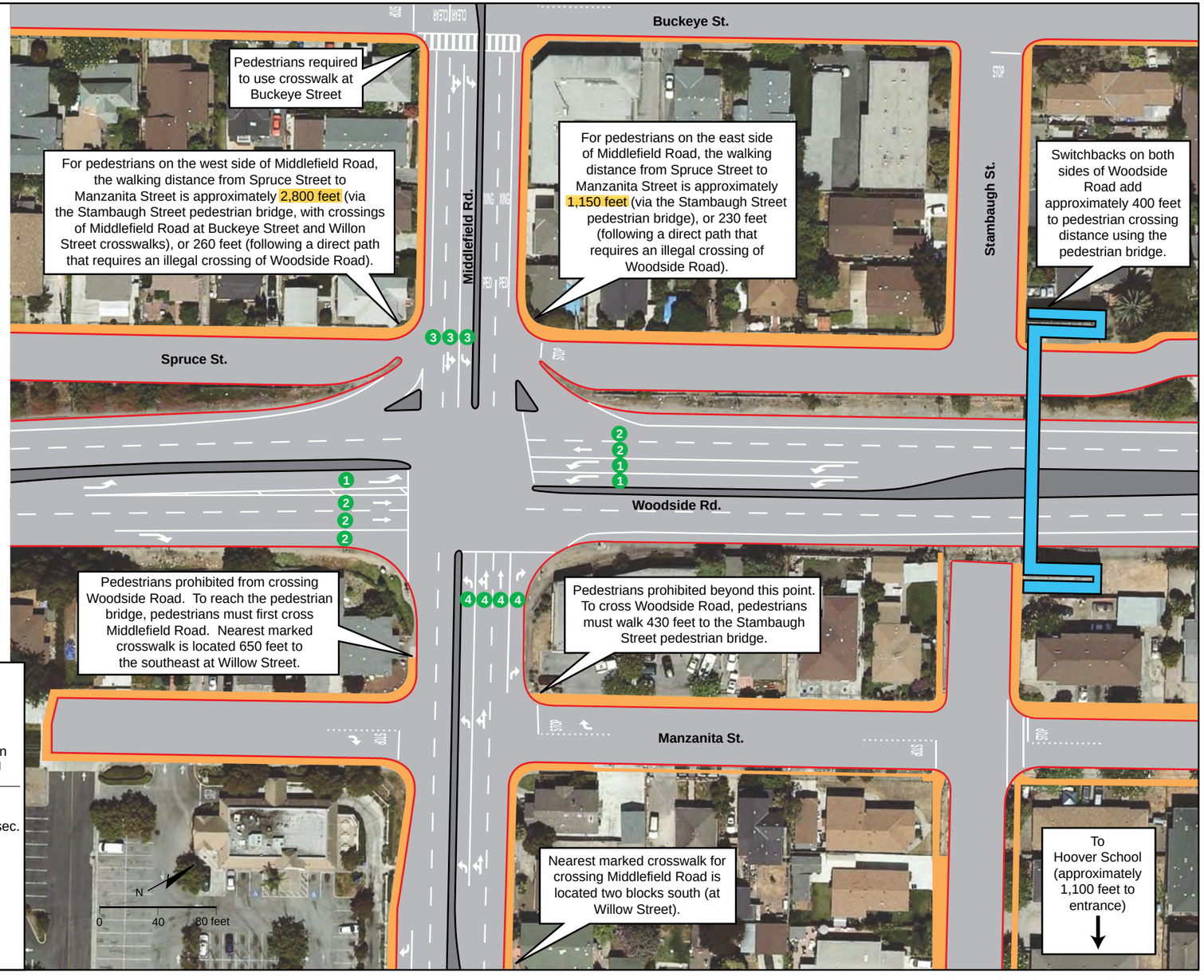
Curb or Edge of Roadway — XX (YY) = AM (PM) — Pedestrian Bridge

Striping — Sidewalk

TRAFFIC SIGNAL PHASES (PM PEAK HOUR)

Signal Phasing	Maximum Green Time	Maximum Split (Green+Yellow +Red)	Corresponding Pedestrian Movement	Pedestrian Crossing Distance [1]	Pedestrian Crossing Time [2]
1 = 1st Phase	20 sec. [3]	23 sec. [3]	None	N/A	N/A
2 = 2nd Phase	54.5 sec. [4]	60 sec. [4]	North & South Legs	66 ft./107 ft.	19 sec./31 sec.
3 = 3rd Phase	20.5 sec.	23.5 sec.	West Leg	120 ft.	35 sec.
4 = 4th Phase	25 sec.	28.5 sec.	East Leg	103 ft.	30 sec.

[1] Curb-to-curb walking distance for prohibited crossing.
[2] Amount of time needed for pedestrians to cross, based on walking speed of 3.5 feet per second.
[3] Eastbound left-turn maximum is 13 seconds less than Westbound movement.
[4] Westbound through movement is 13 seconds longer than eastbound movement (effective June 2004).



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EXISTING PEAK HOUR VOLUMES AND SIGNAL PHASING
WOODSIDE AND MIDDLEFIELD ROAD INTERSECTION

FIGURE 2

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EXISTING CONFIGURATION OF WOODSIDE/MIDDLEFIELD

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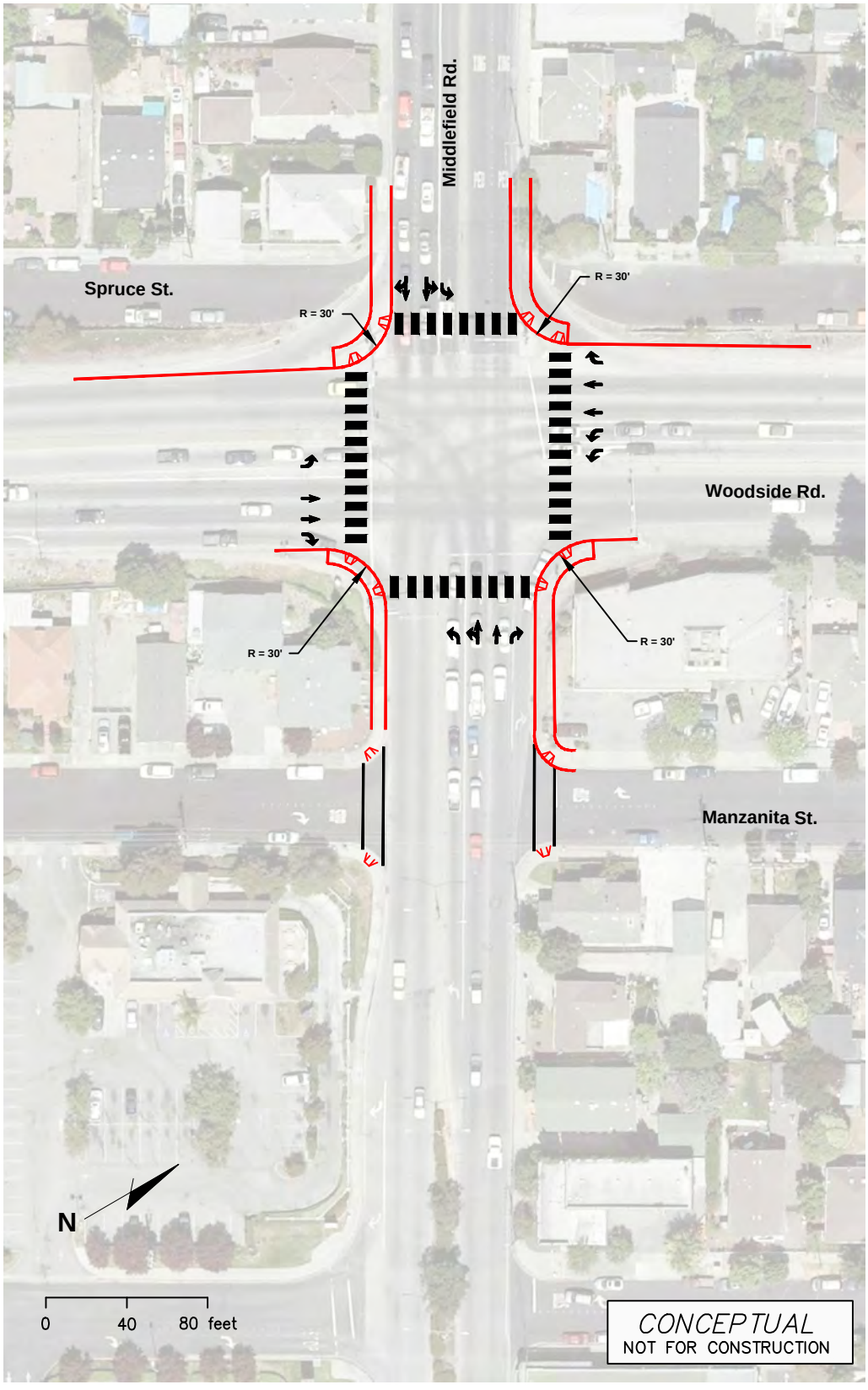
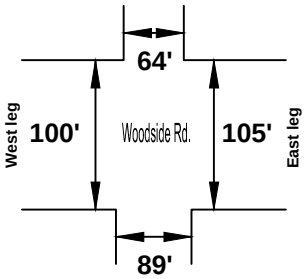
FIGURE 3



Pedestrian crossing distance



LEGEND:

= High Visibility Crosswalk

= Curb/Edge of Sidewalk

= Curb Ramp

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WOODSIDE ROAD CROSSING
VARIATION 1: FOUR LEGS / SPLIT PHASE MIDDLEFIELD

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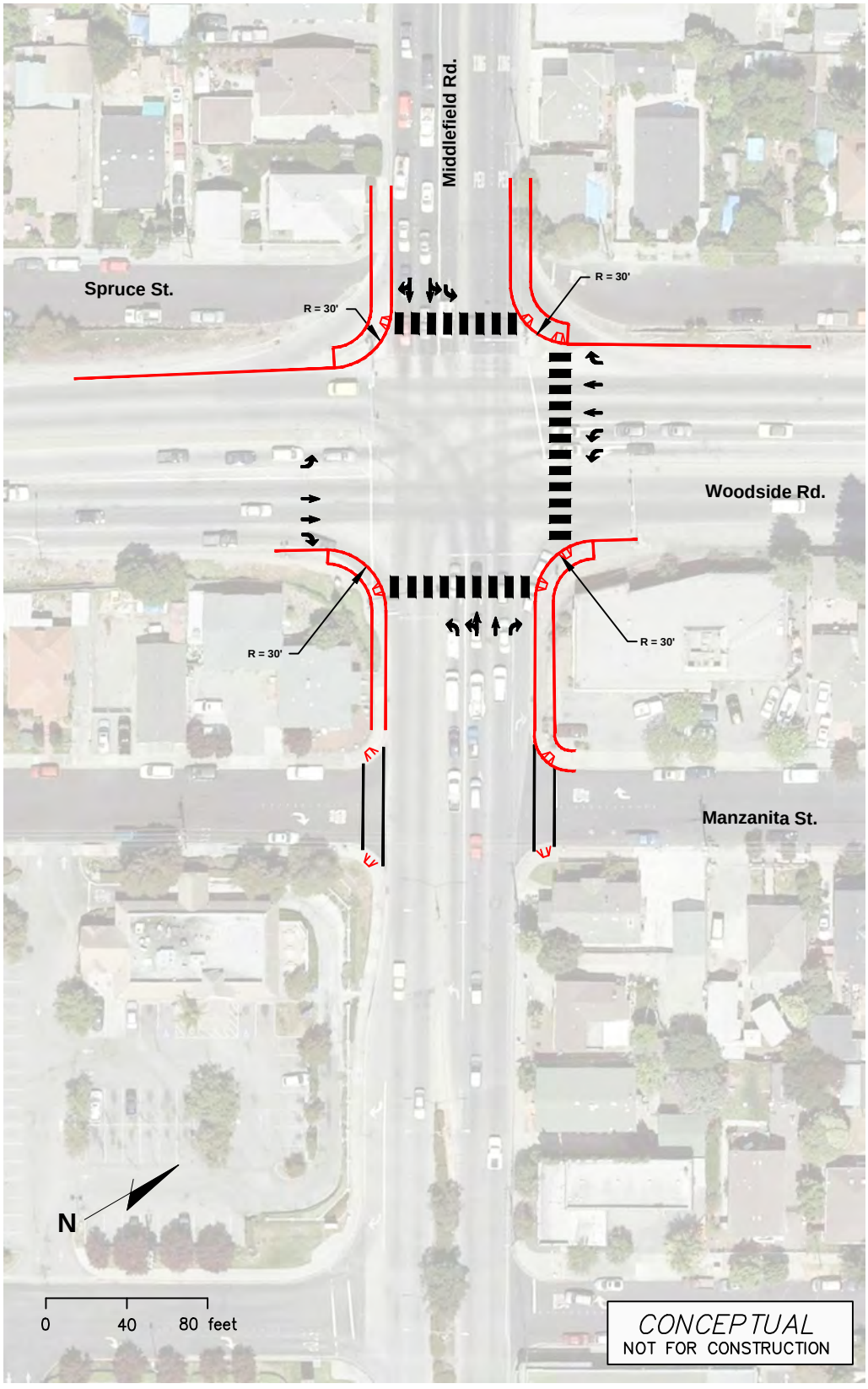
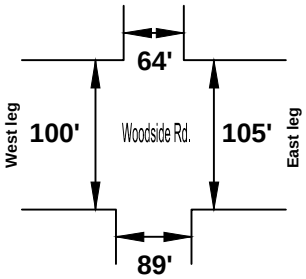
FIGURE 4



Pedestrian crossing distance



LEGEND:

= High Visibility Crosswalk

= Curb/Edge of Sidewalk

= Curb Ramp

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WOODSIDE ROAD CROSSING
VARIATION 2: THREE LEGS / SPLIT PHASE MIDDLEFIELD

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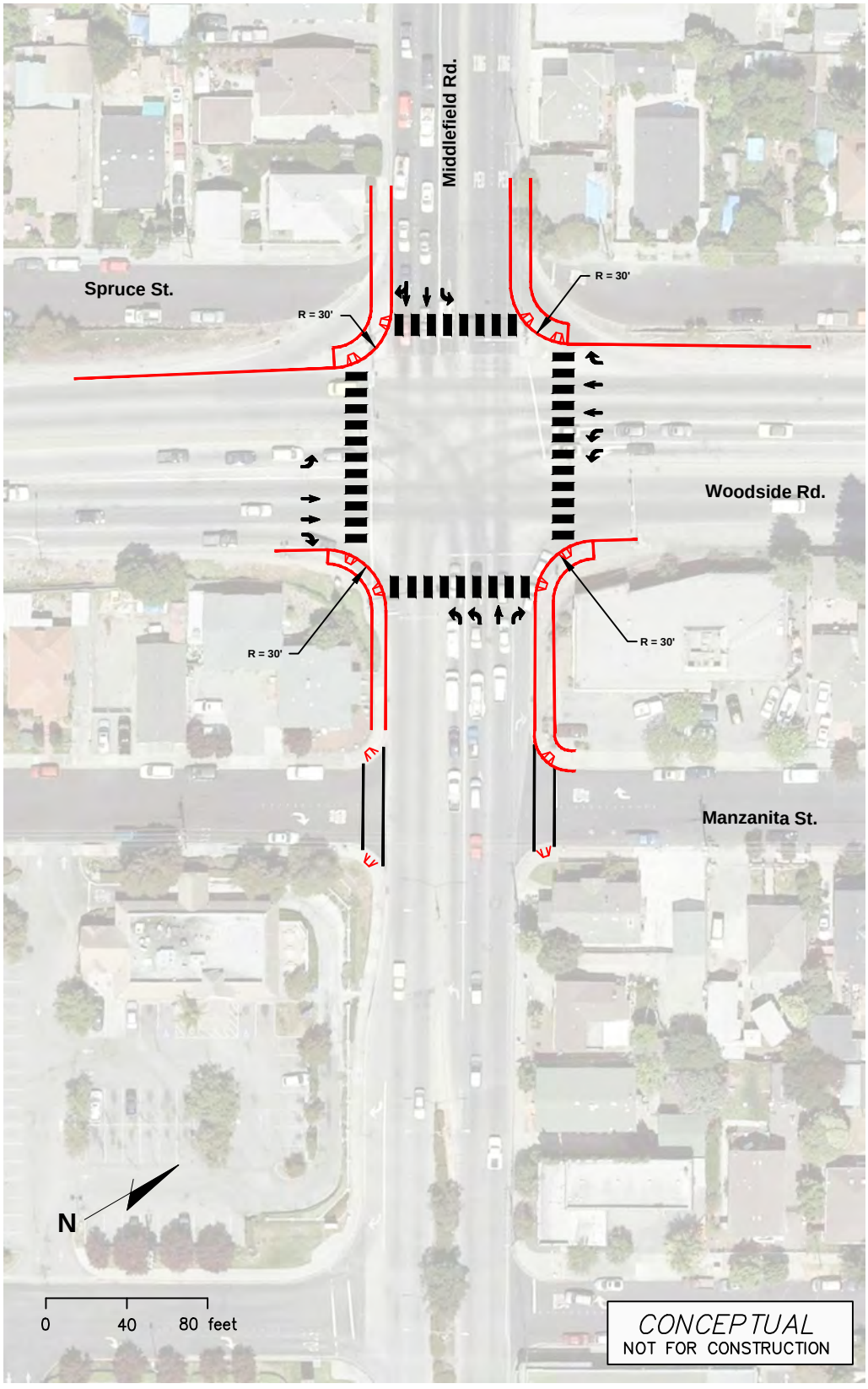
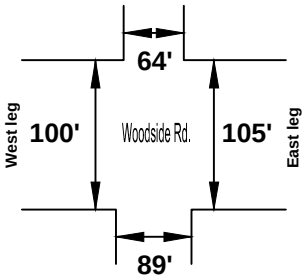
FIGURE 5



Pedestrian crossing distance



LEGEND:

= High Visibility Crosswalk

= Curb/Edge of Sidewalk

= Curb Ramp

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WOODSIDE ROAD CROSSING
VARIATION 3: FOUR LEGS / PROTECTED LEFTS MIDDLEFIELD

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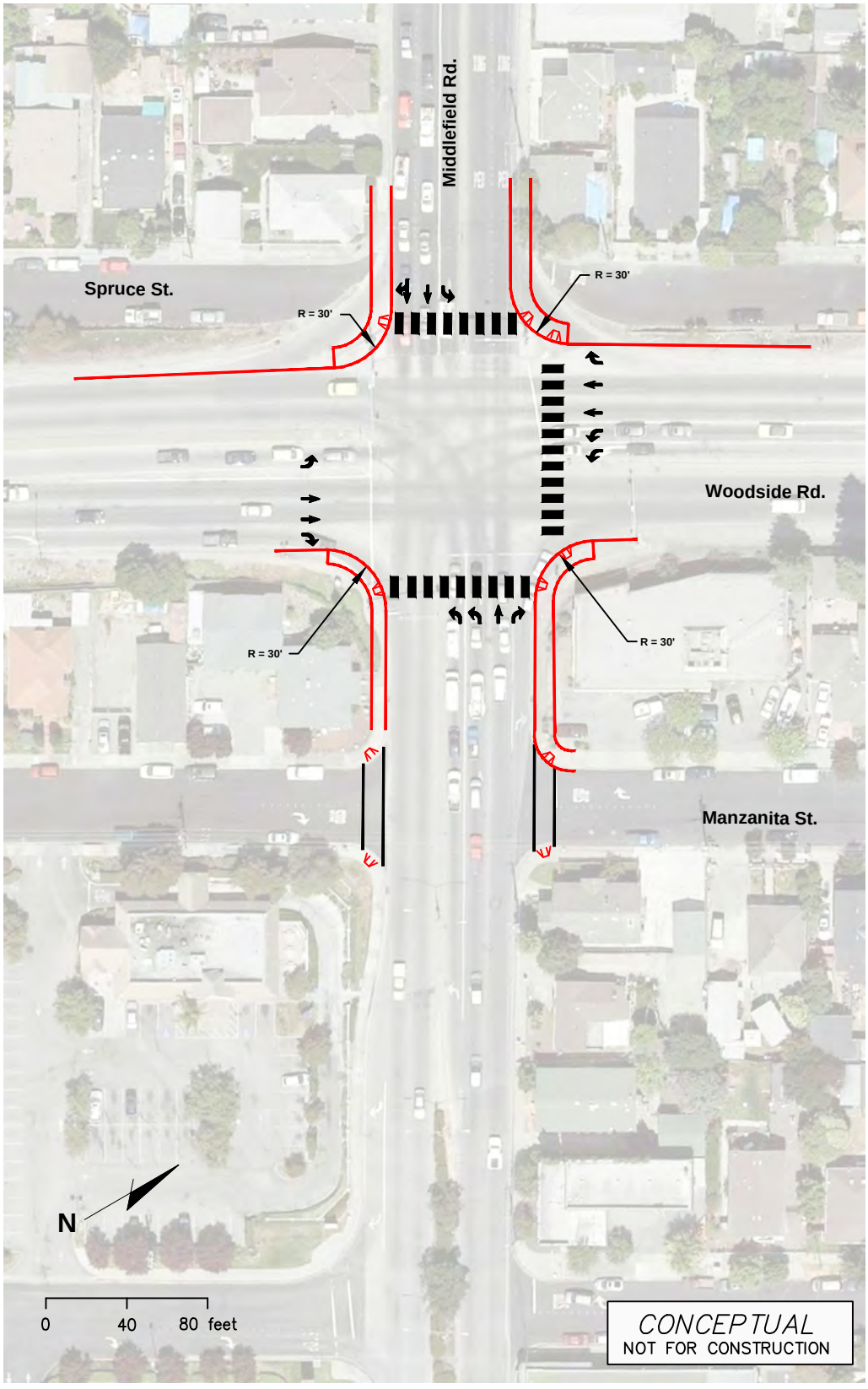
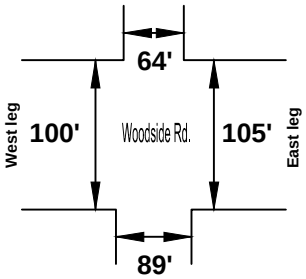
FIGURE 6



Pedestrian crossing distance



LEGEND:

= High Visibility Crosswalk

= Curb/Edge of Sidewalk

= Curb Ramp

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WOODSIDE ROAD CROSSING
VARIATION 4: THREE LEGS / PROTECTED LEFTS MIDDLEFIELD

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FIGURE 7

Table 3

Design / Signal Phasing Variations

Crosswalk Locations	Signal Phasing	
	N/S Split Phasing on Middlefield	**Protect Left-turns on Middlefield**
All Approaches (4)	Variation 1	Variation 3
North, South, & East (3)	Variation 2	Variation 4

Source: Fehr & Peers, 2011

PEDESTRIAN SIGNAL DESIGN/TIMING REQUIREMENTS

Each of the proposed design variations comply with the California Manual on Uniform Traffic Control Device (MUTCD) design standards effective January 2010. The most recent FHWA MUTCD has not been formally adopted by California yet, but each of the proposed options would comply with both documents. The following signal design parameters were incorporated into the analysis to comply with both standards:

- The proposed crosswalks across Woodside Road would be fully actuated. Pedestrian detectors, push-buttons or passive detection devices, would trigger the pedestrian signal intervals described below.

- The proposed length of the *Walk Interval* across Woodside Road for the operations analysis was set to four seconds. While the MUTCD generally recommends provision of a seven-second *Walk Interval*, the MUTCD standards include an option to provide walk intervals as short as four seconds, in cases where seven seconds are not needed. The primary purpose of the *Walk Interval* is to provide adequate time for pedestrians to leave the curb and begin crossing the street. The provision of a *Walk Interval* as short as four seconds would be adequate in this case, since the vast majority of pedestrians will have already arrived at the pedestrian detector, prior to the start of the Walk Interval. In addition, the volume of pedestrians crossing in both directions (100-200 during peak hours) is not anticipated to be so large as to require provision of a longer *Walk Interval*.

- The length of the *Pedestrian Clearance Time* shall be based on a walking speed of 3.5 feet per second, measured from the curb to the far side of the roadway. Consistent with MUTCD standards, the *Pedestrian Clearance Time* may include each of the following intervals:

    - Pedestrian Change Interval (Flashing “Don’t Walk”)

    - Yellow Interval (when the pedestrian signal changes to solid “Don’t Walk)

    - All-red Interval (immediately following the yellow interval, before conflicting vehicle movements are given a green light)

- The *Combined Walk Interval and Pedestrian Clearance Time* shall be based on a walking speed of 3.0 feet per second. For this calculation, the crossing distance would be measured from the adjacent pedestrian detector to the far side of the street.

TRAFFIC ANALYSIS

Volume counts were conducted in April 2008 of motor vehicles, bicyclists and pedestrians during the weekday AM (7:00-9:00) and PM (4:00 – 6:00) peak periods at the Woodside Road/Middlefield Road intersection and on the Stambaugh Street pedestrian bridge. The peak hour volume was determined for each travel mode.

Travel Mode for Trips Crossing Woodside Road

Almost one out of seven residents in the surrounding neighborhood do not own motor vehicles, and must rely on walking, bicycling and public transportation for mobility (compared to one out of 14 in Redwood City) according to the US Census 2000. In addition, over 800 students attend the nearby K-8 Hoover School located five blocks from the Woodside Road at Middlefield Intersection. The majority of the students walk to school and need to cross Woodside Road. The lack of safe and convenient access for these walkers and bicyclists hinder their ability to get to work, school, shopping, and essential services.

Based on the volume counts described above, the volume of traffic crossing Woodside Road within the Hoover Area was determined. Excluding vehicles entering or exiting the neighborhood via Woodside Road, the counts indicated that 614 vehicles crossed Woodside Road on Middlefield Road during the AM peak hour, while 759 vehicles crossed during the PM peak hour. Pedestrians crossing Woodside Road via the Stambaugh Street pedestrian bridge during the same periods averaged 215 during the AM peak hour and 106 during the PM peak hour. In addition, field observations indicate that some pedestrians bypass the pedestrian bridge and take a more direct route by crossing illegally at the Woodside Road / Middlefield Road intersection. Seven pedestrians during the AM peak hour and nine pedestrians during the PM peak hour illegally crossed the intersection. Including those pedestrians, a total of 222 pedestrians cross Woodside Road during the AM peak hour, and 115 pedestrians cross during the PM peak hour.

As shown in **Table 4** below, pedestrians represent 26% and 13% of AM and PM peak hour traffic crossing Woodside Road, respectively, while bicyclists represent 2% of traffic during the same periods.

TABLE 4 TRAVEL MODE SPLIT FOR WOODSIDE CROSSING (NORTH/SOUTH THROUGH MOVEMENTS VIA MIDDLEFIELD AND STAMBAUGH)

Intersection	Control	Peak Hour	Mode of Travel			Mode Split		
			Vehs[1]	Peds[2]	Bikes [1,2]	Vehs	Peds	Bikes
Woodside Road/ Middlefield Road	Signal	AM	614	7	24			
Stambaugh	Overcrossing			215				
Total			***614***	***222***	***24***	***71.4%***	***25.8%***	***2.7%***
Woodside Road/ Middlefield Road	Signal	PM	759	9	23			
Stambaugh	Overcrossing			106				
Total			***759***	***115***	***23***	***84.6%***	***12.8%***	***2.6%***

[1] The information reported includes all northbound and southbound traffic only.

[2] Total pedestrians/bicycles crossing at the Stambaugh Street pedestrian bridge or jaywalking at the Woodside / Middlefield intersection.

Source: Fehr & Peers, 2008.

Level of Service Comparison

Table 5 provides a comparison of intersection LOS and vehicle delay for each variation, based on existing (year 2008) and cumulative (year 2020) traffic volumes. The highlighted cells in Table 5 identify the design features that differ between each option as compared to one another. All four design variations provide crosswalks on three or four of the approaches, no crosswalks are provided under the existing conditions. Vehicle queue length summaries are provided in **Appendix A**. The LOS calculation and signal phasing sheets are provided in the **Appendix B**.

Table 5

Level of Service Comparison for Design Variations

Condition	Crosswalks (Leg)				N/S Split Phasing	Intersection Level of Service (Average Vehicle Delay in Sec)		
	North	South	East	West		Existing AM Peak Hour	Existing PM Peak Hour	Cumulative 2020 PM Peak Hour
Existing	--	--	--	--	Y	D (44.4)	D (54.9)	**F (94)**
Variation 1	✓	✓	✓	✓	Y	**F (89.0)**	E (75.1)	**F (150)**
Variation 2	✓	✓	✓		Y	E (60.9)	E (70.5)	**F (89)**
Variation 3	✓	✓	✓	✓	N	E (61.9)	E (69.6)	**F (113)**
Variation 4	✓	✓	✓		N	D (51.8)	D (54.5)	**F (82)**

Highlighted cells indicate differences between options. There are currently no crosswalks at the intersection.

Bold - LOS F is considered to represent "failing conditions".

1 - LOS comparison of existing conditions is based on traffic and pedestrian volume counts conducted in April 2008.

2 - Cumulative volumes derived from Transportation Impact Analysis prepared for the Costco Draft EIR, 2020 Plus Project volumes, Kittelson & Associates, October 2006 (PM only).

Source: Fehr & Peers, 2011

FINDINGS

Traffic Operations

Based on the intersection operations analysis, Variations 1, 2, and 3 will degrade the existing intersection operations as compared to the intersection operations without crosswalks. Variation 1 will operate at LOS F during the morning peak hour and LOS E in the evening peak hour. Under Variation 1 if the cycle length is increased from 125 seconds to 153 seconds, it is possible to achieve a LOS E operation under the existing traffic volumes during the AM peak hour. However, this change in cycle length would affect the signal coordination along Woodside Road. Variations 2 and 3 will operate at LOS E during both the morning and evening peak hours. Variation 4 operates at LOS D during both the morning and evening peak hours, which is similar to the existing conditions. Under the cumulative conditions the intersection will operate at LOS F under the existing configuration as well as all four design variations. Generally for vehicular operations, the variations with only three crosswalks

operate better than the variations with four crosswalks and the protected north-south left-turn phasing variations operate better than the north-south split phasing variations. In terms of pedestrian mobility, the four-leg crosswalk designs provides the greatest level of access by minimizing the travel path to all locations by eliminating the need for out of way travel.

Synchro Analysis Files

The Synchro analysis files for these four design variations and three traffic scenarios are provided with this memorandum. It should be noted that the operations analysis focused on maintaining the current level of service of operation along the Woodside Road corridor for the Woodside approaches. If further optimization of the signal timings is desired, the effect that modifying the signal timings at this intersection would need to considered in terms of the overall effect on the operation of the corridor as a whole.

Effect on Vehicle Queue Lengths

While there is some increase in vehicle delay with the design variations, the queuing on the individual approaches did not increase substantially with the addition of the crosswalks to the intersection. The greatest increases in queuing occur with under Variation 1, which included four crosswalks and north-south split phase operation. Under all three traffic volume scenarios studied (Existing AM, Existing PM, and Cumulative 2020 PM); Variation 1 generated longer queues on the Woodside Road approaches. The other three variations had small, or no, increases in queuing during the AM peak hour under the existing traffic volumes. Under the existing PM peak hour conditions, the queues on Woodside Road were about the same for Variations 1, 2, and 3; however, there was some increase in the queues on Middlefield Road. It should be noted that this was in part by design in order to maintain the existing LOS and queuing on the Woodside Road approaches.

Conclusion

Design variations 3 and 4 have fewer effects on the intersection level of service and vehicle queuing as compared to Variations 1 and 2. While Variation 4 has the least effect of all the design variations, it does not provide crosswalks on all four approaches because of the mobility needs of the residents in the area. Since the City desires to provide crosswalks on all approaches, Variation 3, which provides four crosswalks with protected north-south left-turn phasing, would be the preferred design for the intersection.

APPENDIX A:

MOTOR VEHICLE QUEUE-LENGTH COMPARISON FOR EACH OPTION

APPENDIX B:

SYNCHRO OUTPUTS FOR EACH OPTION (PHASINGS, TIMINGS & HCM REPORTS)

APPENDIX A:

MOTOR VEHICLE QUEUE-LENGTH COMPARISON FOR EACH OPTION

TABLE A-1: QUEUE LENGTH COMPARISON – EXISTING AM PEAK HOUR VOLUMES

	Length of 95th Percentile Vehicle Queue in Feet *(Through Movements unless noted below)*			
	Woodside Road		Middlefield Road	
	Eastbound	Westbound	Northbound	Southbound
Baseline Conditions - No Crosswalks (existing intersection configuration)	835 ft	553 ft	393 ft (NB LT)	212 ft
Variation 1A – Four Crosswalks with Split North-South Phasing (125 second cycle)	1,001 ft	741 ft	323 ft (NB LT)	201 ft
Variation 1B – Four Crosswalks with Split North-South Phasing (153 second cycle)	1,081 ft	794 ft	440 ft (NB LT)	258 ft
Variation 2 – Three Crosswalks with Split North-South Phasing (no west crosswalk)	925 ft	678 ft	323 ft (NB LT)	182 ft
Variation 3 – Four Crosswalks with Protected North-South Phasing	913 ft	678 ft	339 ft	185 ft
Variation 4 – Three Crosswalks with Protected North-South Phasing (no west crosswalk)	913 ft	678 ft	341 ft	201 ft

Source: Fehr & Peers, 2011
Existing volumes based on April 2008 counts.

TABLE A-2: QUEUE LENGTH COMPARISON – EXISTING PM PEAK HOUR VOLUMES

	Length of 95th Percentile Vehicle Queue in Feet *(Through Movements unless noted below)*			
	Woodside Road		Middlefield Road	
	Eastbound	Westbound	Northbound	Southbound
Baseline Conditions - No Crosswalks (existing intersection configuration)	532 ft	783 ft	527 ft (NB LT)	224 ft
Variation 1A – Four Crosswalks with Split North-South Phasing (125 second cycle)	596 ft	1,086 ft	438 ft (NB LT)	253 ft
Variation 1B – Four Crosswalks with Split North-South Phasing (153 second cycle)	666 ft	1,084 ft	529 ft (NB LT)	294 ft
Variation 2 – Three Crosswalks with Split North-South Phasing (no west crosswalk)	532 ft	783 ft	438 ft (NB LT)	415 ft
Variation 3 – Four Crosswalks with Protected North-South Phasing	532 ft	783 ft	611 ft	230 ft
Variation 4 – Three Crosswalks with Protected North-South Phasing (no west crosswalk)	532 ft	783 ft	611 ft	276 ft

Source: Fehr & Peers, 2011
Existing volumes based on April 2008 counts.

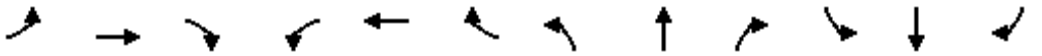
TABLE A-3: QUEUE LENGTH COMPARISON – CUMULATIVE PM PEAK HOUR VOLUMES

	Length of 95th Percentile Vehicle Queue in Feet *(Through Movements unless noted below)*			
	Woodside Road		Middlefield Road	
	Eastbound	Westbound	Northbound	Southbound
Baseline Conditions - No Crosswalks (existing intersection configuration)	1,115 ft	1,038 ft	693 ft (NB LT)	257 ft
Variation 1A – Four Crosswalks with Split North-South Phasing (125 second cycle)	1,177 ft	1,231 ft	604 ft (NB LT)	243 ft
Variation 1B – Four Crosswalks with Split North-South Phasing (153 second cycle)	1,340 ft	1,248 ft	717 ft (NB LT)	282 ft
Variation 2 – Three Crosswalks with Split North-South Phasing (no west crosswalk)	1,115 ft	1,037 ft	604 ft (NB LT)	396 ft
Variation 3 – Four Crosswalks with Protected North-South Phasing	1,115 ft	1,037 ft	713 ft	224 ft
Variation 4 – Three Crosswalks with Protected North-South Phasing (no west crosswalk)	1,115 ft	1,037 ft	713 ft	262 ft

Source: Fehr & Peers, 2011

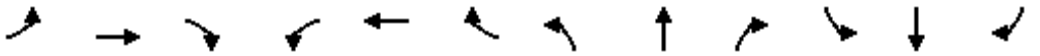
APPENDIX B:

SYNCHRO OUTPUTS FOR EACH OPTION (PHASINGS, TIMINGS & HCM REPORTS)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	152	1535	535	168	1211	98	486	314	171	138	300	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.91	0.91	1.00	0.91	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	1610	3321	1583	1610	3383	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3539	1583	1610	3321	1583	1610	3383	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	157	1582	552	173	1248	101	501	324	176	142	309	79
RTOR Reduction (vph)	0	0	148	0	0	21	0	0	101	0	0	38
Lane Group Flow (vph)	157	1582	404	173	1248	80	271	554	75	128	323	41
Turn Type	Prot		Perm	Prot		Perm	Split		Perm	Split		Perm
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			2			6			4			3
Actuated Green, G (s)	15.1	59.0	59.0	11.6	56.0	56.0	24.7	24.7	24.7	14.7	14.7	14.7
Effective Green, g (s)	14.1	60.5	60.5	10.6	57.0	57.0	24.2	24.2	24.2	13.7	13.7	13.7
Actuated g/C Ratio	0.11	0.48	0.48	0.08	0.46	0.46	0.19	0.19	0.19	0.11	0.11	0.11
Clearance Time (s)	3.0	5.5	5.5	3.0	5.0	5.0	3.5	3.5	3.5	3.0	3.0	3.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	200	1713	766	291	1614	722	312	643	306	176	371	173
v/s Ratio Prot	c0.09	c0.45		0.05	0.35		c0.17	0.17		0.08	c0.10	
v/s Ratio Perm			0.26			0.05			0.05			0.03
v/c Ratio	0.79	0.92	0.53	0.59	0.77	0.11	0.87	0.86	0.25	0.73	0.87	0.24
Uniform Delay, d1	54.0	30.1	22.4	55.1	28.6	19.5	48.9	48.8	42.7	53.8	54.8	50.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	18.1	9.9	2.6	3.2	3.7	0.3	21.7	11.4	0.4	13.9	19.4	0.7
Delay (s)	72.0	40.0	24.9	58.4	32.2	19.8	70.5	60.2	43.1	67.8	74.2	51.6
Level of Service	E	D	C	E	C	B	E	E	D	E	E	D
Approach Delay (s)		38.5			34.4			60.0			69.3	
Approach LOS		D			C			E			E	

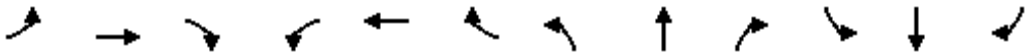
Intersection Summary			
HCM Average Control Delay	44.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	84.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	152	1535	535	168	1211	98	486	314	171	138	300	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	2.0	4.0	4.0	2.0	4.5	4.0	3.5	4.0	3.5	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.91	0.91	1.00	0.91	0.91	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.93	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1541	3433	3539	1539	1610	3321	1477	1610	3238	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1541	3433	3539	1539	1610	3321	1477	1610	3238	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	157	1582	552	173	1248	101	501	324	176	142	309	79
RTOR Reduction (vph)	0	0	38	0	0	24	0	0	100	0	16	0
Lane Group Flow (vph)	157	1582	514	173	1248	77	271	554	76	128	386	0
Confl. Peds. (#/hr)			30			30			65			50
Turn Type	Prot		pm+ov	Prot		pm+ov	Split		pm+ov	Split		
Protected Phases	5	2	4	1	6	3	4	4	1	3	3	
Permitted Phases			2			6			4			
Actuated Green, G (s)	13.0	43.6	74.4	8.2	39.3	66.7	30.8	30.8	39.0	27.4	27.4	
Effective Green, g (s)	12.0	45.1	77.4	7.2	40.3	68.7	29.8	30.3	38.0	26.4	26.9	
Actuated g/C Ratio	0.10	0.36	0.62	0.06	0.32	0.55	0.24	0.24	0.30	0.21	0.22	
Clearance Time (s)	3.0	5.5	3.5	3.0	5.0	3.0	3.5	3.5	3.0	3.0	3.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	170	1277	954	198	1141	846	384	805	449	340	697	
v/s Ratio Prot	c0.09	c0.45	0.14	0.05	0.35	0.02	c0.17	0.17	0.01	0.08	c0.12	
v/s Ratio Perm			0.19			0.03			0.04			
v/c Ratio	0.92	1.24	0.54	0.87	1.09	0.09	0.71	0.69	0.17	0.38	0.55	
Uniform Delay, d1	56.0	40.0	13.6	58.4	42.4	13.3	43.6	43.1	31.9	42.2	43.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	47.1	114.4	0.6	31.9	56.1	0.0	5.8	2.5	0.2	0.7	1.0	
Delay (s)	103.1	154.3	14.2	90.4	98.4	13.4	49.4	45.5	32.1	42.9	44.6	
Level of Service	F	F	B	F	F	B	D	D	C	D	D	
Approach Delay (s)		117.0			91.8			44.2			44.2	
Approach LOS		F			F			D			D	

Intersection Summary			
HCM Average Control Delay	89.0	HCM Level of Service	F
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	109.2%	ICU Level of Service	H
Analysis Period (min)	15		

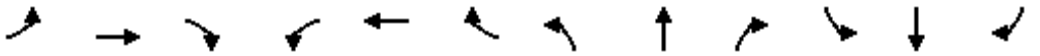
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	152	1535	535	168	1211	98	486	314	171	138	300	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	2.0	4.0	4.0	2.0	4.5	4.0	3.5	4.0	3.5	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.91	0.91	1.00	0.91	0.91	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.96	1.00	1.00	0.93	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1527	3433	3539	1522	1610	3321	1468	1610	3229	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1527	3433	3539	1522	1610	3321	1468	1610	3229	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	157	1582	552	173	1248	101	501	324	176	142	309	79
RTOR Reduction (vph)	0	0	24	0	0	18	0	0	84	0	13	0
Lane Group Flow (vph)	157	1582	528	173	1248	83	271	554	92	128	389	0
Confl. Peds. (#/hr)			30			30			65			50
Turn Type	Prot		pm+ov	Prot		pm+ov	Split		pm+ov	Split		
Protected Phases	5	2	4	1	6	3	4	4	1	3	3	
Permitted Phases			2			6			4			
Actuated Green, G (s)	17.6	66.1	97.7	12.4	61.4	89.3	31.6	31.6	44.0	27.9	27.9	
Effective Green, g (s)	16.6	67.6	100.7	11.4	62.4	91.3	30.6	31.1	43.0	26.9	27.4	
Actuated g/C Ratio	0.11	0.44	0.66	0.07	0.41	0.60	0.20	0.20	0.28	0.18	0.18	
Clearance Time (s)	3.0	5.5	3.5	3.0	5.0	3.0	3.5	3.5	3.0	3.0	3.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	192	1564	1005	256	1443	908	322	675	413	283	578	
v/s Ratio Prot	c0.09	c0.45	0.11	0.05	0.35	0.02	c0.17	0.17	0.02	0.08	c0.12	
v/s Ratio Perm			0.23			0.04			0.05			
v/c Ratio	0.82	1.01	0.53	0.68	0.86	0.09	0.84	0.82	0.22	0.45	0.67	
Uniform Delay, d1	66.7	42.7	13.7	69.0	41.4	13.2	58.9	58.3	42.2	56.5	58.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	22.9	25.6	0.5	6.9	7.1	0.0	17.7	7.9	0.3	1.2	3.1	
Delay (s)	89.6	68.3	14.2	75.9	48.6	13.2	76.6	66.2	42.5	57.6	61.7	
Level of Service	F	E	B	E	D	B	E	E	D	E	E	
Approach Delay (s)		56.7			49.3			64.8			60.7	
Approach LOS		E			D			E			E	

Intersection Summary			
HCM Average Control Delay	56.5	HCM Level of Service	E
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	153.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	109.2%	ICU Level of Service	H
Analysis Period (min)	15		

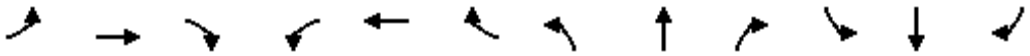
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	152	1535	535	168	1211	98	486	314	171	138	300	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	2.0	4.0	4.0	2.0	4.5	4.0	3.5	4.0	3.5	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.91	0.91	1.00	0.91	0.91	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.94	1.00	1.00	0.89	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1509	3433	3539	1487	1610	3321	1413	1610	3285	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1509	3433	3539	1487	1610	3321	1413	1610	3285	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	157	1582	552	173	1248	101	501	324	176	142	309	79
RTOR Reduction (vph)	0	0	20	0	0	22	0	0	58	0	16	0
Lane Group Flow (vph)	157	1582	532	173	1248	79	271	554	118	128	386	0
Confl. Peds. (#/hr)			60			60			115			
Turn Type	Prot		pm+ov	Prot		pm+ov	Split		pm+ov	Split		
Protected Phases	5	2	4	1	6	3	4	4	1	3	3	
Permitted Phases			2			6			4			
Actuated Green, G (s)	14.2	48.9	81.9	10.3	45.5	63.3	33.0	33.0	43.3	17.8	17.8	
Effective Green, g (s)	13.2	50.4	84.9	9.3	46.5	65.3	32.0	32.5	42.3	16.8	17.3	
Actuated g/C Ratio	0.11	0.40	0.68	0.07	0.37	0.52	0.26	0.26	0.34	0.13	0.14	
Clearance Time (s)	3.0	5.5	3.5	3.0	5.0	3.0	3.5	3.5	3.0	3.0	3.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	187	1427	1025	255	1317	777	412	863	478	216	455	
v/s Ratio Prot	c0.09	c0.45	0.14	0.05	0.35	0.02	c0.17	0.17	0.02	0.08	c0.12	
v/s Ratio Perm			0.21			0.04			0.06			
v/c Ratio	0.84	1.11	0.52	0.68	0.95	0.10	0.66	0.64	0.25	0.59	0.85	
Uniform Delay, d1	54.9	37.3	9.9	56.4	38.1	15.1	41.6	41.1	29.8	50.9	52.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	26.8	59.5	0.4	7.0	15.1	0.1	3.8	1.6	0.3	4.3	13.6	
Delay (s)	81.6	96.8	10.4	63.4	53.1	15.1	45.4	42.7	30.1	55.2	66.2	
Level of Service	F	F	B	E	D	B	D	D	C	E	E	
Approach Delay (s)		74.9			51.8			41.2			63.5	
Approach LOS		E			D			D			E	

Intersection Summary			
HCM Average Control Delay	60.9	HCM Level of Service	E
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	97.6%	ICU Level of Service	F
Analysis Period (min)	15		

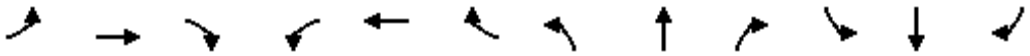
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	152	1535	535	168	1211	98	486	314	171	138	300	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	1.5	4.0	4.0	4.0	4.0	4.0	3.5	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.92	1.00	1.00	0.93	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1529	3433	3539	1455	3433	1863	1480	1770	3380	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1529	3433	3539	1455	3433	1863	1480	1770	3380	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	157	1582	552	173	1248	101	501	324	176	142	309	79
RTOR Reduction (vph)	0	0	43	0	0	22	0	0	40	0	18	0
Lane Group Flow (vph)	157	1582	509	173	1248	79	501	324	136	142	370	0
Confl. Peds. (#/hr)			30			30			65			50
Turn Type	Prot		pm+ov	Prot		Perm	Prot		pm+ov	Prot		
Protected Phases	5	2	3	1	6		3	4	1	7	8	
Permitted Phases			2			6			4			
Actuated Green, G (s)	15.1	49.6	69.1	10.9	45.9	45.9	19.5	35.4	46.3	14.1	30.0	
Effective Green, g (s)	14.1	51.1	72.1	9.9	46.9	46.9	18.5	34.9	45.3	13.1	29.5	
Actuated g/C Ratio	0.11	0.41	0.58	0.08	0.38	0.38	0.15	0.28	0.36	0.10	0.24	
Clearance Time (s)	3.0	5.5	3.0	3.0	5.0	5.0	3.0	3.5	3.0	3.0	3.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	200	1447	882	272	1328	546	508	520	536	185	798	
v/s Ratio Prot	c0.09	c0.45	0.10	0.05	0.35		c0.15	c0.17	0.02	0.08	0.11	
v/s Ratio Perm			0.24			0.05			0.07			
v/c Ratio	0.79	1.09	0.58	0.64	0.94	0.14	0.99	0.62	0.25	0.77	0.46	
Uniform Delay, d1	54.0	37.0	16.8	55.8	37.7	25.8	53.1	39.3	28.0	54.5	41.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	18.1	53.4	0.9	4.8	14.0	0.6	36.0	2.3	0.3	17.2	0.4	
Delay (s)	72.0	90.4	17.7	60.6	51.6	26.4	89.2	41.6	28.2	71.7	41.4	
Level of Service	E	F	B	E	D	C	F	D	C	E	D	
Approach Delay (s)		71.6			51.0			63.1			49.5	
Approach LOS		E			D			E			D	

Intersection Summary			
HCM Average Control Delay	61.9	HCM Level of Service	E
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	96.9%	ICU Level of Service	F
Analysis Period (min)	15		

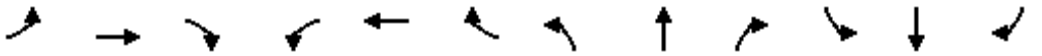
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	152	1535	535	168	1211	98	486	314	171	138	300	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	1.5	4.0	4.0	2.0	4.0	4.0	3.5	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	1.00	0.89	1.00	1.00	0.89	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1492	3433	3539	1411	3433	1863	1415	1770	3431	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1492	3433	3539	1411	3433	1863	1415	1770	3431	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	157	1582	552	173	1248	101	501	324	176	142	309	79
RTOR Reduction (vph)	0	0	36	0	0	22	0	0	44	0	18	0
Lane Group Flow (vph)	157	1582	516	173	1248	79	501	324	132	142	370	0
Confl. Peds. (#/hr)			60			60			115			
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov	Prot		
Protected Phases	5	2	3	1	6	7	3	4	1	7	8	
Permitted Phases			2			6			4			
Actuated Green, G (s)	15.1	51.9	76.2	10.9	48.2	62.4	24.3	33.0	43.9	14.2	22.9	
Effective Green, g (s)	14.1	53.4	79.2	9.9	49.2	64.4	23.3	32.5	42.9	13.2	22.4	
Actuated g/C Ratio	0.11	0.43	0.63	0.08	0.39	0.52	0.19	0.26	0.34	0.11	0.18	
Clearance Time (s)	3.0	5.5	3.0	3.0	5.0	3.0	3.0	3.5	3.0	3.0	3.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	200	1512	945	272	1393	727	640	484	486	187	615	
v/s Ratio Prot	c0.09	c0.45	0.11	0.05	0.35	0.01	c0.15	c0.17	0.02	0.08	0.11	
v/s Ratio Perm			0.23			0.04			0.07			
v/c Ratio	0.79	1.05	0.55	0.64	0.90	0.11	0.78	0.67	0.27	0.76	0.60	
Uniform Delay, d1	54.0	35.8	12.8	55.8	35.5	15.6	48.4	41.4	29.7	54.4	47.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	18.1	36.3	0.6	4.8	9.3	0.1	6.2	3.5	0.3	16.1	1.7	
Delay (s)	72.0	72.1	13.5	60.6	44.8	15.6	54.7	44.9	30.0	70.5	48.9	
Level of Service	E	E	B	E	D	B	D	D	C	E	D	
Approach Delay (s)		58.0			44.6			47.2			54.7	
Approach LOS		E			D			D			D	

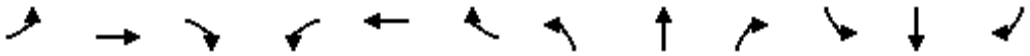
Intersection Summary			
HCM Average Control Delay	51.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	95.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	137	1135	485	190	1616	69	487	430	174	163	329	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.91	0.91	1.00	0.91	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	1610	3339	1583	1610	3382	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3539	1583	1610	3339	1583	1610	3382	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	141	1170	500	196	1666	71	502	443	179	168	339	101
RTOR Reduction (vph)	0	0	178	0	0	11	0	0	80	0	0	42
Lane Group Flow (vph)	141	1170	322	196	1666	60	306	639	99	151	356	59
Turn Type	Prot		Perm	Prot		Perm	Split		Perm	Split		Perm
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			2			6			4			3
Actuated Green, G (s)	7.0	61.5	61.5	13.0	68.0	68.0	26.9	26.9	26.9	18.6	18.6	18.6
Effective Green, g (s)	6.0	63.0	63.0	12.0	69.0	69.0	26.4	26.4	26.4	17.6	17.6	17.6
Actuated g/C Ratio	0.04	0.47	0.47	0.09	0.51	0.51	0.20	0.20	0.20	0.13	0.13	0.13
Clearance Time (s)	3.0	5.5	5.5	3.0	5.0	5.0	3.5	3.5	3.5	3.0	3.0	3.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	79	1652	739	305	1809	809	315	653	310	210	441	206
v/s Ratio Prot	c0.08	0.33		0.06	c0.47		0.19	c0.19		0.09	c0.11	
v/s Ratio Perm			0.20			0.04			0.06			0.04
v/c Ratio	1.78	0.71	0.44	0.64	0.92	0.07	0.97	0.98	0.32	0.72	0.81	0.29
Uniform Delay, d1	64.5	28.7	24.1	59.4	30.5	16.8	53.9	54.0	46.6	56.3	57.1	53.0
Progression Factor	1.00	1.00	1.00	1.03	0.57	0.26	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	399.0	2.6	1.9	3.8	7.8	0.1	42.8	29.5	0.6	11.2	10.4	0.8
Delay (s)	463.5	31.3	26.0	64.8	25.1	4.6	96.7	83.5	47.2	67.5	67.4	53.8
Level of Service	F	C	C	E	C	A	F	F	D	E	E	D
Approach Delay (s)		63.5			28.4			81.3			65.2	
Approach LOS		E			C			F			E	

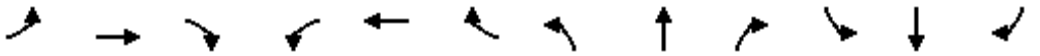
Intersection Summary			
HCM Average Control Delay	54.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	92.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	137	1135	485	190	1616	69	487	430	174	163	329	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	2.0	4.0	4.0	2.0	4.5	4.0	3.5	4.0	3.5	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.91	0.91	1.00	0.91	0.91	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.93	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1537	3433	3539	1531	1610	3339	1473	1610	3216	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1537	3433	3539	1531	1610	3339	1473	1610	3216	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	141	1170	500	196	1666	71	502	443	179	168	339	101
RTOR Reduction (vph)	0	0	26	0	0	12	0	0	81	0	18	0
Lane Group Flow (vph)	141	1170	474	196	1666	59	306	639	98	151	439	0
Confl. Peds. (#/hr)			30			30			65			50
Turn Type	Prot		pm+ov	Prot		pm+ov	Split		pm+ov	Split		
Protected Phases	5	2	4	1	6	3	4	4	1	3	3	
Permitted Phases			2			6			4			
Actuated Green, G (s)	8.0	50.9	82.5	9.6	53.0	80.9	31.6	31.6	41.2	27.9	27.9	
Effective Green, g (s)	7.0	52.4	85.5	8.6	54.0	82.9	30.6	31.1	40.2	26.9	27.4	
Actuated g/C Ratio	0.05	0.39	0.63	0.06	0.40	0.61	0.23	0.23	0.30	0.20	0.20	
Clearance Time (s)	3.0	5.5	3.5	3.0	5.0	3.0	3.5	3.5	3.0	3.0	3.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	92	1374	973	219	1416	940	365	769	439	321	653	
v/s Ratio Prot	c0.08	0.33	0.12	0.06	c0.47	0.01	0.19	c0.19	0.02	0.09	c0.14	
v/s Ratio Perm			0.19			0.03			0.05			
v/c Ratio	1.53	0.85	0.49	0.89	1.18	0.06	0.84	0.83	0.22	0.47	0.67	
Uniform Delay, d1	64.0	37.7	13.1	62.8	40.5	10.5	49.8	49.4	35.7	47.8	49.7	
Progression Factor	1.00	1.00	1.00	0.94	0.70	1.21	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	286.7	6.8	0.4	29.3	85.9	0.0	15.4	7.6	0.3	1.1	2.7	
Delay (s)	350.7	44.6	13.5	88.4	114.3	12.7	65.2	57.1	35.9	48.8	52.4	
Level of Service	F	D	B	F	F	B	E	E	D	D	D	
Approach Delay (s)		59.8			108.0			55.9			51.5	
Approach LOS		E			F			E			D	

Intersection Summary			
HCM Average Control Delay	75.1	HCM Level of Service	E
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	114.8%	ICU Level of Service	H
Analysis Period (min)	15		

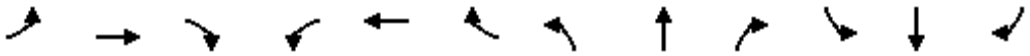
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	137	1135	485	190	1616	69	487	430	174	163	329	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	2.0	4.0	4.0	2.0	4.5	4.0	3.5	4.0	3.5	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.91	0.91	1.00	0.91	0.91	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.96	1.00	1.00	0.93	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1529	3433	3539	1521	1610	3339	1471	1610	3210	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1529	3433	3539	1521	1610	3339	1471	1610	3210	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	141	1170	500	196	1666	71	502	443	179	168	339	101
RTOR Reduction (vph)	0	0	30	0	0	9	0	0	77	0	16	0
Lane Group Flow (vph)	141	1170	470	196	1666	62	306	639	102	151	441	0
Confl. Peds. (#/hr)			30			30			65			50
Turn Type	Prot		pm+ov	Prot		pm+ov	Split		pm+ov	Split		
Protected Phases	5	2	4	1	6	3	4	4	1	3	3	
Permitted Phases			2			6			4			
Actuated Green, G (s)	9.5	63.0	95.6	14.0	68.0	96.4	32.6	32.6	46.6	28.4	28.4	
Effective Green, g (s)	8.5	64.5	98.6	13.0	69.0	98.4	31.6	32.1	45.6	27.4	27.9	
Actuated g/C Ratio	0.06	0.42	0.64	0.08	0.45	0.64	0.21	0.21	0.30	0.18	0.18	
Clearance Time (s)	3.0	5.5	3.5	3.0	5.0	3.0	3.5	3.5	3.0	3.0	3.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	98	1492	985	292	1596	978	333	701	438	288	585	
v/s Ratio Prot	c0.08	0.33	0.11	0.06	c0.47	0.01	0.19	c0.19	0.02	0.09	c0.14	
v/s Ratio Perm			0.20			0.03			0.05			
v/c Ratio	1.44	0.78	0.48	0.67	1.04	0.06	0.92	0.91	0.23	0.52	0.75	
Uniform Delay, d1	72.2	38.2	14.0	67.9	42.0	10.2	59.4	59.1	40.5	56.9	59.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	245.8	4.2	0.4	6.0	34.9	0.0	29.2	16.1	0.3	1.7	5.5	
Delay (s)	318.1	42.4	14.3	73.9	76.9	10.2	88.6	75.2	40.8	58.6	64.7	
Level of Service	F	D	B	E	E	B	F	E	D	E	E	
Approach Delay (s)		56.1			74.2			73.4			63.2	
Approach LOS		E			E			E			E	

Intersection Summary			
HCM Average Control Delay	66.8	HCM Level of Service	E
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	153.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	114.8%	ICU Level of Service	H
Analysis Period (min)	15		

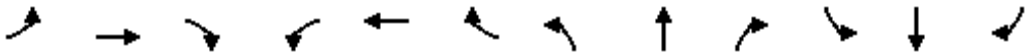
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	137	1135	485	190	1616	69	487	430	174	163	329	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	2.0	4.0	4.0	2.0	4.5	4.0	3.5	4.0	3.5	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.91	0.91	1.00	0.91	0.91	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.92	1.00	1.00	0.89	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1497	3433	3539	1462	1610	3339	1411	1610	3272	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1497	3433	3539	1462	1610	3339	1411	1610	3272	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	141	1170	500	196	1666	71	502	443	179	168	339	101
RTOR Reduction (vph)	0	0	29	0	0	9	0	0	18	0	18	0
Lane Group Flow (vph)	141	1170	471	196	1666	62	306	639	161	151	439	0
Confl. Peds. (#/hr)			60			60			115			
Turn Type	Prot		pm+ov	Prot		pm+ov	Split		pm+ov	Split		
Protected Phases	5	2	4	1	6	3	4	4	1	3	3	
Permitted Phases			2			6			4			
Actuated Green, G (s)	7.0	61.5	94.5	13.0	68.0	80.5	33.0	33.0	46.0	12.5	12.5	
Effective Green, g (s)	6.0	63.0	97.5	12.0	69.0	82.5	32.0	32.5	45.0	11.5	12.0	
Actuated g/C Ratio	0.04	0.47	0.72	0.09	0.51	0.61	0.24	0.24	0.33	0.09	0.09	
Clearance Time (s)	3.0	5.5	3.5	3.0	5.0	3.0	3.5	3.5	3.0	3.0	3.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	79	1652	1081	305	1809	893	382	804	470	137	291	
v/s Ratio Prot	c0.08	0.33	0.11	0.06	c0.47	0.01	0.19	c0.19	0.03	0.09	c0.13	
v/s Ratio Perm			0.20			0.04			0.08			
v/c Ratio	1.78	0.71	0.44	0.64	0.92	0.07	0.80	0.79	0.34	1.10	1.51	
Uniform Delay, d1	64.5	28.7	7.6	59.4	30.5	10.7	48.5	48.1	33.9	61.8	61.5	
Progression Factor	1.00	1.00	1.00	1.02	0.59	0.50	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	399.0	2.6	0.3	3.8	7.8	0.0	11.4	5.5	0.4	106.9	245.6	
Delay (s)	463.5	31.3	7.9	64.4	25.7	5.4	59.9	53.6	34.3	168.7	307.1	
Level of Service	F	C	A	E	C	A	E	D	C	F	F	
Approach Delay (s)		58.5			28.9			52.2			272.7	
Approach LOS		E			C			D			F	

Intersection Summary			
HCM Average Control Delay	70.5	HCM Level of Service	E
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	104.2%	ICU Level of Service	G
Analysis Period (min)	15		

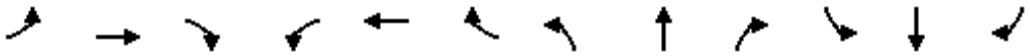
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	137	1135	485	190	1616	69	487	430	174	163	329	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	1.5	4.0	4.0	4.0	4.0	4.0	3.5	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.91	1.00	1.00	0.93	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1519	3433	3539	1447	3433	1863	1480	1770	3356	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1519	3433	3539	1447	3433	1863	1480	1770	3356	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	141	1170	500	196	1666	71	502	443	179	168	339	101
RTOR Reduction (vph)	0	0	46	0	0	11	0	0	20	0	20	0
Lane Group Flow (vph)	141	1170	454	196	1666	60	502	443	159	168	420	0
Confl. Peds. (#/hr)			30			30			65			50
Turn Type	Prot		pm+ov	Prot		Perm	Prot		pm+ov	Prot		
Protected Phases	5	2	3	1	6		3	4	1	7	8	
Permitted Phases			2			6			4			
Actuated Green, G (s)	7.0	61.5	77.0	13.0	68.0	68.0	15.5	33.0	46.0	12.5	30.0	
Effective Green, g (s)	6.0	63.0	80.0	12.0	69.0	69.0	14.5	32.5	45.0	11.5	29.5	
Actuated g/C Ratio	0.04	0.47	0.59	0.09	0.51	0.51	0.11	0.24	0.33	0.09	0.22	
Clearance Time (s)	3.0	5.5	3.0	3.0	5.0	5.0	3.0	3.5	3.0	3.0	3.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	79	1652	900	305	1809	740	369	449	493	151	733	
v/s Ratio Prot	c0.08	0.33	c0.06	0.06	c0.47		c0.15	c0.24	0.03	0.09	0.13	
v/s Ratio Perm			0.24			0.04			0.08			
v/c Ratio	1.78	0.71	0.50	0.64	0.92	0.08	1.36	0.99	0.32	1.11	0.57	
Uniform Delay, d1	64.5	28.7	16.0	59.4	30.5	16.8	60.2	51.0	33.6	61.8	47.1	
Progression Factor	1.00	1.00	1.00	1.02	0.59	0.27	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	399.0	2.6	0.4	3.8	7.8	0.2	178.9	38.6	0.4	106.6	1.1	
Delay (s)	463.5	31.3	16.4	64.4	25.7	4.8	239.1	89.6	34.0	168.4	48.2	
Level of Service	F	C	B	E	C	A	F	F	C	F	D	
Approach Delay (s)		60.8			28.8			147.5			81.4	
Approach LOS		E			C			F			F	

Intersection Summary			
HCM Average Control Delay	69.6	HCM Level of Service	E
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	102.2%	ICU Level of Service	G
Analysis Period (min)	15		

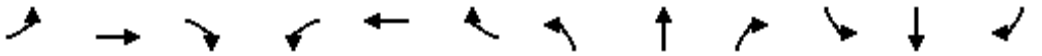
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	137	1135	485	190	1616	69	487	430	174	163	329	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	1.5	4.0	4.0	2.0	4.0	4.0	3.5	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	1.00	0.87	1.00	1.00	0.89	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1481	3433	3539	1382	3433	1863	1411	1770	3417	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1481	3433	3539	1382	3433	1863	1411	1770	3417	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	141	1170	500	196	1666	71	502	443	179	168	339	101
RTOR Reduction (vph)	0	0	36	0	0	9	0	0	18	0	20	0
Lane Group Flow (vph)	141	1170	464	196	1666	62	502	443	161	168	420	0
Confl. Peds. (#/hr)			60			60			115			
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov	Prot		
Protected Phases	5	2	3	1	6	7	3	4	1	7	8	
Permitted Phases			2			6			4			
Actuated Green, G (s)	7.0	61.5	85.7	13.0	68.0	80.5	24.2	33.0	46.0	12.5	21.3	
Effective Green, g (s)	6.0	63.0	88.7	12.0	69.0	82.5	23.2	32.5	45.0	11.5	20.8	
Actuated g/C Ratio	0.04	0.47	0.66	0.09	0.51	0.61	0.17	0.24	0.33	0.09	0.15	
Clearance Time (s)	3.0	5.5	3.0	3.0	5.0	3.0	3.0	3.5	3.0	3.0	3.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	79	1652	973	305	1809	845	590	449	470	151	526	
v/s Ratio Prot	c0.08	0.33	0.09	0.06	c0.47	0.01	0.15	c0.24	0.03	c0.09	0.12	
v/s Ratio Perm			0.22			0.04			0.08			
v/c Ratio	1.78	0.71	0.48	0.64	0.92	0.07	0.85	0.99	0.34	1.11	0.80	
Uniform Delay, d1	64.5	28.7	11.6	59.4	30.5	10.7	54.2	51.0	33.9	61.8	55.1	
Progression Factor	1.00	1.00	1.00	1.02	0.59	0.50	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	399.0	2.6	0.4	3.8	7.8	0.0	11.3	38.6	0.4	106.6	8.2	
Delay (s)	463.5	31.3	11.9	64.4	25.7	5.4	65.5	89.6	34.3	168.4	63.3	
Level of Service	F	C	B	E	C	A	E	F	C	F	E	
Approach Delay (s)		59.6			28.9			70.1			92.4	
Approach LOS		E			C			E			F	

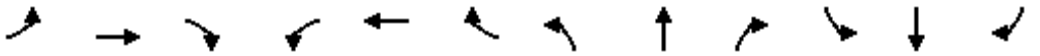
Intersection Summary			
HCM Average Control Delay	54.5	HCM Level of Service	D
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	102.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	1700	600	355	1765	155	650	480	330	140	365	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.91	0.91	1.00	0.91	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	3433	3539	1583	1610	3329	1583	1610	3384	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	3433	3539	1583	1610	3329	1583	1610	3384	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	124	1753	619	366	1820	160	670	495	340	144	376	41
RTOR Reduction (vph)	0	0	158	0	0	22	0	0	125	0	0	16
Lane Group Flow (vph)	124	1753	461	366	1820	138	382	783	215	130	390	25
Turn Type	Prot		Perm	Prot		Perm	Split		Perm	Split		Perm
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			2			6			4			3
Actuated Green, G (s)	7.0	56.1	56.1	18.4	68.0	68.0	26.2	26.2	26.2	19.3	19.3	19.3
Effective Green, g (s)	6.0	57.6	57.6	17.4	69.0	69.0	25.7	25.7	25.7	18.3	18.3	18.3
Actuated g/C Ratio	0.04	0.43	0.43	0.13	0.51	0.51	0.19	0.19	0.19	0.14	0.14	0.14
Clearance Time (s)	3.0	5.5	5.5	3.0	5.0	5.0	3.5	3.5	3.5	3.0	3.0	3.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	79	1510	675	442	1809	809	306	634	301	218	459	215
v/s Ratio Prot	c0.07	c0.50		0.11	c0.51		c0.24	0.24		0.08	c0.12	
v/s Ratio Perm			0.29			0.09			0.14			0.02
v/c Ratio	1.57	1.16	0.68	0.83	1.01	0.17	1.25	1.24	0.71	0.60	0.85	0.12
Uniform Delay, d1	64.5	38.7	31.3	57.3	33.0	17.7	54.6	54.6	51.2	54.9	57.0	51.3
Progression Factor	1.00	1.00	1.00	0.96	0.65	0.34	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	308.5	80.2	5.5	10.8	21.3	0.4	136.1	119.0	7.8	4.3	13.7	0.2
Delay (s)	373.0	118.9	36.9	66.1	42.8	6.3	190.7	173.7	58.9	59.2	70.7	51.5
Level of Service	F	F	D	E	D	A	F	F	E	E	E	D
Approach Delay (s)		111.2			44.0			152.1			66.6	
Approach LOS		F			D			F			E	

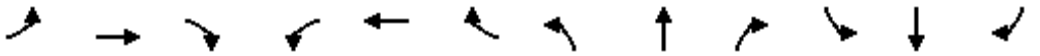
Intersection Summary			
HCM Average Control Delay	93.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	102.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	1700	600	355	1765	155	650	480	330	140	365	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	2.0	4.0	4.0	2.0	4.5	4.0	3.5	4.0	3.5	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.91	0.91	1.00	0.91	0.91	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.93	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1539	3433	3539	1531	1610	3329	1467	1610	3312	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1539	3433	3539	1531	1610	3329	1467	1610	3312	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	124	1753	619	366	1820	160	670	495	340	144	376	41
RTOR Reduction (vph)	0	0	20	0	0	12	0	0	124	0	6	0
Lane Group Flow (vph)	124	1753	599	366	1820	148	382	783	216	130	425	0
Confl. Peds. (#/hr)			30			30			65			50
Turn Type	Prot		pm+ov	Prot		pm+ov	Split		pm+ov	Split		
Protected Phases	5	2	4	1	6	3	4	4	1	3	3	
Permitted Phases			2			6			4			
Actuated Green, G (s)	5.3	49.5	83.9	8.3	53.0	80.8	34.4	34.4	42.7	27.8	27.8	
Effective Green, g (s)	4.3	51.0	86.9	7.3	54.0	82.8	33.4	33.9	41.7	26.8	27.3	
Actuated g/C Ratio	0.03	0.38	0.64	0.05	0.40	0.61	0.25	0.25	0.31	0.20	0.20	
Clearance Time (s)	3.0	5.5	3.5	3.0	5.0	3.0	3.5	3.5	3.0	3.0	3.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	56	1337	991	186	1416	939	398	836	453	320	670	
v/s Ratio Prot	0.07	0.50	0.16	c0.11	c0.51	0.03	c0.24	0.24	0.03	0.08	c0.13	
v/s Ratio Perm			0.23			0.06			0.12			
v/c Ratio	2.21	1.31	0.60	1.97	1.29	0.16	0.96	0.94	0.48	0.41	0.63	
Uniform Delay, d1	65.3	42.0	14.0	63.9	40.5	11.2	50.1	49.5	37.8	47.2	49.3	
Progression Factor	1.00	1.00	1.00	0.97	0.76	1.17	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	599.8	145.5	1.0	452.4	133.3	0.1	34.3	17.5	0.8	0.8	2.0	
Delay (s)	665.2	187.5	15.1	514.7	163.9	13.1	84.4	67.0	38.6	48.0	51.3	
Level of Service	F	F	B	F	F	B	F	E	D	D	D	
Approach Delay (s)		168.5			208.4			65.0			50.5	
Approach LOS		F			F			E			D	

Intersection Summary			
HCM Average Control Delay	149.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	119.9%	ICU Level of Service	H
Analysis Period (min)	15		

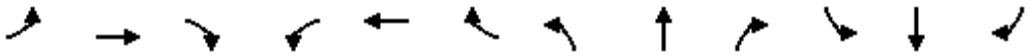
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	1700	600	355	1765	155	650	480	330	140	365	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	2.0	4.0	4.0	2.0	4.5	4.0	3.5	4.0	3.5	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.91	0.91	1.00	0.91	0.91	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.96	1.00	1.00	0.93	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1533	3433	3539	1521	1610	3329	1480	1610	3309	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1533	3433	3539	1521	1610	3329	1480	1610	3309	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	124	1753	619	366	1820	160	670	495	340	144	376	41
RTOR Reduction (vph)	0	0	13	0	0	7	0	0	97	0	5	0
Lane Group Flow (vph)	124	1753	606	366	1820	153	382	783	243	130	426	0
Confl. Peds. (#/hr)			30			30			65			50
Turn Type	Prot		pm+ov	Prot		pm+ov	Split		pm+ov	Split		
Protected Phases	5	2	4	1	6	3	4	4	1	3	3	
Permitted Phases			2			6			4			
Actuated Green, G (s)	7.0	55.1	90.4	19.4	68.0	96.2	35.3	35.3	54.7	28.2	28.2	
Effective Green, g (s)	6.0	56.6	93.4	18.4	69.0	98.2	34.3	34.8	53.7	27.2	27.7	
Actuated g/C Ratio	0.04	0.37	0.61	0.12	0.45	0.64	0.22	0.23	0.35	0.18	0.18	
Clearance Time (s)	3.0	5.5	3.5	3.0	5.0	3.0	3.5	3.5	3.0	3.0	3.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	69	1309	936	413	1596	976	361	757	519	286	599	
v/s Ratio Prot	c0.07	c0.50	0.16	0.11	c0.51	0.03	c0.24	0.24	0.06	0.08	c0.13	
v/s Ratio Perm			0.24			0.07			0.11			
v/c Ratio	1.80	1.34	0.65	0.89	1.14	0.16	1.06	1.03	0.47	0.45	0.71	
Uniform Delay, d1	73.5	48.2	19.2	66.3	42.0	10.9	59.4	59.1	38.5	56.3	58.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	410.1	157.9	1.6	19.8	71.3	0.1	63.5	41.9	0.7	1.1	4.0	
Delay (s)	483.6	206.1	20.7	86.1	113.3	11.0	122.9	101.0	39.2	57.4	62.9	
Level of Service	F	F	C	F	F	B	F	F	D	E	E	
Approach Delay (s)		173.9			102.1			92.6			61.6	
Approach LOS		F			F			F			E	

Intersection Summary			
HCM Average Control Delay	122.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	153.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	119.9%	ICU Level of Service	H
Analysis Period (min)	15		

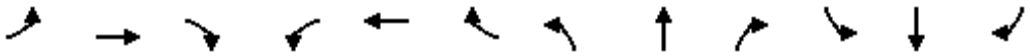
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	1700	600	355	1765	155	650	480	330	140	365	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	2.0	4.0	4.0	2.0	4.5	4.0	3.5	4.0	3.5	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.91	0.91	1.00	0.91	0.91	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.92	1.00	1.00	0.90	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1500	3433	3539	1462	1610	3329	1430	1610	3336	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1500	3433	3539	1462	1610	3329	1430	1610	3336	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	124	1753	619	366	1820	160	670	495	340	144	376	41
RTOR Reduction (vph)	0	0	6	0	0	8	0	0	14	0	5	0
Lane Group Flow (vph)	124	1753	613	366	1820	152	382	783	326	130	426	0
Confl. Peds. (#/hr)			60			60			115			
Turn Type	Prot		pm+ov	Prot		pm+ov	Split		pm+ov	Split		
Protected Phases	5	2	4	1	6	3	4	4	1	3	3	
Permitted Phases			2			6			4			
Actuated Green, G (s)	7.0	56.0	89.0	18.5	68.0	80.5	33.0	33.0	51.5	12.5	12.5	
Effective Green, g (s)	6.0	57.5	92.0	17.5	69.0	82.5	32.0	32.5	50.5	11.5	12.0	
Actuated g/C Ratio	0.04	0.43	0.68	0.13	0.51	0.61	0.24	0.24	0.37	0.09	0.09	
Clearance Time (s)	3.0	5.5	3.5	3.0	5.0	3.0	3.5	3.5	3.0	3.0	3.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	79	1507	1022	445	1809	893	382	801	535	137	297	
v/s Ratio Prot	c0.07	c0.50	0.15	0.11	c0.51	0.02	c0.24	0.24	0.08	0.08	c0.13	
v/s Ratio Perm			0.26			0.09			0.15			
v/c Ratio	1.57	1.16	0.60	0.82	1.01	0.17	1.00	0.98	0.61	0.95	1.43	
Uniform Delay, d1	64.5	38.8	11.6	57.2	33.0	11.4	51.5	50.9	34.2	61.5	61.5	
Progression Factor	1.00	1.00	1.00	0.96	0.68	0.68	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	308.5	81.2	1.0	10.5	21.5	0.1	46.0	26.0	2.0	60.6	213.1	
Delay (s)	373.0	119.9	12.5	65.5	43.9	7.8	97.5	76.9	36.2	122.1	274.6	
Level of Service	F	F	B	E	D	A	F	E	D	F	F	
Approach Delay (s)		105.9			44.8			73.0			239.2	
Approach LOS		F			D			E			F	

Intersection Summary			
HCM Average Control Delay	88.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	108.1%	ICU Level of Service	G
Analysis Period (min)	15		

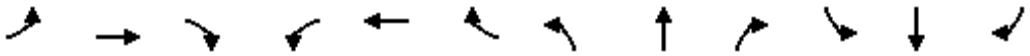
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	1700	600	355	1765	155	650	480	330	140	365	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	1.5	4.0	4.0	4.0	4.0	4.0	3.5	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.91	1.00	1.00	0.94	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1520	3433	3539	1447	3433	1863	1491	1770	3460	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1520	3433	3539	1447	3433	1863	1491	1770	3460	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	124	1753	619	366	1820	160	670	495	340	144	376	41
RTOR Reduction (vph)	0	0	22	0	0	22	0	0	15	0	6	0
Lane Group Flow (vph)	124	1753	597	366	1820	138	670	495	325	144	411	0
Confl. Peds. (#/hr)			30			30			65			50
Turn Type	Prot		pm+ov	Prot		Perm	Prot		pm+ov	Prot		
Protected Phases	5	2	3	1	6		3	4	1	7	8	
Permitted Phases			2			6			4			
Actuated Green, G (s)	7.0	56.0	71.5	18.5	68.0	68.0	15.5	33.0	51.5	12.5	30.0	
Effective Green, g (s)	6.0	57.5	74.5	17.5	69.0	69.0	14.5	32.5	50.5	11.5	29.5	
Actuated g/C Ratio	0.04	0.43	0.55	0.13	0.51	0.51	0.11	0.24	0.37	0.09	0.22	
Clearance Time (s)	3.0	5.5	3.0	3.0	5.0	5.0	3.0	3.5	3.0	3.0	3.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	79	1507	839	445	1809	740	369	449	558	151	756	
v/s Ratio Prot	c0.07	c0.50	c0.09	0.11	c0.51		c0.20	c0.27	0.08	0.08	0.12	
v/s Ratio Perm			0.30			0.10			0.14			
v/c Ratio	1.57	1.16	0.71	0.82	1.01	0.19	1.82	1.10	0.58	0.95	0.54	
Uniform Delay, d1	64.5	38.8	22.3	57.2	33.0	17.8	60.2	51.2	33.8	61.5	46.8	
Progression Factor	1.00	1.00	1.00	0.96	0.68	0.36	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	308.5	81.2	2.9	10.5	21.5	0.5	377.6	73.3	1.6	59.0	0.8	
Delay (s)	373.0	119.9	25.2	65.5	43.9	6.9	437.9	124.5	35.4	120.4	47.6	
Level of Service	F	F	C	E	D	A	F	F	D	F	D	
Approach Delay (s)		109.0			44.8			243.9			66.3	
Approach LOS		F			D			F			E	

Intersection Summary			
HCM Average Control Delay	113.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	111.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	1700	600	355	1765	155	650	480	330	140	365	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	1.5	4.0	4.0	2.0	4.0	4.0	3.5	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	0.97	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	1.00	0.87	1.00	1.00	0.90	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1485	3433	3539	1382	3433	1863	1430	1770	3487	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1485	3433	3539	1382	3433	1863	1430	1770	3487	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	124	1753	619	366	1820	160	670	495	340	144	376	41
RTOR Reduction (vph)	0	0	12	0	0	8	0	0	14	0	6	0
Lane Group Flow (vph)	124	1753	607	366	1820	152	670	495	326	144	411	0
Confl. Peds. (#/hr)			60			60			115			
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov	Prot		
Protected Phases	5	2	3	1	6	7	3	4	1	7	8	
Permitted Phases			2			6			4			
Actuated Green, G (s)	7.0	56.0	81.5	18.5	68.0	80.5	25.5	33.0	51.5	12.5	20.0	
Effective Green, g (s)	6.0	57.5	84.5	17.5	69.0	82.5	24.5	32.5	50.5	11.5	19.5	
Actuated g/C Ratio	0.04	0.43	0.63	0.13	0.51	0.61	0.18	0.24	0.37	0.09	0.14	
Clearance Time (s)	3.0	5.5	3.0	3.0	5.0	3.0	3.0	3.5	3.0	3.0	3.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	79	1507	930	445	1809	845	623	449	535	151	504	
v/s Ratio Prot	c0.07	c0.50	0.13	0.11	c0.51	0.02	c0.20	c0.27	0.08	0.08	0.12	
v/s Ratio Perm			0.28			0.09			0.15			
v/c Ratio	1.57	1.16	0.65	0.82	1.01	0.18	1.08	1.10	0.61	0.95	0.82	
Uniform Delay, d1	64.5	38.8	16.0	57.2	33.0	11.5	55.2	51.2	34.2	61.5	56.0	
Progression Factor	1.00	1.00	1.00	0.96	0.68	0.68	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	308.5	81.2	1.7	10.5	21.5	0.1	58.0	73.3	2.0	59.0	9.8	
Delay (s)	373.0	119.9	17.6	65.5	43.9	7.9	113.3	124.5	36.2	120.4	65.8	
Level of Service	F	F	B	E	D	A	F	F	D	F	E	
Approach Delay (s)		107.1			44.9			99.6			79.8	
Approach LOS		F			D			F			E	

Intersection Summary			
HCM Average Control Delay	82.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	105.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group