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SENSITIVITY ANALYSIS

DATE: October 23, 2025

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SUBJECT: US 101 and Prado Road Interchange Project #24989-000

INTRODUCTION

The following traffic analysis was completed to support the US 101 Prado Road Interchange Project. The relative performance of various design elements of the proposed project were analyzed under AM/PM peak hour 2050 future year conditions and compared across the following four performance metrics:

- Vehicular Level of Service (based on Highway Capacity Manual 7th Edition – HCM 7 grades using static and simulation delay results)
- Vehicular Delay (using both static and simulation modeling)
- Vehicular 95th Percentile Queue (based on simulation modeling)
- Carbon Footprint (based on simulation results and composite EMFAC emission rates)

The peak hour volume sets used for these operational determinations were based on the most recent travel demand modeling developed by the City of San Luis Obispo. All demand profiles reflect future mode shifts to transit. Pursuant to *NCHRP Report 765 Analytical Travel Forecasting Approaches for Project-Level Planning and Design*, 2014, travel demand model outputs were post-processed using traffic counts collected in May 2025. The traffic counts include pedestrians and bicyclists. For the future year (2050) build condition these ped/bike counts were manually adjusted to reflect the anticipated increase in pedestrian/bicycle activity to result from the project (i.e., overcrossing connectivity and planned bicycle and pedestrian facilities in the proposed project).

STUDY AREA

The focus of the analysis is on Prado Road at the following two intersections:

1. Prado Road / US 101 NB Ramps
2. Prado Road / Elks Lane

Currently Elks Lane and the US 101 NB ramps intersect at an all-way-stop. With the extension of Prado Road to Froom Ranch Way (**Figure 1**), Elks Lane would be realigned with the City's new Water Resource Recovery Facility (WRRF) and Corporation Yard entrance.

FIGURE 1: STUDY AREA

PROJECT ALTERNATIVES

NO BUILD

The No Build alternative assumes the current all-way stop-controlled intersection at the US 101 NB off-/on-ramp / Prado Road / Elks Lane intersection, with no realignment of Elks Lane, and no overcrossing of US 101.

BUILD

A total of five alternatives were included in the Build analysis: two alternatives assuming a 4-lane bridge over US 101 and three alternatives with a 2-lane bridge. The Four-Lane Alternative assumed signals at the two study intersections (**Figure 2**), while the Two-Lane Alternative assumed either signals (**Figure 3**) or roundabouts (**Figure 4**) at the two study intersections.

For each overcrossing alternative, several geometric alternatives were analyzed, as described below:

FOUR-LANE OVERCROSSING

Both alternatives assume a 4-lane overcrossing, with the four lanes extending from Froom Ranch Way to Higuera Street, signals at the US 101 NB ramps and Elks Lane intersections, and bike lanes and sidewalks on both sides of Prado Road. The lane configuration at both intersections is identical between alternatives, with the only difference being the treatment of the westbound right-turn at the US 101 NB ramps intersection, as described below.

Alternative 1a: The westbound right-turn lane at the US 101 NB ramps would be a 200-foot storage lane, controlled at the intersection, with an approximate 100-foot long crosswalk across the east leg (**Figure 2**).

Alternative 1b: The westbound right-turn lane would be channelized at the US 101 NB ramps (similar to Alternative 3 shown in **Figure 4**), have 200 feet of storage, be signalized (only for the pedestrian crossing), and include a lane add for that movement and a merge with the eastbound left and northbound thru movements (similar to Alternative 3). The crosswalk length across the east leg would be approximately 75 feet.

TWO-LANE OVERCROSSING

All alternatives assume a 2-lane overcrossing, with four lanes extending from east of the US 101 NB ramps to Higuera Street, bike lanes and sidewalks on both sides of Prado Road, and a two-way mixed-use path on the south side. It should be noted that options for reducing traffic lanes east of the US 101 NB ramps was initially considered, but due to the significant congestion and delays that would cause was not included in the two-lane overcrossing alternatives. Alternative 2 includes signals at the US 101 NB ramps and Elks Lane intersections, with identical lane configuration at both intersections, with the only difference being the treatment of the westbound right-turn at the US 101 NB ramps intersection, as described below. Alternative 3 would be roundabouts at Elks Lane and the US 101 NB ramps.

Alternative 2a: The westbound right-turn lane at the US 101 NB ramps would be a drop lane (i.e., the rightmost lane drops to the on-ramp rather than continue through the intersection), controlled at the intersection (**Figure 3**).

Alternative 2b: The westbound right-turn lane would be channelized at the US 101 NB ramps (similar to Alternative 3 shown in **Figure 4**), be signalized (only for the pedestrian crossing), and include a lane add for that movement and a merge with the eastbound left and northbound thru movements (similar to Alternative 3).

Alternative 3: Alternative 3 would include a 2-lane roundabout at Elks Lane with single-lane approaches on the side street and a single-lane roundabout at the US 101 NB ramps (teardrop configuration) with a northbound right-turn lane for the off-ramp as shown in **Figure 4**. The westbound right at the US 101 NB ramps would be channelized, free, and include a lane add for that movement and a merge with the eastbound left and northbound thru movements.

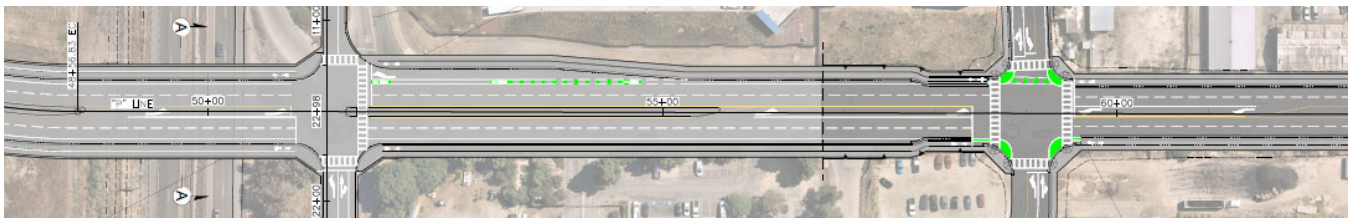


FIGURE 2: ALTERNATIVE 1A

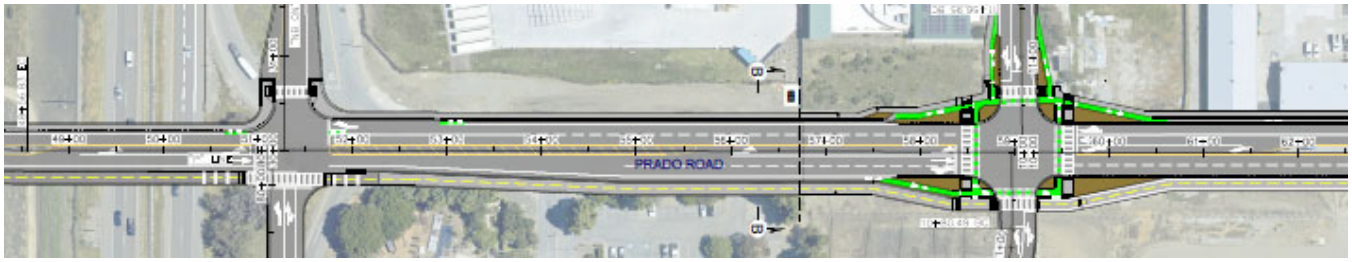


FIGURE 3: ALTERNATIVE 2A

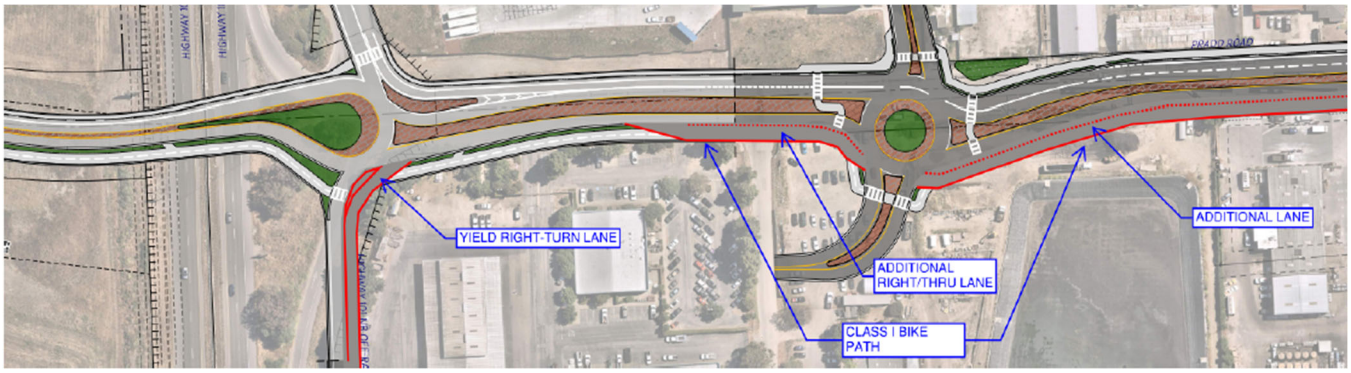


FIGURE 4: ALTERNATIVE 3

ANALYSIS METHODOLOGY

The methodologies used for the purpose of analyzing the various design elements of the proposed project alternatives are described below. Two forms of analysis were applied: static and stochastic. The static analysis is primarily based on methods described in the Highway Capacity Manual (HCM). Static analysis uses a fixed data input set along with a set of equations to develop a deterministic result versus stochastic analysis which uses a set of inputs with multi-run variance to derive a set of measured rather than calculated results (i.e., microsimulation). The SYNCHRO and SIDRA modeling software were applied for static analyses while the VISSIM modeling software was applied for stochastic operational determinations.

HIGHWAY CAPACITY MANUAL ANALYSIS

The operation or performance of roadway facilities is commonly described in terms of Level of Service (LOS). LOS is a qualitative measure of effectiveness describing traffic operations based on such factors as speed, travel time, delay, and freedom to change lanes for all vehicles. Six levels are defined from LOS A, as the best-operating conditions, to LOS F, or the worst operating conditions. LOS E represents "at-capacity" operations. Study intersections were analyzed to determine their LOS based on the definitions and formulas presented in the Highway Capacity Manual 7th Edition (HCM 7) as implemented by the SYNCHRO (v12) and SIDRA (v10) analysis software. **Table 1** presents the LOS criteria for intersections in accordance with the HCM 7 methodology.

TABLE 1: INTERSECTION LEVEL OF SERVICE CRITERIA

LEVEL OF SERVICE (LOS)	TOTAL DELAY PER VEHICLE (SECONDS)	
	SIGNALIZED [A]	UNSIGNALIZED [B]
A	< 10	< 10
B	> 10 and < 20	> 10 and < 15
C	> 20 and < 35	> 15 and < 25
D	> 35 and < 55	> 25 and < 35
E	> 55 and < 80	> 35 and < 50
F	> 80	> 50

Notes:

A. HCM 7, Chapter 19 (Signalized Intersections)

B. Chapter 22 (Roundabouts)

MICROSIMULATION ANALYSIS

Microsimulation analysis was conducted using the VISSIM modeling software to better reflect the effects of the close intersection spacing as well as lane utilization that the HCM methodologies do not specifically address. The models were developed, and analysis was conducted in accordance with the FHWA guidelines for microsimulation analysis[1].

It should be noted that the VISSIM models used for this analysis were not calibrated to existing conditions. However, the VISSIM models can still be used to compare alternative results to help inform decisions for a preferred alternative. Additionally, the Existing configuration (no overcrossing, all-way stop) and future configuration (with overcrossing, signal or roundabout) are different enough that much of the calibration for the Existing condition (e.g., how drivers yield at the stop sign) would not be useful for the Future Build conditions (signal or roundabout). The driver behavior and other

[1] Traffic Analysis Toolbox Volume III: Guidelines for Applying Traffic Microsimulation Modeling Software. Federal Highway Administration (FHWA). August 2003.

model parameters were based on previous models developed by DKS for similar facilities. Delay results from the microsimulation analysis are compared to HCM LOS criteria for intersections for the purpose of consistency with other analysis in this report.

QUEUING

95th percentile queue results are defined as the length of the queue which is exceeded five percent of the time during the analysis time period. The 95th percentile queue is useful in determining the appropriate storage requirements such as length of turn pockets but is not representative of what an average driver would experience during their commute.

SYNCHRO was used to identify the average and 95th percentile vehicle queues for approaching traffic for the future peak volumes. The 95th percentile queue in SYNCHRO is a calculation of the maximum back of queue with 95th percentile traffic volume, and not an actual observed queue.

VISSIM was also used to estimate the average and 95th percentile vehicle queues for approaching traffic for each study intersection for the one-hour system peak hour. To calculate 95th percentile queues, queue length data was collected from VISSIM using queue counters on critical approaches with a 120-second interval to reflect queues that form while traffic flow is impeded. The average and 95th percentile queue was then calculated using a percentile function in Excel.

DKS considers micro-simulation as a superior approach for queuing analysis given its ability to more accurately reflect the operational interaction of adjacent intersections and in particular, closely spaced intersections. It is also better at reflecting the interactions of pedestrians and bicyclists at intersections of all control types and in particular those with roundabout control.

FUTURE FORECASTS

The peak hour volume sets used for these operational determinations were based on the most recent travel demand modeling developed by the City of San Luis Obispo. All demand profiles reflect future mode shifts to transit. Pursuant to NCHRP Report 765, travel demand model outputs were post-processed using traffic counts collected in May 2025. The traffic counts include pedestrians and bicyclists. For the future year build condition these ped/bike counts were manually adjusted to reflect the anticipated increase in pedestrian/bicycle activity to result from the project (i.e., overcrossing connectivity and planned bicycle and pedestrian facilities in the proposed project).

Additionally, future forecasts included the completion of the Prado Creek Bridge project and related Higuera Street / Prado Road intersection improvements, as well as the planned extension of Prado Road east to Broad Street.

Future (Year 2050) forecasts for the AM and PM peak hours for the 4-lane and 2-lane overcrossing, as shown in **Figure 5** and **Figure 6**, respectively.

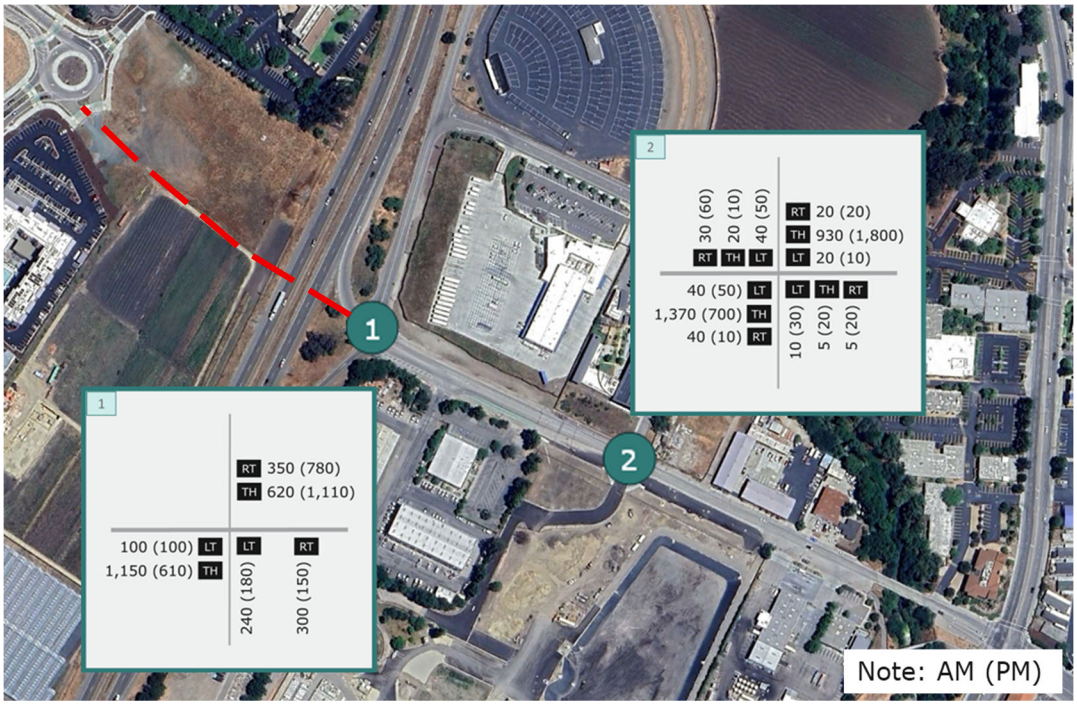


FIGURE 5: FUTURE (YEAR 2050) INTERSECTION VOLUMES – 4-LANE OVERCROSSING

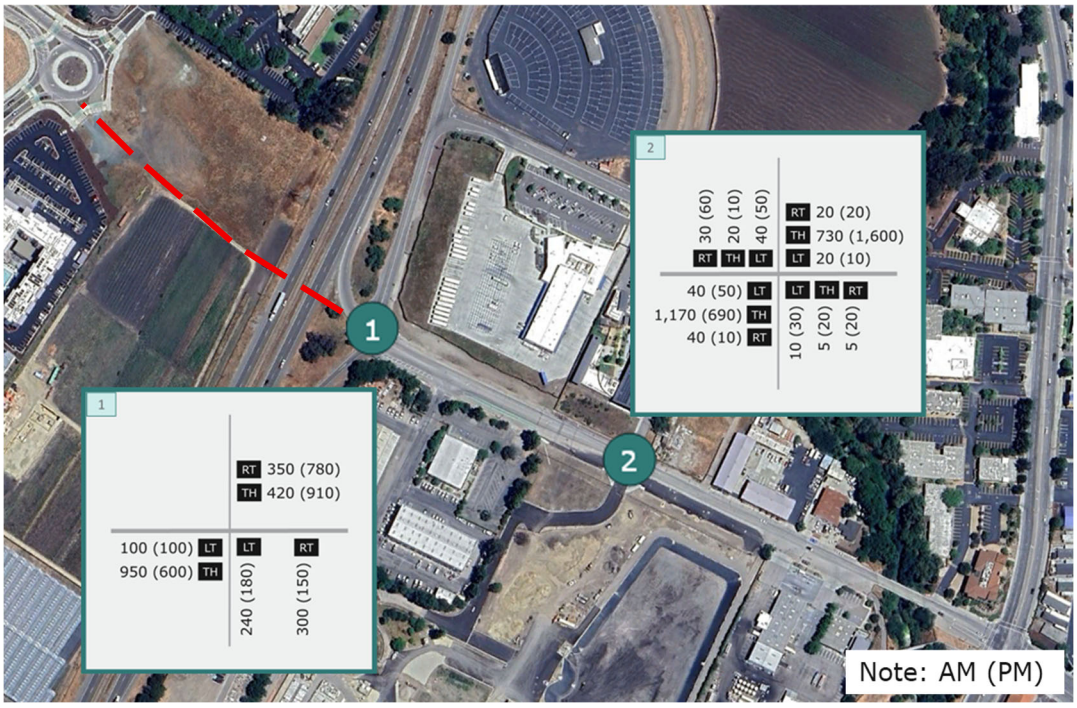


FIGURE 6: FUTURE (YEAR 2050) INTERSECTION VOLUMES – 2-LANE OVERCROSSING

OPERATIONAL ANALYSIS RESULTS

The following section describes the intersection operations for Future Year (2050). The delay, LOS and queue results for SYNCHRO and VISSIM can be found in the **Appendix**.

LEVEL OF SERVICE (LOS)

The analysis results for the intersection performance for the Future Year (2050) AM and PM peak hours are provided in **Table 2**. As shown, under No Build conditions, the Prado Road / US 101 NB / Elks Lane intersection is projected to operate at LOS F during the PM peak hour with significant delay (> 2 minutes). Under Build conditions, all intersections under all scenarios and time periods would operate at LOS D or better. The 4-lane alternatives generally operate better than the 2-lane alternatives (although only by a few seconds overall), with Alternative 1B operating better of the 4-lane alternatives and Alternative 3 generally operating better of the 2-lane Alternatives.

When comparing results from SYNCHRO and SIDRA (deterministic) and VISSIM (microsimulation), they are generally similar between time periods and scenarios, showing that even though the VISSIM models were not calibrated to existing conditions, the assumptions made for driver behavior are consistent with the output from SYNCHRO and SIDRA. The only exception is the NB Ramps intersection in the AM peak under Alternative 3, where the VISSIM model shows more average delay (27 seconds) for the off-ramp than SIDRA (10 seconds). This is due to a much higher delay modeled for the off-ramp in VISSIM than SIDRA. It should be noted that the circulating flow and approach flow are approximately 1,600 vph, which is the threshold at which not only dual approach lanes are necessary, but dual circulating lanes should also be considered.

TABLE 2: FUTURE YEAR (2050) INTERSECTION PERFORMANCE – DELAY AND LOS

INTERSECTION	SOFTWARE [B]	DELAY [A] (LOS)					
		NO OC	4-LANE OC		2-LANE OC		
		NO BUILD [C]	ALT 1A	ALT 1B	ALT 2A	ALT 2B	ALT 3 [D]
AM PEAK							
PRADO RD / US 101 NB RAMPS	SYNCHRO	23 (C)	13 (B)	13 (B)	17 (B)	17 (B)	10 (A/B)
	VISSIM	19 (C)	13 (B)	12 (B)	20 (B/C)	18 (B)	26 (D)
PRADO RD / ELKS LN	SYNCHRO	-	17 (B)	17 (B)	16 (B)	16 (B)	7 (A)
	VISSIM	-	15 (B)	15 (B)	14 (B)	14 (B)	5 (A)
PM PEAK							
PRADO RD / US 101 NB RAMPS	SYNCHRO	**130 (F)**	16 (B)	16 (B)	19 (B)	19 (B)	13 (B)
	VISSIM	**202 (F)**	19 (B)	11 (B)	19 (B)	13 (B)	8 (A)
PRADO RD / ELKS LN	SYNCHRO	-	26 (C)	19 (B)	21 (C)	21 (C)	10 (A/B)
	VISSIM	-	31 (C)	27 (C)	26 (C)	24 (C)	6 (A)

Note:

A. Average delay in seconds per vehicle. **Bold** indicates the LOS exceeds the City's mobility standard.
B. SYNCHRO is a deterministic model and VISSIM a microsimulation model. While the results may be similar, SYNCHRO does not consider downstream queue spillback, while VISSIM does.
C. The Prado Rd / Elks Ln intersection does not exist in the No Build. Elks Ln intersects Prado Rd
D. Roundabout results from SIDRA. LOS based on unsignalized criteria.

QUEING ANALYSIS

The Future (2050) average and 95th percentile queue lengths for each intersection for the AM and PM peak hours are presented in **Table 3** through **Table 6**. Also shown are queue lengths from SYNCHRO/SIDRA and VISSIM, with VISSIM queues generally longer than queues from SYNCHRO/SIDRA. It should be noted (and described above), the SYNCHRO/SIDRA queue lengths are calculated using equations while VISSIM queue lengths are calculated from observed queue lengths. However, the results between SYNCHRO and VISSIM are consistent in identifying movements that could experience queues in the future.

AVERAGE QUEUE LENGTH

As shown in the tables, average queue lengths (i.e., the queue experienced on average by a driver) are expected to be contained within the available storage and do not extend back to upstream intersections, except for the following:

No Build

- Westbound at Prado Road / US 101 NB Ramps (PM peak)

While the No Build westbound average queue does not extend to Higuera Street during the PM peak, it is within 100 feet of the intersection, meaning that at any given time during the PM peak queues are expected to extend from the US 101 NB ramps back to nearly Higuera Street. This is consistent with the high delay for this movement shown in **Table 2**.

Alternative 1A

- Westbound right-turn at Prado Road / US 101 NB Ramps (PM peak)

The westbound right average queue under Alternative 1A at the Prado Road / US 101 NB Ramps intersection exceeds the storage during the PM peak hour. The main reason this queue exceeds available storage is that the movement is signalized, meaning that during the eastbound left and northbound phases the movement would be red. The westbound right could therefore experience a red phase nearly 50% of the cycle (assumed 105 second cycle). While the westbound green time could be increased, it would result in longer queues for the eastbound left and northbound off-ramp.

95TH PERCENTILE QUEUE LENGTH

As shown in the tables, several 95th percentile queue lengths are expected to exceed available storage or extend back to upstream intersections during both the AM and PM peak hours, as described below:

No Build

- Westbound at Prado Road / US 101 NB Ramps (PM peak)

During the PM peak, under No Build conditions, westbound queues are projected to extend back to Higuera Street.

Alternative 1A

- Westbound right at Prado Road / US 101 NB Ramps (PM peak)
- Westbound through at Prado Road / US 101 NB Ramps (PM peak)
- Westbound through at Prado Road / Elks Lane (PM peak)

The heavy westbound demand (1,800 to 1,900) during the PM peak hour results in westbound queues extending back from the US 101 NB Ramps (both in the right and through lanes) intersection to the Elks Lane intersection, and then back to the Higuera Street intersection.

Alternative 1B

- Westbound right at Prado Road / US 101 NB Ramps (PM peak)
- Westbound through at Prado Road / Elks Lane (PM peak)

Similar to Alternative 1A, the westbound right-turn exceeds available storage. However, since the westbound right-turn is only stopped when there is a pedestrian, the westbound queues don't extend all the way to the Elks Lane intersection. The heavy demand at Prado Road / Elks Lane still results in the queue extending to the Higuera Street intersection.

Alternative 2A

- Eastbound at Prado Road / US 101 NB Ramps (AM peak)
- Northbound right at Prado Road / US 101 NB Ramps (AM peak)
- Westbound right at Prado Road / US 101 NB Ramps (PM peak)
- Westbound through at Prado Road / US 101 NB Ramps (PM peak)
- Westbound through at Prado Road / Elks Lane (PM peak)

During the AM peak hour under Alternative 2A, eastbound 95th percentile queues at the Prado Road / US 101 NB Ramps would extend back toward Froom Ranch Way (2/3 of the way there in SYNCHRO and exceeding it in VISSIM). Additionally, the northbound right-turn queue (in VISSIM) would exceed available storage (200 feet) but does not result in queues back onto the US 101 NB mainline.

The heavy westbound demand (1,600 to 1,700) during the PM peak hour results in westbound queues extending back from the US 101 NB Ramps (both in the right and through lanes) intersection to the Elks Lane intersection, and then back to the Higuera Street intersection.

Alternative 2B

- Eastbound at Prado Road / US 101 NB Ramps (AM peak)
- Northbound right at Prado Road / US 101 NB Ramps (AM peak)

Similar to Alternative 2A, during the AM peak hour the eastbound 95th percentile queue at the Prado Road / US 101 NB Ramps would extend back toward Froom Ranch Way, and the northbound right-turn queue (in VISSIM) would exceed available storage but not back onto the US 101 NB mainline.

Similar to Alternative 2A, during the PM peak hour westbound queues extend back from the US 101 NB Ramps (both in the right and through lanes) intersection to the Elks Lane intersection, and then back to the Higuera Street intersection.

Alternative 3

- Northbound at Prado Road / US 101 NB Ramps (AM peak)

The VISSIM results show northbound approach queues to the roundabout could extend back to the US 101 mainline during the AM peak hour. The reason for the queuing is that the eastbound through movement is not impeded by any other movement, and at 1,050 vehicles (100 left and 950 through) results in insufficient gaps (1 vehicle every 3-4 seconds) for northbound vehicles.

Similar to Alternative 2, during the PM peak hour westbound queues extend back from the US 101 NB Ramps (both in the right and through lanes) intersection to the Elks Lane intersection. However, unlike Alternative 2, queues do not extend back to the Higuera Street intersection.

TABLE 3: FUTURE (2050) AM PEAK HOUR QUEUE LENGTHS – AVERAGE

ALTERNATIVE	SOFTWARE	QUEUE LENGTH (FT) [A]											
		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		L	T	R	L	T	R	L	T	R	L	T	R
PRADO RD / US 101 NB RAMPS													
NO BUILD (NO OC)	SYNCHRO [B]		-		-	-			-			-	
	VISSIM		-		-	225			40			20	
ALT 1A (4-LANE OC)	SYNCHRO	30	115	-	-	90	0	70	50		-	-	-
	VISSIM	60	140	-	-	115	85	130	85		-	-	-
ALT 1B (4-LANE OC)	SYNCHRO	30	115	-	-	90	0	70	50		-	-	-
	VISSIM	55	135	-	-	115	30	120	85		-	-	-
ALT 2A (2-LANE OC)	SYNCHRO	40	275	-	-	130	0	90	45		-	-	-
	VISSIM	75	410	-	-	160	105	135	140		-	-	-
ALT 2B (2-LANE OC)	SYNCHRO	40	275	-	-	130	0	90	45		-	-	-
	VISSIM	70	395	-	-	155	20	130	135		-	-	-
ALT 3 (2-LANE OC)	SIDRA	0		-	-	25	0	25		40	-	-	-
	VISSIM	0		-	-	55	0	235		555	-	-	-
PRADO RD / ELKS LN													
NO BUILD (NO OC)	SYNCHRO		-			-			-			-	
	VISSIM		-			-			-			-	
ALT 1A (4-LANE OC)	SYNCHRO	10	95		5	110		5	5		10	5	
	VISSIM	30	265		15	185		10	5		30	25	
ALT 1B (4-LANE OC)	SYNCHRO	10	95		5	110		5	5		10	5	
	VISSIM	30	255		20	180		10	5		30	25	

ALTERNATIVE	SOFTWARE	QUEUE LENGTH (FT) [A]											
		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		L	T	R	L	T	R	L	T	R	L	T	R
ALT 2A (2-LANE OC)	SYNCHRO	10	75		5	40		5	5		10	5	
	VISSIM	30	235		20	150		10	5		30	25	
ALT 2B (2-LANE OC)	SYNCHRO	10	75		5	40		5	5		10	5	
	VISSIM	30	235		20	150		10	5		30	25	
ALT 3 (2-LANE OC)	SIDRA	35			15			5			5		
	VISSIM	70			35			15			25		

Note:

All queues are rounded to nearest 5'.

A. L = Left. T = Thru. R = Right.

B. SYNCHRO does not calculate the average queue for all-way stop intersections.

TABLE 4: FUTURE (2050) AM PEAK HOUR QUEUE LENGTHS – 95TH PERCENTILE

ALTERNATIVE	SOFTWARE	QUEUE LENGTH (FT) [A]											
		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		L	T	R	L	T	R	L	T	R	L	T	R
PRADO RD / US 101 NB RAMPS													
NO BUILD (NO OC)	SYNCHRO		-			235			70			10	
	VISSIM		-			475			120			60	
ALT 1A (4-LANE OC)	SYNCHRO	85	200	-	-	160	50	165	155		-	-	-
	VISSIM	130	235	-	-	240	245	235	185		-	-	-
ALT 1B (4-LANE OC)	SYNCHRO	85	200	-	-	160	50	165	155		-	-	-
	VISSIM	135	260	-	-	260	145	240	190		-	-	-
ALT 2A (2-LANE OC)	SYNCHRO	90	525	-	-	250	50	185	135		-	-	-
	VISSIM	140	**865**	-	-	360	295	255	**330**		-	-	-
ALT 2B (2-LANE OC)	SYNCHRO	90	525	-	-	250	50	185	135		-	-	-
	VISSIM	140	**865**	-	-	350	105	250	**330**		-	-	-
ALT 3 (2-LANE OC)	SIDRA	0		-	-	55	0	65		95	-	-	-
	VISSIM	0		-	-	175	0	**910**		**1365**	-	-	-
PRADO RD / ELKS LN													
NO BUILD (NO OC)	SYNCHRO		-			-			-			-	
	VISSIM		-			-			-			-	
ALT 1A (4-LANE OC)	SYNCHRO	60	430		35	250		25	20		60	50	
	VISSIM	80	470		45	355		35	20		80	65	
ALT 1B (4-LANE OC)	SYNCHRO	60	430		35	250		25	20		60	50	
	VISSIM	85	515		60	355		40	25		85	75	
	SYNCHRO	55	345		35	190		20	20		55	45	

ALTERNATIVE	SOFTWARE	QUEUE LENGTH (FT) [A]											
		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		L	T	R	L	T	R	L	T	R	L	T	R
ALT 2A (2-LANE OC)	VISSIM	80	585		50	315		45	25		90	70	
ALT 2B (2-LANE OC)	SYNCHRO	55	345		35	190		20	20		55	45	
	VISSIM	80	585		20	150		45	25		90	70	
ALT 3 (2-LANE OC)	SIDRA	85			40			5			10		
	VISSIM	130			115			50			90		

Note:

All queues are rounded to nearest 5'. **BOLD** indicates the queue exceeds the storage length or extends back to the next upstream intersection.

A. L = Left. T = Thru. R = Right.

TABLE 5: FUTURE (2050) PM PEAK HOUR QUEUE LENGTHS – AVERAGE

ALTERNATIVE	SOFTWARE	QUEUE LENGTH (FT) [A]											
		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		L	T	R	L	T	R	L	T	R	L	T	R
PRADO RD / US 101 NB RAMPS													
NO BUILD (NO OC)	SYNCHRO [B]		-			-			-			-	
	VISSIM		-			1545			10			20	
ALT 1A (4-LANE OC)	SYNCHRO	50	50	-	-	205	45	90	0		-	-	-
	VISSIM	65	60	-	-	310	**430**	110	35		-	-	-
ALT 1B (4-LANE OC)	SYNCHRO	50	50	-	-	205	45	90	0		-	-	-
	VISSIM	60	60	-	-	220	115	95	40		-	-	-
ALT 2A (2-LANE OC)	SYNCHRO	55	115	-	-	430	45	95	0		-	-	-
	VISSIM	60	130	-	-	435	460	105	40		-	-	-
ALT 2B (2-LANE OC)	SYNCHRO	55	115	-	-	430	45	95	0		-	-	-
	VISSIM	60	130	-	-	390	120	105	40		-	-	-
ALT 3 (2-LANE OC)	SIDRA	0		-	-	275	0	10		10	-	-	-
	VISSIM	0		-	-	295	10	45		45	-	-	-
PRADO RD / ELKS LN													
NO BUILD (NO OC)	SYNCHRO		-			-			-			-	
	VISSIM		-			-			-			-	
ALT 1A (4-LANE OC)	SYNCHRO	30	80		5	530		20	15		30	5	
	VISSIM	45	105		10	665		25	20		40	35	
ALT 1B (4-LANE OC)	SYNCHRO	30	80		5	530		20	15		30	5	
	VISSIM	40	105		10	610		25	20		40	35	
	SYNCHRO	30	75		5	420		20	15		30	5	

ALTERNATIVE	SOFTWARE	QUEUE LENGTH (FT) [A]											
		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		L	T	R	L	T	R	L	T	R	L	T	R
ALT 2A (2-LANE OC)	VISSIM	45	100		10	550		25	20		45	35	
ALT 2B (2-LANE OC)	SYNCHRO	30	75		5	420		20	15		30	5	
	VISSIM	40	100		10	525		25	20		45	30	
ALT 3 (2-LANE OC)	SIDRA	15			60			5			15		
	VISSIM	50			160			20			50		

Note:

All queues are rounded to nearest 5'. **BOLD** indicates the queue exceeds the storage length or extends back to the next upstream intersection.

A. L = Left. T = Thru. R = Right.

B. SYNCHRO does not calculate the average queue for all-way stop intersections.

TABLE 6: FUTURE (2050) PM PEAK HOUR QUEUE LENGTHS – 95TH PERCENTILE

ALTERNATIVE	SOFTWARE	QUEUE LENGTH (FT) [A]											
		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		L	T	R	L	T	R	L	T	R	L	T	R
PRADO RD / US 101 NB RAMPS													
NO BUILD (NO OC)	SYNCHRO		-			950			20			10	
	VISSIM		-			**1690**			60			60	
ALT 1A (4-LANE OC)	SYNCHRO	110	85	-	-	335	235	175	50		-	-	-
	VISSIM	135	115	-	-	**715**	**725**	210	85		-	-	-
ALT 1B (4-LANE OC)	SYNCHRO	110	85	-	-	335	220	175	50		-	-	-
	VISSIM	135	130	-	-	545	**495**	205	95		-	-	-
ALT 2A (2-LANE OC)	SYNCHRO	110	215	-	-	**#845** [B]	230	175	50		-	-	-
	VISSIM	135	300	-	-	**740**	**740**	205	105		-	-	-
ALT 2B (2-LANE OC)	SYNCHRO	110	215	-	-	**#845** [B]	215	175	50		-	-	-
	VISSIM	135	325	-	-	**720**	**645**	200	105		-	-	-
ALT 3 (2-LANE OC)	SIDRA	0		-	-	**675**	0	25		20	-	-	-
	VISSIM	0		-	-	**740**	80	125		120	-	-	-
PRADO RD / ELKS LN													
NO BUILD (NO OC)	SYNCHRO		-			-			-			-	
	VISSIM		-			-			-			-	
ALT 1A (4-LANE OC)	SYNCHRO	75	175		25	#820 [B]		50	50		75	50	
	VISSIM	105	240		45	**950**		65	70		95	90	
ALT 1B (4-LANE OC)	SYNCHRO	75	175		25	#815 [B]		50	50		75	50	
	VISSIM	105	210		45	**945**		70	70		90	90	
	SYNCHRO	75	170		25	605		50	50		75	50	

ALTERNATIVE	SOFTWARE	QUEUE LENGTH (FT) [A]											
		EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND		
		L	T	R	L	T	R	L	T	R	L	T	R
ALT 2A (2-LANE OC)	VISSIM	105	220		45	**945**		65	65		90	95	
ALT 2B (2-LANE OC)	SYNCHRO	75	170		25	605		50	50		75	50	
	VISSIM	105	200		45	**940**		65	70		100	85	
ALT 3 (2-LANE OC)	SIDRA	40			155			10			35		
	VISSIM	105			550			75			135		

Note:

All queues are rounded to nearest 5'. **BOLD** indicates the queue exceeds the storage length or extends back to the next upstream intersection.

A. L = Left. T = Thru. R = Right.

B. # = 95th percentile volume exceeds capacity, queue may be longer.

GREEN HOUSE GAS (GHG) EMISSIONS ANALYSIS

Reducing the effects of climate change and specifically reducing on-road mobile source emissions of greenhouse gases is a key policy initiative of both Caltrans and the City of San Luis Obispo. As such, a generalized "carbon footprint" assessment was performed for each design alternative. This analysis entailed generating composite emission rates specific to San Luis Obispo's motor vehicle fleet demographic, fuel type (i.e., gas, diesel, electric, etc.) and technology group distributions. Given that the latest Emission Factors (EMFAC) model from the California Air Resources Board (EMFAC25) reflects currently rescinded or pending regulations affecting EV adoption rates, a 2025 analysis year was preferred over an outyear forecast. Hence, 2025 composite emission rates were applied to 2050 forecasts of vehicle activity.

As shown in **Table 7**, the 2050 VISSIM microsimulation vehicle activity output for both AM and PM peak hours was allocated to the appropriate speed bin. This activity is multiplied by the EMFAC25 composite emission rate associated with each speed bin to generate total CO2 missions[2]. The final results are tallied at the bottom of the table and expressed in tons (AM and PM Peak Hour combined). The results indicate that Alternative 2B generates the least amount of peak hour CO2 (smallest carbon footprint). The No Build condition is not reported as it is not comparable within Vissim to the other alternatives given there is no overcrossing. An emissions comparison would require a much larger area to capture the changes in travel patterns with the overcrossing, which is beyond the scope of this analysis.

[2] Of the three GHG components (Carbon dioxide (CO2), Methane (CH4), and Nitrous oxide (N2O)) only CO2 was modeled.

TABLE 7: 2050 EMISSIONS COMPARISON

SPEED BIN	PEAK HOUR	2025 COMPOSITE EMMISION CO2 RATE (G/MI) [A]	2050 VMT				
			4-LANE OC		2-LANE OC		
			ALT 1A	ALT 1B	ALT 2A	ALT 2B	ALT 3
0-5 MPH	AM	864.88	95	96	96	96	328
	PM		122	96	95	95	24
6-15 MPH	AM	628.23	2820	2162	2953	2271	1760
	PM		6277	2125	4923	1924	1280
16-35 MPH	AM	409.48	14895	15537	14234	14931	14871
	PM		14850	19044	16330	19353	18596
35+ MPH	AM	299.89	1207	1210	1409	1410	3777
	PM		3066	3071	2523	2524	3876
Total Emissions (tons)		-	21.3	20.2	20.7	19.9	20.1

Note:

A. Composite of LDA, LDT1 and LDT2, LHD1 and LHD1 Other, MCY, MDV vehicle population mix

SUMMARY

The operational results presented above show that the Build Alternatives generally operate better than the No Build. **Table 8** provides a performance summary of all Alternatives for delay, average and 95th percentile queue, and GHG Emissions. The following is a summary of how the performance measures were quantified:

LOS

- Excellent Performance is if the intersection operates at LOS D or better and all movements are better than LOS F
- Acceptable Performance is if there are any LOS F movements, but the intersection still operates better than LOS D
- Moderate Performance is if the intersection operates worse than LOS D but not at LOS F
- Poor Performance is if the intersection operates at LOS F

Average / 95th Percentile Queue

- Excellent Performance if queues are contained within storage and no queues extend to an upstream intersection
- Acceptable Performance if a storage lane is exceeded or queues back to upstream intersection, but not to Higuera Street
- Moderate Performance if a queue extends back to Higuera Street
- Poor Performance if a queue backs onto US 101

Emissions

- Excellent Performance if less than 20 tons of emissions
- Acceptable Performance if between 20 and 21 tons of emissions
- Moderate Performance if between 21 and 22 tons of emissions
- Poor Performance if greater than 22 tons of emissions

The results show that Alternative 2B (2-lane overcrossing with westbound right at the US 101 NB ramps channelized) generally performs better than the other Alternatives. It should be noted that while Alternative 3 performs similarly to Alternative 2B, the 95th percentile queue on the US 101 NB off-ramp extends back onto US 101, making this a fatal flaw without additional mitigation (e.g., additional lanes or signalizing the roundabout to manage queues) to reduce the queue spillback onto US 101. This would require additional costs and no longer meet the intent of the Alternative (smaller footprint of the overcrossing).

TABLE 8: PERFORMANCE SUMMARY

MEASURE OF EFFECTIVENESS	ALTERNATIVE [A]					
	NO BUILD	ALT 1A	ALT 1B	ALT 2A	ALT 2B	ALT 3
DELAY [B]	●	●	●	●	●	●
AVG QUEUE LENGTH (SYNCHRO/SIDRA)	N/A	●	●	●	●	●
AVG QUEUE LENGTH (VISSIM)	◐	◑	●	◑	●	●
95% QUEUE LENGTH (SYNCHRO/SIDRA)	◐	◐	◐	◑	◑	●
95% QUEUE LENGTH (VISSIM)	◐	◐	◐	◐	◐	●
EMMISSIONS	N/A	◐	◑	● [C]	●	● [C]

Note:

A. ● = Excellent Performance, ◑ = Acceptable Performance, ◐ = Moderate Performance, ● = Poor Performance

B. Delay comes from the Synchro/Sidra software.

C. These Alternatives ranked as acceptable performance based on total emissions, but was considered excellent performance as they involve less GHG generation during construction.

APPENDIX

CONTENTS

SECTION 1: SYNCHRO/SIDRA RESULTS

NO BUILD

AM PEAK HOUR

Intersection	
Intersection Delay, s/veh	22.8
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	565	15	0	30	310	55	0	15
Future Vol, veh/h	0	0	0	0	565	15	0	30	310	55	0	15
Peak Hour 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
Heavy Vehicles, %	2	2	2	4	10	10	4	5	5	20	4	20
Mvmt Flow	0	0	0	0	565	15	0	30	310	55	0	15
Number of Lanes	0	0	0	0	1	0	0	1	0	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	1	0
HCM Control Delay, s/veh	29.6	13.7	10.9
HCM LOS	D	B	B

Lane	NBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	0%	0%	100%	0%
Vol Thru, %	9%	97%	0%	0%
Vol Right, %	91%	3%	0%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	340	580	55	15
LT Vol	0	0	55	0
Through Vol	30	565	0	0
RT Vol	310	15	0	15
Lane Flow Rate	340	580	55	15
Geometry Grp	4a	2	5	5
Degree of Util (X)	0.503	0.841	0.115	0.026
Departure Headway (Hd)	5.323	5.219	7.546	6.32
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	677	696	474	565
Service Time	3.366	3.248	5.306	4.079
HCM Lane V/C Ratio	0.502	0.833	0.116	0.027
HCM Control Delay, s/veh	13.7	29.6	11.3	9.2
HCM Lane LOS	B	D	B	A
HCM 95th-tile Q	2.8	9.4	0.4	0.1

NO BUILD

PM PEAK HOUR

Intersection	
Intersection Delay, s/veh	130.2
Intersection LOS	F

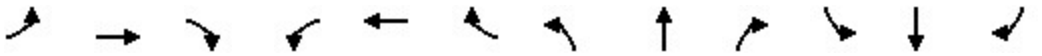
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	980	30	0	10	125	45	0	25
Future Vol, veh/h	0	0	0	0	980	30	0	10	125	45	0	25
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	4	5	5	2	5	5	10	4	10
Mvmt Flow	0	0	0	0	980	30	0	10	125	45	0	25
Number of Lanes	0	0	0	0	1	0	0	1	0	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	1	0
HCM Control Delay, s/veh	154.4	10.9	11
HCM LOS	F	B	B

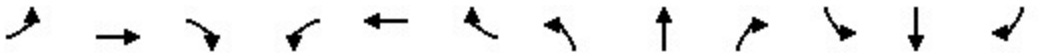
Lane	NBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	0%	0%	100%	0%
Vol Thru, %	7%	97%	0%	0%
Vol Right, %	93%	3%	0%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	135	1010	45	25
LT Vol	0	0	45	0
Through Vol	10	980	0	0
RT Vol	125	30	0	25
Lane Flow Rate	135	1010	45	25
Geometry Grp	4a	2	5	5
Degree of Util (X)	0.209	1.286	0.091	0.042
Departure Headway (Hd)	6.252	4.584	8.048	6.814
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	578	798	448	529
Service Time	4.252	2.603	5.748	4.514
HCM Lane V/C Ratio	0.234	1.266	0.1	0.047
HCM Control Delay, s/veh	10.9	154.4	11.6	9.8
HCM Lane LOS	B	F	B	A
HCM 95th-tile Q	0.8	37.9	0.3	0.1

ALTERNATIVE 1A

AM PEAK HOUR



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	1150	0	0	620	350	240	0	300	0	0	0
Future Volume (veh/h)	100	1150	0	0	620	350	240	0	300	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.94	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1841	1841	0	0	1841	1841	1841	0	1841			
Adj Flow Rate, veh/h	100	1150	0	0	620	350	240	0	300			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	4	4	0	0	4	4	4	0	4			
Cap, veh/h	158	1944	0	0	1279	538	429	0	381			
Arrive On Green	0.09	0.56	0.00	0.00	0.37	0.37	0.24	0.00	0.24			
Sat Flow, veh/h	1753	3589	0	0	3589	1472	1753	0	1560			
Grp Volume(v), veh/h	100	1150	0	0	620	350	240	0	300			
Grp Sat Flow(s),veh/h/ln	1753	1749	0	0	1749	1472	1753	0	1560			
Q Serve(g_s), s	2.8	10.9	0.0	0.0	6.8	9.9	6.0	0.0	9.0			
Cycle Q Clear(g_c), s	2.8	10.9	0.0	0.0	6.8	9.9	6.0	0.0	9.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	158	1944	0	0	1279	538	429	0	381			
V/C Ratio(X)	0.63	0.59	0.00	0.00	0.48	0.65	0.56	0.00	0.79			
Avail Cap(c_a), veh/h	700	3493	0	0	3493	1470	700	0	623			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	22.0	7.4	0.0	0.0	12.2	13.2	16.6	0.0	17.7			
Incr Delay (d2), s/veh	4.2	0.3	0.0	0.0	0.3	1.3	1.1	0.0	3.6			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.2	2.7	0.0	0.0	2.2	2.8	2.1	0.0	3.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	26.1	7.6	0.0	0.0	12.5	14.5	17.7	0.0	21.3			
LnGrp LOS	C	A			B	B	B		C			
Approach Vol, veh/h		1250			970			540				
Approach Delay, s/veh		9.1			13.2			19.7				
Approach LOS		A			B			B				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		32.8			9.5	23.3		17.2				
Change Period (Y+Rc), s		5.0			5.0	5.0		5.0				
Max Green Setting (Gmax), s		50.0			20.0	50.0		20.0				
Max Q Clear Time (g_c+I1), s		12.9			4.8	11.9		11.0				
Green Ext Time (p_c), s		10.4			0.2	6.3		1.2				
Intersection Summary												
HCM 7th Control Delay, s/veh			12.6									
HCM 7th LOS			B									



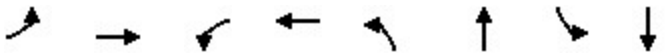
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	1370	40	20	930	20	10	5	5	40	20	30
Future Volume (veh/h)	40	1370	40	20	930	20	10	5	5	40	20	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.95	1.00		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	40	1370	40	20	930	20	10	5	5	40	20	30
Peak Hour 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
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	79	1768	52	48	1722	37	26	129	129	79	121	182
Arrive On Green	0.04	0.51	0.51	0.03	0.49	0.49	0.02	0.16	0.16	0.04	0.19	0.19
Sat Flow, veh/h	1753	3464	101	1753	3496	75	1753	827	827	1753	651	976
Grp Volume(v), veh/h	40	691	719	20	465	485	10	0	10	40	0	50
Grp Sat Flow(s),veh/h/ln	1753	1749	1817	1753	1749	1823	1753	0	1653	1753	0	1627
Q Serve(g_s), s	1.7	24.5	24.6	0.9	14.1	14.1	0.4	0.0	0.4	1.7	0.0	2.0
Cycle Q Clear(g_c), s	1.7	24.5	24.6	0.9	14.1	14.1	0.4	0.0	0.4	1.7	0.0	2.0
Prop In Lane	1.00		0.06	1.00		0.04	1.00		0.50	1.00		0.60
Lane Grp Cap(c), veh/h	79	893	927	48	861	898	26	0	258	79	0	303
V/C Ratio(X)	0.51	0.77	0.78	0.42	0.54	0.54	0.38	0.00	0.04	0.51	0.00	0.17
Avail Cap(c_a), veh/h	229	1371	1424	229	1371	1429	229	0	540	229	0	531
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.7	15.2	15.2	36.6	13.4	13.4	37.3	0.0	27.4	35.7	0.0	26.2
Incr Delay (d2), s/veh	5.0	1.5	1.5	5.8	0.5	0.5	8.8	0.0	0.1	5.0	0.0	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	8.7	9.1	0.4	5.0	5.2	0.2	0.0	0.2	0.8	0.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.7	16.7	16.7	42.4	13.9	13.9	46.1	0.0	27.5	40.7	0.0	26.4
LnGrp LOS	D	B	B	D	B	B	D		C	D		C
Approach Vol, veh/h		1450			970			20			90	
Approach Delay, s/veh		17.3			14.5			36.8			32.8	
Approach LOS		B			B			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.1	44.1	6.1	19.2	8.4	42.7	8.4	17.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	10.0	60.0	10.0	25.0	10.0	60.0	10.0	25.0
Max Q Clear Time (g_c+I1), s	2.9	26.6	2.4	4.0	3.7	16.1	3.7	2.4
Green Ext Time (p_c), s	0.0	12.5	0.0	0.2	0.0	7.2	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	17.0
HCM 7th LOS	B

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	100	1150	620	350	240	300
v/c Ratio	0.35	0.59	0.49	0.47	0.55	0.63
Control Delay (s/veh)	28.7	9.5	17.2	4.5	26.3	19.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	28.7	9.5	17.2	4.5	26.3	19.5
Queue Length 50th (ft)	31	114	88	0	72	52
Queue Length 95th (ft)	86	201	162	51	167	153
Internal Link Dist (ft)		786	602			
Turn Bay Length (ft)	150			150		300
Base Capacity (vph)	648	3458	2976	1272	648	655
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.33	0.21	0.28	0.37	0.46

Intersection Summary

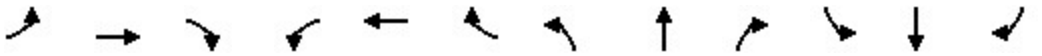


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	40	1410	20	950	10	10	40	50
v/c Ratio	0.17	0.54	0.09	0.39	0.05	0.04	0.17	0.20
Control Delay (s/veh)	35.5	9.2	37.1	9.4	37.8	30.1	35.5	22.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	35.5	9.2	37.1	9.4	37.8	30.1	35.5	22.3
Queue Length 50th (ft)	11	97	5	111	3	1	11	5
Queue Length 95th (ft)	60	431	37	251	24	20	60	50
Internal Link Dist (ft)		602		903		272		534
Turn Bay Length (ft)	100		100		100		100	
Base Capacity (vph)	326	3024	326	3029	326	779	326	776
Starvation Cap Reductn	0	54	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.47	0.06	0.31	0.03	0.01	0.12	0.06

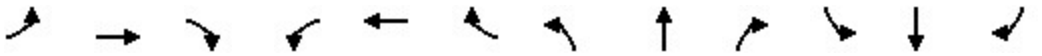
Intersection Summary

ALTERNATIVE 1A

PM PEAK HOUR



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	610	0	0	1110	780	180	0	150	0	0	0
Future Volume (veh/h)	100	610	0	0	1110	780	180	0	150	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.96	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1841	1841	0	0	1841	1841	1841	0	1841			
Adj Flow Rate, veh/h	100	610	0	0	1110	780	180	0	150			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	4	4	0	0	4	4	4	0	4			
Cap, veh/h	130	2566	0	0	2076	886	236	0	210			
Arrive On Green	0.07	0.73	0.00	0.00	0.59	0.59	0.13	0.00	0.13			
Sat Flow, veh/h	1753	3589	0	0	3589	1493	1753	0	1560			
Grp Volume(v), veh/h	100	610	0	0	1110	780	180	0	150			
Grp Sat Flow(s),veh/h/ln	1753	1749	0	0	1749	1493	1753	0	1560			
Q Serve(g_s), s	4.3	4.3	0.0	0.0	14.4	33.8	7.5	0.0	7.0			
Cycle Q Clear(g_c), s	4.3	4.3	0.0	0.0	14.4	33.8	7.5	0.0	7.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	130	2566	0	0	2076	886	236	0	210			
V/C Ratio(X)	0.77	0.24	0.00	0.00	0.53	0.88	0.76	0.00	0.71			
Avail Cap(c_a), veh/h	461	2566	0	0	2301	982	461	0	410			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	34.5	3.3	0.0	0.0	9.2	13.1	31.7	0.0	31.5			
Incr Delay (d2), s/veh	9.0	0.0	0.0	0.0	0.2	8.7	5.0	0.0	4.5			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	2.1	0.9	0.0	0.0	4.5	11.1	3.3	0.0	2.7			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	43.6	3.3	0.0	0.0	9.4	21.8	36.7	0.0	35.9			
LnGrp LOS	D	A			A	C	D		D			
Approach Vol, veh/h		710			1890			330				
Approach Delay, s/veh		9.0			14.5			36.4				
Approach LOS		A			B			D				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		60.8			10.7	50.1		15.2				
Change Period (Y+Rc), s		5.0			5.0	5.0		5.0				
Max Green Setting (Gmax), s		50.0			20.0	50.0		20.0				
Max Q Clear Time (g_c+I1), s		6.3			6.3	35.8		9.5				
Green Ext Time (p_c), s		4.6			0.2	9.3		0.7				
Intersection Summary												
HCM 7th Control Delay, s/veh			15.6									
HCM 7th LOS			B									



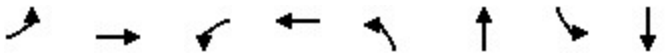
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	700	10	10	1800	20	30	20	20	50	10	60
Future Volume (veh/h)	50	700	10	10	1800	20	30	20	20	50	10	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	50	700	10	10	1800	20	30	20	20	50	10	60
Peak Hour 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
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	79	2108	30	26	2008	22	59	118	118	79	34	203
Arrive On Green	0.05	0.60	0.60	0.01	0.57	0.57	0.03	0.14	0.14	0.05	0.15	0.15
Sat Flow, veh/h	1753	3527	50	1753	3541	39	1753	825	825	1753	220	1320
Grp Volume(v), veh/h	50	347	363	10	887	933	30	0	40	50	0	70
Grp Sat Flow(s),veh/h/ln	1753	1749	1829	1753	1749	1832	1753	0	1650	1753	0	1540
Q Serve(g_s), s	2.8	10.0	10.0	0.6	44.6	44.9	1.7	0.0	2.1	2.8	0.0	4.0
Cycle Q Clear(g_c), s	2.8	10.0	10.0	0.6	44.6	44.9	1.7	0.0	2.1	2.8	0.0	4.0
Prop In Lane	1.00		0.03	1.00		0.02	1.00		0.50	1.00		0.86
Lane Grp Cap(c), veh/h	79	1045	1093	26	992	1039	59	0	235	79	0	237
V/C Ratio(X)	0.63	0.33	0.33	0.39	0.89	0.90	0.50	0.00	0.17	0.63	0.00	0.30
Avail Cap(c_a), veh/h	175	1050	1098	175	1050	1099	175	0	413	175	0	385
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.9	10.1	10.1	48.8	19.0	19.1	47.5	0.0	37.6	46.9	0.0	37.5
Incr Delay (d2), s/veh	8.1	0.2	0.2	9.5	9.7	9.6	6.5	0.0	0.3	8.1	0.0	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	3.6	3.7	0.3	18.7	19.7	0.8	0.0	0.9	1.4	0.0	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	55.0	10.3	10.3	58.3	28.7	28.7	53.9	0.0	38.0	55.0	0.0	38.2
LnGrp LOS	E	B	B	E	C	C	D		D	E		D
Approach Vol, veh/h		760			1830			70			120	
Approach Delay, s/veh		13.2			28.9			44.8			45.2	
Approach LOS		B			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.5	64.7	8.4	20.4	9.5	61.7	9.5	19.3
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	10.0	60.0	10.0	25.0	10.0	60.0	10.0	25.0
Max Q Clear Time (g_c+I1), s	2.6	12.0	3.7	6.0	4.8	46.9	4.8	4.1
Green Ext Time (p_c), s	0.0	4.8	0.0	0.3	0.0	9.8	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	25.7
HCM 7th LOS	C

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	100	610	1110	780	180	150
v/c Ratio	0.42	0.26	0.61	0.75	0.57	0.37
Control Delay (s/veh)	42.2	5.0	16.2	9.2	41.4	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	42.2	5.0	16.2	9.2	41.4	9.2
Queue Length 50th (ft)	50	50	203	45	89	0
Queue Length 95th (ft)	109	86	334	237	173	52
Internal Link Dist (ft)		786	602			
Turn Bay Length (ft)	150			150		300
Base Capacity (vph)	498	3077	2319	1155	498	552
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.20	0.48	0.68	0.36	0.27

Intersection Summary



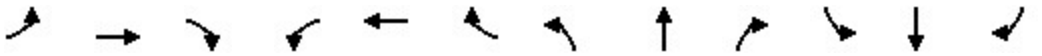
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	50	710	10	1820	30	40	50	70
v/c Ratio	0.35	0.27	0.09	0.78	0.23	0.27	0.35	0.38
Control Delay (s/veh)	52.6	6.7	49.5	20.3	50.5	33.2	52.6	21.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	52.6	6.7	49.5	20.3	50.5	33.2	52.6	21.8
Queue Length 50th (ft)	32	79	6	530	19	13	32	6
Queue Length 95th (ft)	73	174	25	#818	51	48	73	51
Internal Link Dist (ft)		602		903		272		534
Turn Bay Length (ft)	100		100		100		100	
Base Capacity (vph)	179	2617	179	2324	179	443	179	441
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.27	0.06	0.78	0.17	0.09	0.28	0.16

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

ALTERNATIVE 1B

AM PEAK HOUR



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	1150	0	0	620	350	240	0	300	0	0	0
Future Volume (veh/h)	100	1150	0	0	620	350	240	0	300	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.94	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1841	1841	0	0	1841	1841	1841	0	1841			
Adj Flow Rate, veh/h	100	1150	0	0	620	350	240	0	300			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	4	4	0	0	4	4	4	0	4			
Cap, veh/h	158	1944	0	0	1279	538	429	0	381			
Arrive On Green	0.09	0.56	0.00	0.00	0.37	0.37	0.24	0.00	0.24			
Sat Flow, veh/h	1753	3589	0	0	3589	1472	1753	0	1560			
Grp Volume(v), veh/h	100	1150	0	0	620	350	240	0	300			
Grp Sat Flow(s),veh/h/ln	1753	1749	0	0	1749	1472	1753	0	1560			
Q Serve(g_s), s	2.8	10.9	0.0	0.0	6.8	9.9	6.0	0.0	9.0			
Cycle Q Clear(g_c), s	2.8	10.9	0.0	0.0	6.8	9.9	6.0	0.0	9.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	158	1944	0	0	1279	538	429	0	381			
V/C Ratio(X)	0.63	0.59	0.00	0.00	0.48	0.65	0.56	0.00	0.79			
Avail Cap(c_a), veh/h	700	3493	0	0	3493	1470	700	0	623			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	22.0	7.4	0.0	0.0	12.2	13.2	16.6	0.0	17.7			
Incr Delay (d2), s/veh	4.2	0.3	0.0	0.0	0.3	1.3	1.1	0.0	3.6			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.2	2.7	0.0	0.0	2.2	2.8	2.1	0.0	3.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	26.1	7.6	0.0	0.0	12.5	14.5	17.7	0.0	21.3			
LnGrp LOS	C	A			B	B	B		C			
Approach Vol, veh/h		1250			970			540				
Approach Delay, s/veh		9.1			13.2			19.7				
Approach LOS		A			B			B				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		32.8			9.5	23.3		17.2				
Change Period (Y+Rc), s		5.0			5.0	5.0		5.0				
Max Green Setting (Gmax), s		50.0			20.0	50.0		20.0				
Max Q Clear Time (g_c+I1), s		12.9			4.8	11.9		11.0				
Green Ext Time (p_c), s		10.4			0.2	6.3		1.2				
Intersection Summary												
HCM 7th Control Delay, s/veh			12.6									
HCM 7th LOS			B									

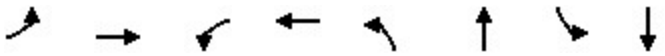
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	1370	40	20	930	20	10	5	5	40	20	30
Future Volume (veh/h)	40	1370	40	20	930	20	10	5	5	40	20	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.95	1.00		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	40	1370	40	20	930	20	10	5	5	40	20	30
Peak Hour 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
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	79	1768	52	48	1722	37	26	129	129	79	121	182
Arrive On Green	0.04	0.51	0.51	0.03	0.49	0.49	0.02	0.16	0.16	0.04	0.19	0.19
Sat Flow, veh/h	1753	3464	101	1753	3496	75	1753	827	827	1753	651	976
Grp Volume(v), veh/h	40	691	719	20	465	485	10	0	10	40	0	50
Grp Sat Flow(s),veh/h/ln	1753	1749	1817	1753	1749	1823	1753	0	1653	1753	0	1627
Q Serve(g_s), s	1.7	24.5	24.6	0.9	14.1	14.1	0.4	0.0	0.4	1.7	0.0	2.0
Cycle Q Clear(g_c), s	1.7	24.5	24.6	0.9	14.1	14.1	0.4	0.0	0.4	1.7	0.0	2.0
Prop In Lane	1.00		0.06	1.00		0.04	1.00		0.50	1.00		0.60
Lane Grp Cap(c), veh/h	79	893	927	48	861	898	26	0	258	79	0	303
V/C Ratio(X)	0.51	0.77	0.78	0.42	0.54	0.54	0.38	0.00	0.04	0.51	0.00	0.17
Avail Cap(c_a), veh/h	229	1371	1424	229	1371	1429	229	0	540	229	0	531
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.7	15.2	15.2	36.6	13.4	13.4	37.3	0.0	27.4	35.7	0.0	26.2
Incr Delay (d2), s/veh	5.0	1.5	1.5	5.8	0.5	0.5	8.8	0.0	0.1	5.0	0.0	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	8.7	9.1	0.4	5.0	5.2	0.2	0.0	0.2	0.8	0.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.7	16.7	16.7	42.4	13.9	13.9	46.1	0.0	27.5	40.7	0.0	26.4
LnGrp LOS	D	B	B	D	B	B	D		C	D		C
Approach Vol, veh/h		1450			970			20			90	
Approach Delay, s/veh		17.3			14.5			36.8			32.8	
Approach LOS		B			B			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.1	44.1	6.1	19.2	8.4	42.7	8.4	17.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	10.0	60.0	10.0	25.0	10.0	60.0	10.0	25.0
Max Q Clear Time (g_c+I1), s	2.9	26.6	2.4	4.0	3.7	16.1	3.7	2.4
Green Ext Time (p_c), s	0.0	12.5	0.0	0.2	0.0	7.2	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	17.0
HCM 7th LOS	B

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	100	1150	620	350	240	300
v/c Ratio	0.35	0.59	0.49	0.46	0.55	0.63
Control Delay (s/veh)	28.7	9.5	17.2	4.4	26.3	19.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	28.7	9.5	17.2	4.4	26.3	19.5
Queue Length 50th (ft)	31	114	88	0	72	52
Queue Length 95th (ft)	86	201	162	51	167	153
Internal Link Dist (ft)		786	602			
Turn Bay Length (ft)	150			150		300
Base Capacity (vph)	648	3458	2976	1316	648	655
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.33	0.21	0.27	0.37	0.46

Intersection Summary

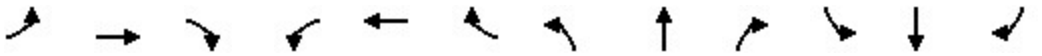


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	40	1410	20	950	10	10	40	50
v/c Ratio	0.17	0.54	0.09	0.39	0.05	0.04	0.17	0.20
Control Delay (s/veh)	35.5	9.2	37.1	9.4	37.8	30.1	35.5	22.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	35.5	9.2	37.1	9.4	37.8	30.1	35.5	22.3
Queue Length 50th (ft)	11	97	5	111	3	1	11	5
Queue Length 95th (ft)	60	431	37	251	24	20	60	50
Internal Link Dist (ft)		602		903		272		534
Turn Bay Length (ft)	100		100		100		100	
Base Capacity (vph)	326	3024	326	3029	326	779	326	776
Starvation Cap Reductn	0	54	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.47	0.06	0.31	0.03	0.01	0.12	0.06

Intersection Summary

ALTERNATIVE 1B

PM PEAK HOUR



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	610	0	0	1110	780	180	0	150	0	0	0
Future Volume (veh/h)	100	610	0	0	1110	780	180	0	150	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.96	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1841	1841	0	0	1841	1841	1841	0	1841			
Adj Flow Rate, veh/h	100	610	0	0	1110	780	180	0	150			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	4	4	0	0	4	4	4	0	4			
Cap, veh/h	130	2566	0	0	2076	886	236	0	210			
Arrive On Green	0.07	0.73	0.00	0.00	0.59	0.59	0.13	0.00	0.13			
Sat Flow, veh/h	1753	3589	0	0	3589	1493	1753	0	1560			
Grp Volume(v), veh/h	100	610	0	0	1110	780	180	0	150			
Grp Sat Flow(s),veh/h/ln	1753	1749	0	0	1749	1493	1753	0	1560			
Q Serve(g_s), s	4.3	4.3	0.0	0.0	14.4	33.8	7.5	0.0	7.0			
Cycle Q Clear(g_c), s	4.3	4.3	0.0	0.0	14.4	33.8	7.5	0.0	7.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	130	2566	0	0	2076	886	236	0	210			
V/C Ratio(X)	0.77	0.24	0.00	0.00	0.53	0.88	0.76	0.00	0.71			
Avail Cap(c_a), veh/h	461	2566	0	0	2301	982	461	0	410			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	34.5	3.3	0.0	0.0	9.2	13.1	31.7	0.0	31.5			
Incr Delay (d2), s/veh	9.0	0.0	0.0	0.0	0.2	8.7	5.0	0.0	4.5			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	2.1	0.9	0.0	0.0	4.5	11.1	3.3	0.0	2.7			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	43.6	3.3	0.0	0.0	9.4	21.8	36.7	0.0	35.9			
LnGrp LOS	D	A			A	C	D		D			
Approach Vol, veh/h		710			1890			330				
Approach Delay, s/veh		9.0			14.5			36.4				
Approach LOS		A			B			D				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		60.8			10.7	50.1		15.2				
Change Period (Y+Rc), s		5.0			5.0	5.0		5.0				
Max Green Setting (Gmax), s		50.0			20.0	50.0		20.0				
Max Q Clear Time (g_c+I1), s		6.3			6.3	35.8		9.5				
Green Ext Time (p_c), s		4.6			0.2	9.3		0.7				
Intersection Summary												
HCM 7th Control Delay, s/veh			15.6									
HCM 7th LOS			B									

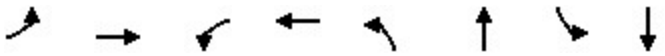
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	700	10	10	1800	20	30	20	20	50	10	60
Future Volume (veh/h)	50	700	10	10	1800	20	30	20	20	50	10	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	50	700	10	10	1800	20	30	20	20	50	10	60
Peak Hour 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
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	84	2234	32	26	2124	24	62	65	65	84	20	123
Arrive On Green	0.05	0.63	0.63	0.01	0.60	0.60	0.04	0.08	0.08	0.05	0.09	0.09
Sat Flow, veh/h	1753	3530	50	1753	3543	39	1753	844	844	1753	228	1367
Grp Volume(v), veh/h	50	347	363	10	887	933	30	0	40	50	0	70
Grp Sat Flow(s),veh/h/ln	1753	1749	1832	1753	1749	1834	1753	0	1689	1753	0	1595
Q Serve(g_s), s	2.5	8.0	8.0	0.5	36.3	36.5	1.5	0.0	2.0	2.5	0.0	3.7
Cycle Q Clear(g_c), s	2.5	8.0	8.0	0.5	36.3	36.5	1.5	0.0	2.0	2.5	0.0	3.7
Prop In Lane	1.00		0.03	1.00		0.02	1.00		0.50	1.00		0.86
Lane Grp Cap(c), veh/h	84	1106	1159	26	1048	1099	62	0	130	84	0	143
V/C Ratio(X)	0.59	0.31	0.31	0.39	0.85	0.85	0.48	0.00	0.31	0.59	0.00	0.49
Avail Cap(c_a), veh/h	199	1193	1249	199	1193	1251	199	0	480	199	0	453
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	41.0	7.4	7.4	42.9	14.3	14.4	41.6	0.0	38.4	41.0	0.0	38.1
Incr Delay (d2), s/veh	6.5	0.2	0.2	9.1	5.3	5.1	5.7	0.0	1.3	6.5	0.0	2.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	2.6	2.7	0.3	13.6	14.3	0.7	0.0	0.9	1.2	0.0	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	47.5	7.6	7.6	52.1	19.6	19.5	47.3	0.0	39.7	47.5	0.0	40.7
LnGrp LOS	D	A	A	D	B	B	D		D	D		D
Approach Vol, veh/h		760			1830			70			120	
Approach Delay, s/veh		10.2			19.7			43.0			43.5	
Approach LOS		B			B			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.3	60.7	8.1	12.9	9.2	57.7	9.2	11.8
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	10.0	60.0	10.0	25.0	10.0	60.0	10.0	25.0
Max Q Clear Time (g_c+I1), s	2.5	10.0	3.5	5.7	4.5	38.5	4.5	4.0
Green Ext Time (p_c), s	0.0	4.8	0.0	0.3	0.0	14.2	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	18.7
HCM 7th LOS	B

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	100	610	1110	780	180	150
v/c Ratio	0.42	0.26	0.61	0.73	0.57	0.37
Control Delay (s/veh)	42.2	5.0	16.2	8.5	41.4	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	42.2	5.0	16.2	8.5	41.4	9.2
Queue Length 50th (ft)	50	50	203	45	89	0
Queue Length 95th (ft)	109	86	334	221	173	52
Internal Link Dist (ft)		786	602			
Turn Bay Length (ft)	150			150		300
Base Capacity (vph)	498	3077	2319	1190	498	552
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.20	0.48	0.66	0.36	0.27

Intersection Summary



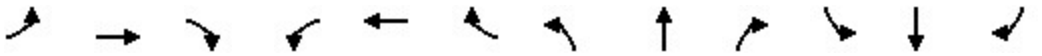
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	50	710	10	1820	30	40	50	70
v/c Ratio	0.35	0.27	0.09	0.78	0.23	0.26	0.35	0.37
Control Delay (s/veh)	52.5	6.7	49.5	20.2	50.4	33.0	52.5	21.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	52.5	6.7	49.5	20.2	50.4	33.0	52.5	21.5
Queue Length 50th (ft)	32	79	6	529	19	13	32	6
Queue Length 95th (ft)	73	173	25	#816	51	48	73	50
Internal Link Dist (ft)		602		903		272		534
Turn Bay Length (ft)	100		100		100		100	
Base Capacity (vph)	180	2621	180	2327	180	452	180	456
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.27	0.06	0.78	0.17	0.09	0.28	0.15

Intersection Summary

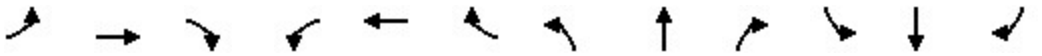
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

ALTERNATIVE 2A

AM PEAK HOUR



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	950	0	0	420	350	240	0	300	0	0	0
Future Volume (veh/h)	100	950	0	0	420	350	240	0	300	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.95	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1841	1841	0	0	1841	1841	1841	0	1841			
Adj Flow Rate, veh/h	100	950	0	0	420	350	240	0	300			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	4	4	0	0	4	4	4	0	4			
Cap, veh/h	143	1098	0	0	792	637	411	0	366			
Arrive On Green	0.08	0.60	0.00	0.00	0.43	0.43	0.23	0.00	0.23			
Sat Flow, veh/h	1753	1841	0	0	1841	1480	1753	0	1560			
Grp Volume(v), veh/h	100	950	0	0	420	350	240	0	300			
Grp Sat Flow(s),veh/h/ln	1753	1841	0	0	1841	1480	1753	0	1560			
Q Serve(g_s), s	3.3	25.5	0.0	0.0	10.0	10.4	7.2	0.0	10.8			
Cycle Q Clear(g_c), s	3.3	25.5	0.0	0.0	10.0	10.4	7.2	0.0	10.8			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	143	1098	0	0	792	637	411	0	366			
V/C Ratio(X)	0.70	0.87	0.00	0.00	0.53	0.55	0.58	0.00	0.82			
Avail Cap(c_a), veh/h	592	1555	0	0	1555	1250	592	0	527			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	26.5	10.0	0.0	0.0	12.4	12.6	20.1	0.0	21.5			
Incr Delay (d2), s/veh	6.0	3.9	0.0	0.0	0.6	0.7	1.3	0.0	6.7			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.5	8.1	0.0	0.0	3.5	3.0	2.7	0.0	4.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.5	13.8	0.0	0.0	13.0	13.3	21.4	0.0	28.2			
LnGrp LOS	C	B			B	B	C		C			
Approach Vol, veh/h		1050			770			540				
Approach Delay, s/veh		15.6			13.1			25.2				
Approach LOS		B			B			C				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		40.3			9.8	30.5		18.9				
Change Period (Y+Rc), s		5.0			5.0	5.0		5.0				
Max Green Setting (Gmax), s		50.0			20.0	50.0		20.0				
Max Q Clear Time (g_c+I1), s		27.5			5.3	12.4		12.8				
Green Ext Time (p_c), s		7.8			0.2	4.3		1.1				
Intersection Summary												
HCM 7th Control Delay, s/veh			17.0									
HCM 7th LOS			B									



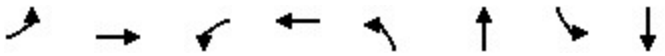
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	1170	40	20	730	20	10	5	5	40	20	30
Future Volume (veh/h)	40	1170	40	20	730	20	10	5	5	40	20	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.95	1.00		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	40	1170	40	20	730	20	10	5	5	40	20	30
Peak Hour 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
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	82	1586	54	49	1532	42	27	137	137	82	128	193
Arrive On Green	0.05	0.46	0.46	0.03	0.44	0.44	0.02	0.17	0.17	0.05	0.20	0.20
Sat Flow, veh/h	1753	3443	118	1753	3471	95	1753	828	828	1753	651	977
Grp Volume(v), veh/h	40	594	616	20	368	382	10	0	10	40	0	50
Grp Sat Flow(s),veh/h/ln	1753	1749	1812	1753	1749	1818	1753	0	1655	1753	0	1629
Q Serve(g_s), s	1.5	18.5	18.6	0.8	9.9	9.9	0.4	0.0	0.3	1.5	0.0	1.7
Cycle Q Clear(g_c), s	1.5	18.5	18.6	0.8	9.9	9.9	0.4	0.0	0.3	1.5	0.0	1.7
Prop In Lane	1.00		0.06	1.00		0.05	1.00		0.50	1.00		0.60
Lane Grp Cap(c), veh/h	82	806	835	49	772	802	27	0	274	82	0	321
V/C Ratio(X)	0.48	0.74	0.74	0.41	0.48	0.48	0.38	0.00	0.04	0.48	0.00	0.16
Avail Cap(c_a), veh/h	262	1569	1626	262	1569	1631	262	0	619	262	0	609
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.1	14.7	14.7	32.0	13.2	13.2	32.6	0.0	23.4	31.1	0.0	22.2
Incr Delay (d2), s/veh	4.4	1.3	1.3	5.4	0.5	0.4	8.5	0.0	0.1	4.4	0.0	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	6.5	6.8	0.4	3.5	3.6	0.2	0.0	0.1	0.7	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	35.4	16.1	16.0	37.4	13.7	13.6	41.1	0.0	23.5	35.4	0.0	22.5
LnGrp LOS	D	B	B	D	B	B	D		C	D		C
Approach Vol, veh/h		1250			770			20			90	
Approach Delay, s/veh		16.7			14.3			32.3			28.2	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.9	35.8	6.0	18.2	8.1	34.5	8.1	16.1
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	10.0	60.0	10.0	25.0	10.0	60.0	10.0	25.0
Max Q Clear Time (g_c+I1), s	2.8	20.6	2.4	3.7	3.5	11.9	3.5	2.3
Green Ext Time (p_c), s	0.0	10.2	0.0	0.2	0.0	5.2	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	16.4
HCM 7th LOS	B

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	100	950	420	350	240	300
v/c Ratio	0.39	0.86	0.54	0.43	0.59	0.60
Control Delay (s/veh)	33.9	20.4	19.2	3.8	31.6	16.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	33.9	20.4	19.2	3.8	31.6	16.7
Queue Length 50th (ft)	40	274	131	0	92	44
Queue Length 95th (ft)	92	527	251	49	183	133
Internal Link Dist (ft)		786	602			
Turn Bay Length (ft)	150					300
Base Capacity (vph)	550	1778	1399	1174	550	613
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.53	0.30	0.30	0.44	0.49

Intersection Summary

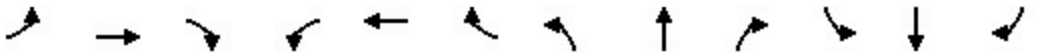


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	40	1210	20	750	10	10	40	50
v/c Ratio	0.15	0.49	0.08	0.30	0.04	0.04	0.15	0.17
Control Delay (s/veh)	30.6	9.4	31.9	8.0	32.9	26.4	30.6	19.5
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	30.6	9.4	31.9	8.0	32.9	26.4	30.6	19.5
Queue Length 50th (ft)	8	74	4	38	2	1	8	4
Queue Length 95th (ft)	55	344	35	190	22	19	55	46
Internal Link Dist (ft)		602		903		272		534
Turn Bay Length (ft)	100		100		100		100	
Base Capacity (vph)	374	3144	374	3149	374	895	374	888
Starvation Cap Reductn	0	451	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.45	0.05	0.24	0.03	0.01	0.11	0.06

Intersection Summary

ALTERNATIVE 2A

PM PEAK HOUR



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	600	0	0	910	780	180	0	150	0	0	0
Future Volume (veh/h)	100	600	0	0	910	780	180	0	150	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.96	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1841	1841	0	0	1841	1841	1841	0	1841			
Adj Flow Rate, veh/h	100	600	0	0	910	780	180	0	150			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	4	4	0	0	4	4	4	0	4			
Cap, veh/h	130	1347	0	0	1087	882	237	0	211			
Arrive On Green	0.07	0.73	0.00	0.00	0.59	0.59	0.14	0.00	0.14			
Sat Flow, veh/h	1753	1841	0	0	1841	1493	1753	0	1560			
Grp Volume(v), veh/h	100	600	0	0	910	780	180	0	150			
Grp Sat Flow(s),veh/h/ln	1753	1841	0	0	1841	1493	1753	0	1560			
Q Serve(g_s), s	4.2	9.7	0.0	0.0	30.0	33.6	7.4	0.0	6.9			
Cycle Q Clear(g_c), s	4.2	9.7	0.0	0.0	30.0	33.6	7.4	0.0	6.9			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	130	1347	0	0	1087	882	237	0	211			
V/C Ratio(X)	0.77	0.45	0.00	0.00	0.84	0.88	0.76	0.00	0.71			
Avail Cap(c_a), veh/h	467	1347	0	0	1226	995	467	0	416			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	34.1	4.0	0.0	0.0	12.4	13.2	31.3	0.0	31.1			
Incr Delay (d2), s/veh	9.0	0.2	0.0	0.0	4.8	8.8	5.0	0.0	4.4			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	2.0	2.3	0.0	0.0	11.2	11.0	3.2	0.0	2.7			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	43.1	4.2	0.0	0.0	17.2	22.0	36.2	0.0	35.5			
LnGrp LOS	D	A			B	C	D		D			
Approach Vol, veh/h		700			1690			330				
Approach Delay, s/veh		9.8			19.4			35.9				
Approach LOS		A			B			D				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		59.9			10.6	49.3		15.1				
Change Period (Y+Rc), s		5.0			5.0	5.0		5.0				
Max Green Setting (Gmax), s		50.0			20.0	50.0		20.0				
Max Q Clear Time (g_c+I1), s		11.7			6.2	35.6		9.4				
Green Ext Time (p_c), s		4.4			0.2	8.7		0.7				
Intersection Summary												
HCM 7th Control Delay, s/veh			18.9									
HCM 7th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	690	10	10	1600	20	30	20	20	50	10	60
Future Volume (veh/h)	50	690	10	10	1600	20	30	20	20	50	10	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	50	690	10	10	1600	20	30	20	20	50	10	60
Peak Hour 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
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	82	2019	29	26	1910	24	61	123	123	82	36	214
Arrive On Green	0.05	0.57	0.57	0.01	0.54	0.54	0.03	0.15	0.15	0.05	0.16	0.16
Sat Flow, veh/h	1753	3526	51	1753	3535	44	1753	826	826	1753	220	1322
Grp Volume(v), veh/h	50	342	358	10	791	829	30	0	40	50	0	70
Grp Sat Flow(s),veh/h/ln	1753	1749	1829	1753	1749	1830	1753	0	1651	1753	0	1543
Q Serve(g_s), s	2.6	9.6	9.6	0.5	35.1	35.2	1.6	0.0	2.0	2.6	0.0	3.7
Cycle Q Clear(g_c), s	2.6	9.6	9.6	0.5	35.1	35.2	1.6	0.0	2.0	2.6	0.0	3.7
Prop In Lane	1.00		0.03	1.00		0.02	1.00		0.50	1.00		0.86
Lane Grp Cap(c), veh/h	82	1001	1047	26	945	989	61	0	247	82	0	249
V/C Ratio(X)	0.61	0.34	0.34	0.39	0.84	0.84	0.49	0.00	0.16	0.61	0.00	0.28
Avail Cap(c_a), veh/h	190	1135	1187	190	1135	1188	190	0	446	190	0	417
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	43.2	10.5	10.5	45.1	17.8	17.9	43.8	0.0	34.3	43.2	0.0	34.0
Incr Delay (d2), s/veh	7.0	0.2	0.2	9.3	4.8	4.7	6.0	0.0	0.3	7.0	0.0	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	3.4	3.6	0.3	13.8	14.5	0.8	0.0	0.8	1.3	0.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	50.3	10.7	10.7	54.4	22.6	22.5	49.8	0.0	34.6	50.3	0.0	34.7
LnGrp LOS	D	B	B	D	C	C	D		C	D		C
Approach Vol, veh/h		750			1630			70			120	
Approach Delay, s/veh		13.3			22.8			41.1			41.2	
Approach LOS		B			C			D			D	

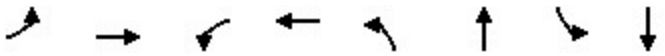
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.4	57.9	8.2	19.9	9.3	55.0	9.3	18.8
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	10.0	60.0	10.0	25.0	10.0	60.0	10.0	25.0
Max Q Clear Time (g_c+I1), s	2.5	11.6	3.6	5.7	4.6	37.2	4.6	4.0
Green Ext Time (p_c), s	0.0	4.8	0.0	0.3	0.0	12.7	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	21.4
HCM 7th LOS	C

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	100	600	910	780	180	150
v/c Ratio	0.49	0.45	0.86	0.72	0.65	0.40
Control Delay (s/veh)	46.3	6.7	29.1	8.0	46.9	9.4
Queue Delay	0.0	0.0	0.6	0.0	0.0	0.0
Total Delay (s/veh)	46.3	6.7	29.7	8.0	46.9	9.4
Queue Length 50th (ft)	54	115	429	44	97	0
Queue Length 95th (ft)	109	216	#844	231	173	52
Internal Link Dist (ft)		786	602			
Turn Bay Length (ft)	150					300
Base Capacity (vph)	401	1552	1058	1085	401	473
Starvation Cap Reductn	0	0	24	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.39	0.88	0.72	0.45	0.32

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

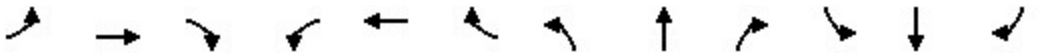


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	50	700	10	1620	30	40	50	70
v/c Ratio	0.30	0.27	0.07	0.71	0.20	0.23	0.30	0.34
Control Delay (s/veh)	50.1	6.9	49.1	17.9	49.0	32.1	50.1	20.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	50.1	6.9	49.1	17.9	49.0	32.1	50.1	20.4
Queue Length 50th (ft)	32	77	6	420	19	13	32	6
Queue Length 95th (ft)	73	171	25	603	51	48	73	51
Internal Link Dist (ft)		602		903		272		534
Turn Bay Length (ft)	100		100		100		100	
Base Capacity (vph)	217	2598	217	2389	217	532	217	522
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.27	0.05	0.68	0.14	0.08	0.23	0.13

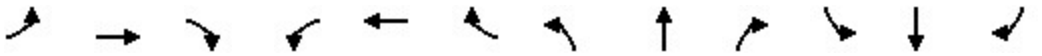
Intersection Summary

ALTERNATIVE 2B

AM PEAK HOUR



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	950	0	0	420	350	240	0	300	0	0	0
Future Volume (veh/h)	100	950	0	0	420	350	240	0	300	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.95	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1841	1841	0	0	1841	1841	1841	0	1841			
Adj Flow Rate, veh/h	100	950	0	0	420	350	240	0	300			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	4	4	0	0	4	4	4	0	4			
Cap, veh/h	143	1098	0	0	792	637	411	0	366			
Arrive On Green	0.08	0.60	0.00	0.00	0.43	0.43	0.23	0.00	0.23			
Sat Flow, veh/h	1753	1841	0	0	1841	1480	1753	0	1560			
Grp Volume(v), veh/h	100	950	0	0	420	350	240	0	300			
Grp Sat Flow(s),veh/h/ln	1753	1841	0	0	1841	1480	1753	0	1560			
Q Serve(g_s), s	3.3	25.5	0.0	0.0	10.0	10.4	7.2	0.0	10.8			
Cycle Q Clear(g_c), s	3.3	25.5	0.0	0.0	10.0	10.4	7.2	0.0	10.8			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	143	1098	0	0	792	637	411	0	366			
V/C Ratio(X)	0.70	0.87	0.00	0.00	0.53	0.55	0.58	0.00	0.82			
Avail Cap(c_a), veh/h	592	1555	0	0	1555	1250	592	0	527			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	26.5	10.0	0.0	0.0	12.4	12.6	20.1	0.0	21.5			
Incr Delay (d2), s/veh	6.0	3.9	0.0	0.0	0.6	0.7	1.3	0.0	6.7			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.5	8.1	0.0	0.0	3.5	3.0	2.7	0.0	4.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.5	13.8	0.0	0.0	13.0	13.3	21.4	0.0	28.2			
LnGrp LOS	C	B			B	B	C		C			
Approach Vol, veh/h		1050			770			540				
Approach Delay, s/veh		15.6			13.1			25.2				
Approach LOS		B			B			C				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		40.3			9.8	30.5		18.9				
Change Period (Y+Rc), s		5.0			5.0	5.0		5.0				
Max Green Setting (Gmax), s		50.0			20.0	50.0		20.0				
Max Q Clear Time (g_c+I1), s		27.5			5.3	12.4		12.8				
Green Ext Time (p_c), s		7.8			0.2	4.3		1.1				
Intersection Summary												
HCM 7th Control Delay, s/veh			17.0									
HCM 7th LOS			B									



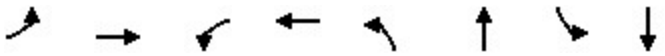
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	1170	40	20	730	20	10	5	5	40	20	30
Future Volume (veh/h)	40	1170	40	20	730	20	10	5	5	40	20	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.95	1.00		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	40	1170	40	20	730	20	10	5	5	40	20	30
Peak Hour 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
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	82	1586	54	49	1532	42	27	137	137	82	128	193
Arrive On Green	0.05	0.46	0.46	0.03	0.44	0.44	0.02	0.17	0.17	0.05	0.20	0.20
Sat Flow, veh/h	1753	3443	118	1753	3471	95	1753	828	828	1753	651	977
Grp Volume(v), veh/h	40	594	616	20	368	382	10	0	10	40	0	50
Grp Sat Flow(s),veh/h/ln	1753	1749	1812	1753	1749	1818	1753	0	1655	1753	0	1629
Q Serve(g_s), s	1.5	18.5	18.6	0.8	9.9	9.9	0.4	0.0	0.3	1.5	0.0	1.7
Cycle Q Clear(g_c), s	1.5	18.5	18.6	0.8	9.9	9.9	0.4	0.0	0.3	1.5	0.0	1.7
Prop In Lane	1.00		0.06	1.00		0.05	1.00		0.50	1.00		0.60
Lane Grp Cap(c), veh/h	82	806	835	49	772	802	27	0	274	82	0	321
V/C Ratio(X)	0.48	0.74	0.74	0.41	0.48	0.48	0.38	0.00	0.04	0.48	0.00	0.16
Avail Cap(c_a), veh/h	262	1569	1626	262	1569	1631	262	0	619	262	0	609
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.1	14.7	14.7	32.0	13.2	13.2	32.6	0.0	23.4	31.1	0.0	22.2
Incr Delay (d2), s/veh	4.4	1.3	1.3	5.4	0.5	0.4	8.5	0.0	0.1	4.4	0.0	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	6.5	6.8	0.4	3.5	3.6	0.2	0.0	0.1	0.7	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	35.4	16.1	16.0	37.4	13.7	13.6	41.1	0.0	23.5	35.4	0.0	22.5
LnGrp LOS	D	B	B	D	B	B	D		C	D		C
Approach Vol, veh/h		1250			770			20			90	
Approach Delay, s/veh		16.7			14.3			32.3			28.2	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.9	35.8	6.0	18.2	8.1	34.5	8.1	16.1
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	10.0	60.0	10.0	25.0	10.0	60.0	10.0	25.0
Max Q Clear Time (g_c+I1), s	2.8	20.6	2.4	3.7	3.5	11.9	3.5	2.3
Green Ext Time (p_c), s	0.0	10.2	0.0	0.2	0.0	5.2	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	16.4
HCM 7th LOS	B

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	100	950	420	350	240	300
v/c Ratio	0.39	0.86	0.54	0.42	0.59	0.60
Control Delay (s/veh)	33.9	20.4	19.2	3.7	31.6	16.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	33.9	20.4	19.2	3.7	31.6	16.7
Queue Length 50th (ft)	40	274	131	0	92	44
Queue Length 95th (ft)	92	527	251	49	183	133
Internal Link Dist (ft)		786	602			
Turn Bay Length (ft)	150					300
Base Capacity (vph)	550	1778	1399	1213	550	613
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.53	0.30	0.29	0.44	0.49

Intersection Summary

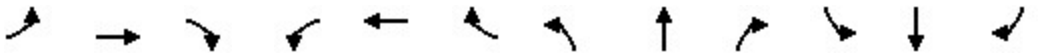


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	40	1210	20	750	10	10	40	50
v/c Ratio	0.15	0.49	0.08	0.30	0.04	0.04	0.15	0.17
Control Delay (s/veh)	30.6	9.4	31.9	8.0	32.9	26.4	30.6	19.5
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	30.6	9.4	31.9	8.0	32.9	26.4	30.6	19.5
Queue Length 50th (ft)	8	74	4	38	2	1	8	4
Queue Length 95th (ft)	55	344	35	190	22	19	55	46
Internal Link Dist (ft)		602		903		272		534
Turn Bay Length (ft)	100		100		100		100	
Base Capacity (vph)	374	3144	374	3149	374	895	374	888
Starvation Cap Reductn	0	451	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.45	0.05	0.24	0.03	0.01	0.11	0.06

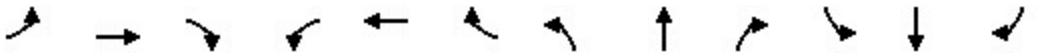
Intersection Summary

ALTERNATIVE 2B

PM PEAK HOUR



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	600	0	0	910	780	180	0	150	0	0	0
Future Volume (veh/h)	100	600	0	0	910	780	180	0	150	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.96	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1841	1841	0	0	1841	1841	1841	0	1841			
Adj Flow Rate, veh/h	100	600	0	0	910	780	180	0	150			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	4	4	0	0	4	4	4	0	4			
Cap, veh/h	130	1347	0	0	1087	882	237	0	211			
Arrive On Green	0.07	0.73	0.00	0.00	0.59	0.59	0.14	0.00	0.14			
Sat Flow, veh/h	1753	1841	0	0	1841	1493	1753	0	1560			
Grp Volume(v), veh/h	100	600	0	0	910	780	180	0	150			
Grp Sat Flow(s),veh/h/ln	1753	1841	0	0	1841	1493	1753	0	1560			
Q Serve(g_s), s	4.2	9.7	0.0	0.0	30.0	33.6	7.4	0.0	6.9			
Cycle Q Clear(g_c), s	4.2	9.7	0.0	0.0	30.0	33.6	7.4	0.0	6.9			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	130	1347	0	0	1087	882	237	0	211			
V/C Ratio(X)	0.77	0.45	0.00	0.00	0.84	0.88	0.76	0.00	0.71			
Avail Cap(c_a), veh/h	467	1347	0	0	1226	995	467	0	416			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	34.1	4.0	0.0	0.0	12.4	13.2	31.3	0.0	31.1			
Incr Delay (d2), s/veh	9.0	0.2	0.0	0.0	4.8	8.8	5.0	0.0	4.4			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	2.0	2.3	0.0	0.0	11.2	11.0	3.2	0.0	2.7			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	43.1	4.2	0.0	0.0	17.2	22.0	36.2	0.0	35.5			
LnGrp LOS	D	A			B	C	D		D			
Approach Vol, veh/h		700			1690			330				
Approach Delay, s/veh		9.8			19.4			35.9				
Approach LOS		A			B			D				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		59.9			10.6	49.3		15.1				
Change Period (Y+Rc), s		5.0			5.0	5.0		5.0				
Max Green Setting (Gmax), s		50.0			20.0	50.0		20.0				
Max Q Clear Time (g_c+I1), s		11.7			6.2	35.6		9.4				
Green Ext Time (p_c), s		4.4			0.2	8.7		0.7				
Intersection Summary												
HCM 7th Control Delay, s/veh			18.9									
HCM 7th LOS			B									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	690	10	10	1600	20	30	20	20	50	10	60
Future Volume (veh/h)	50	690	10	10	1600	20	30	20	20	50	10	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	50	690	10	10	1600	20	30	20	20	50	10	60
Peak Hour 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
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	82	2019	29	26	1910	24	61	123	123	82	36	214
Arrive On Green	0.05	0.57	0.57	0.01	0.54	0.54	0.03	0.15	0.15	0.05	0.16	0.16
Sat Flow, veh/h	1753	3526	51	1753	3535	44	1753	826	826	1753	220	1322
Grp Volume(v), veh/h	50	342	358	10	791	829	30	0	40	50	0	70
Grp Sat Flow(s),veh/h/ln	1753	1749	1829	1753	1749	1830	1753	0	1651	1753	0	1543
Q Serve(g_s), s	2.6	9.6	9.6	0.5	35.1	35.2	1.6	0.0	2.0	2.6	0.0	3.7
Cycle Q Clear(g_c), s	2.6	9.6	9.6	0.5	35.1	35.2	1.6	0.0	2.0	2.6	0.0	3.7
Prop In Lane	1.00		0.03	1.00		0.02	1.00		0.50	1.00		0.86
Lane Grp Cap(c), veh/h	82	1001	1047	26	945	989	61	0	247	82	0	249
V/C Ratio(X)	0.61	0.34	0.34	0.39	0.84	0.84	0.49	0.00	0.16	0.61	0.00	0.28
Avail Cap(c_a), veh/h	190	1135	1187	190	1135	1188	190	0	446	190	0	417
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	43.2	10.5	10.5	45.1	17.8	17.9	43.8	0.0	34.3	43.2	0.0	34.0
Incr Delay (d2), s/veh	7.0	0.2	0.2	9.3	4.8	4.7	6.0	0.0	0.3	7.0	0.0	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	3.4	3.6	0.3	13.8	14.5	0.8	0.0	0.8	1.3	0.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	50.3	10.7	10.7	54.4	22.6	22.5	49.8	0.0	34.6	50.3	0.0	34.7
LnGrp LOS	D	B	B	D	C	C	D		C	D		C
Approach Vol, veh/h		750			1630			70			120	
Approach Delay, s/veh		13.3			22.8			41.1			41.2	
Approach LOS		B			C			D			D	

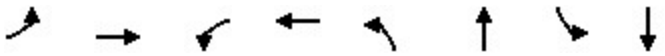
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.4	57.9	8.2	19.9	9.3	55.0	9.3	18.8
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	10.0	60.0	10.0	25.0	10.0	60.0	10.0	25.0
Max Q Clear Time (g_c+I1), s	2.5	11.6	3.6	5.7	4.6	37.2	4.6	4.0
Green Ext Time (p_c), s	0.0	4.8	0.0	0.3	0.0	12.7	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	21.4
HCM 7th LOS	C

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR
Lane Group Flow (vph)	100	600	910	780	180	150
v/c Ratio	0.49	0.45	0.86	0.70	0.65	0.40
Control Delay (s/veh)	46.3	6.7	29.1	7.4	46.9	9.4
Queue Delay	0.0	0.0	0.6	0.0	0.0	0.0
Total Delay (s/veh)	46.3	6.7	29.7	7.4	46.9	9.4
Queue Length 50th (ft)	54	115	429	43	97	0
Queue Length 95th (ft)	109	216	#844	216	173	52
Internal Link Dist (ft)		786	602			
Turn Bay Length (ft)	150					300
Base Capacity (vph)	401	1552	1058	1115	401	473
Starvation Cap Reductn	0	0	24	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.39	0.88	0.70	0.45	0.32

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	50	700	10	1620	30	40	50	70
v/c Ratio	0.30	0.27	0.07	0.71	0.20	0.23	0.30	0.34
Control Delay (s/veh)	50.1	6.9	49.1	17.9	49.0	32.1	50.1	20.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	50.1	6.9	49.1	17.9	49.0	32.1	50.1	20.4
Queue Length 50th (ft)	32	77	6	420	19	13	32	6
Queue Length 95th (ft)	73	171	25	603	51	48	73	51
Internal Link Dist (ft)		602		903		272		534
Turn Bay Length (ft)	100		100		100		100	
Base Capacity (vph)	217	2598	217	2389	217	532	217	522
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.27	0.05	0.68	0.14	0.08	0.23	0.13

Intersection Summary

ALTERNATIVE 3

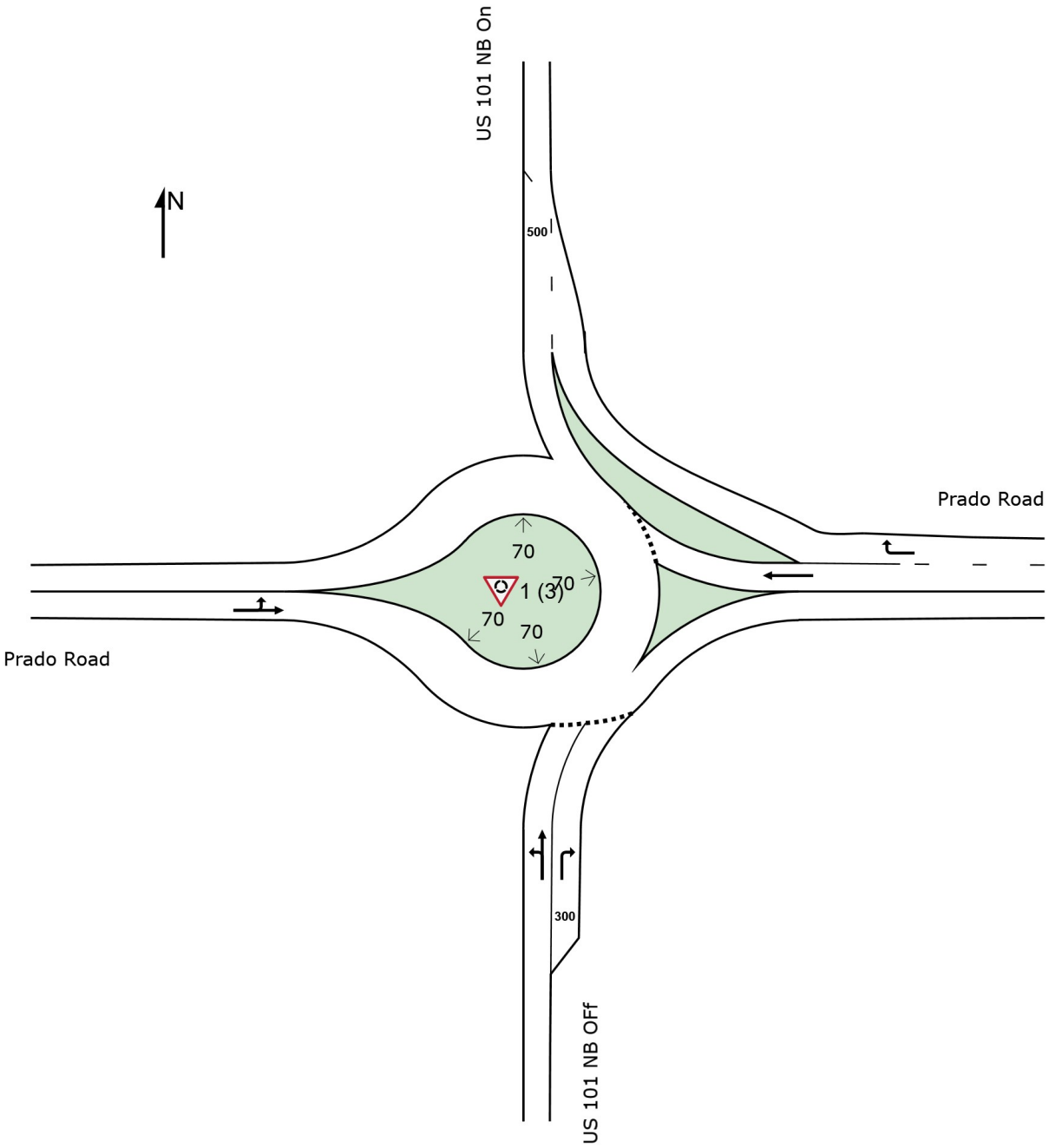
AM PEAK HOUR

SITE LAYOUT

Site: [1 (3)] Single lane AM - NBR lane (US 101 NB Ramps)

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



Organisation: DKS ASSOCIATES | Licence: NETWORK / FLOATING | Created: Monday, August 18, 2025 12:23:56 PM
Project: L:\All-DKS\SAC\P\24000\900s\P24989-000 City of SLO - US101 Prado Road Interchange\12 Traffic Analysis\Sidra\2050 RABs.sipx

MOVEMENT SUMMARY

Site: [1 (3)] Single lane AM - NBR lane (US 101 NB Ramps)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Queued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed mph
South: US 101 NB OFf															
3	L2	All MCs	240	4.0	240	4.0	0.511	17.7	LOS C	2.5	63.3	0.78	0.90	1.23	26.1
8	T1	All MCs	1	4.0	1	4.0	0.511	20.4	LOS C	2.5	63.3	0.78	0.90	1.23	28.0
18	R2	All MCs	300	4.0	300	4.0	0.636	22.9	LOS C	3.7	94.6	0.82	1.01	1.51	25.8
Approach			541	4.0	541	4.0	0.636	20.6	LOS C	3.7	94.6	0.80	0.96	1.39	25.9
East: Prado Road															
6	T1	All MCs	420	4.0	420	4.0	0.432	8.6	LOS A	2.2	57.4	0.57	0.40	0.58	29.1
16	R2	All MCs	350	4.0	350	4.0	0.217	3.8	LOS A	0.0	0.0	0.00	0.00	0.00	32.7
Approach			770	4.0	770	4.0	0.432	6.4	LOS A	2.2	57.4	0.31	0.22	0.31	30.6
West: Prado Road															
5	L2	All MCs	100	4.0	100	4.0	0.789	9.4	LOS A	0.0	0.0	0.00	0.00	0.00	34.2
2	T1	All MCs	950	4.0	950	4.0	0.789	6.7	LOS A	0.0	0.0	0.00	0.00	0.00	32.5
Approach			1050	4.0	1050	4.0	0.789	6.9	LOS A	0.0	0.0	0.00	0.00	0.00	32.6
All Vehicles			2361	4.0	2361	4.0	0.789	9.9	LOS A	3.7	94.6	0.29	0.29	0.42	30.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c >1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Organisation: DKS ASSOCIATES | Licence: NETWORK / FLOATING | Processed: Monday, June 23, 2025 11:29:14 AM
Project: L:\All-DKS\SAC\P\24000\900s\P24989-000 City of SLO - US101 Prado Road Interchange\12 Traffic Analysis\Sidra\2050 RABs.sipx

QUEUE ANALYSIS

Site: [1 (3)] Single lane AM - NBR lane (US 101 NB Ramps)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Lane Queues (Distance)

Lane Number	Contin. Lane	Deg. Satn v/c	Prog. Factor (Queue)	Overflow Queue (ft)	Back of Queue (ft) Av.	Back of Queue (ft) 95%	Queue at Start of Gap (ft) Av.	Queue at Start of Gap (ft) 95%	Cycle-Average Queue (ft) Av.	Cycle-Average Queue (ft) 95%	Queue Storage Ratio Av.	Queue Storage Ratio 95%	Prob. Block. %	Prob. SL Ov. %	Ov. Lane No.
South: US 101 NB OFf															
Lane 1		0.511	1.000	7.1	25.5	63.3	23.2	57.6	30.6	55.5	0.02	0.04	0.0	NA	NA
Lane 2		0.636	1.000	13.6	38.0	94.6	33.7	83.7	49.2	89.3	0.13	0.32	NA	0.0	1
Approach		0.636			38.0	94.6	33.7	83.7	49.2	89.3	0.02	0.04			
East: Prado Road															
Lane 1		0.432	1.000	0.2	23.1	57.4	15.9	39.5	25.8	46.8	0.01	0.04	0.0	NA	NA
Lane 2	Y	0.217	1.000	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.00	0.00	0.0	NA	NA
Approach		0.432			23.1	57.4	15.9	39.5	25.8	46.8	0.01	0.04			
West: Prado Road															
Lane 1		0.789	1.000	0.0	0.0	0.0	0.0	0.0	50.1	90.8	0.00	0.00	0.0	NA	NA
Approach		0.789			0.0	0.0	0.0	0.0	50.1	90.8	0.00	0.00			
Intersection		0.789			38.0	94.6	33.7	83.7	50.1	90.8	0.02	0.04			

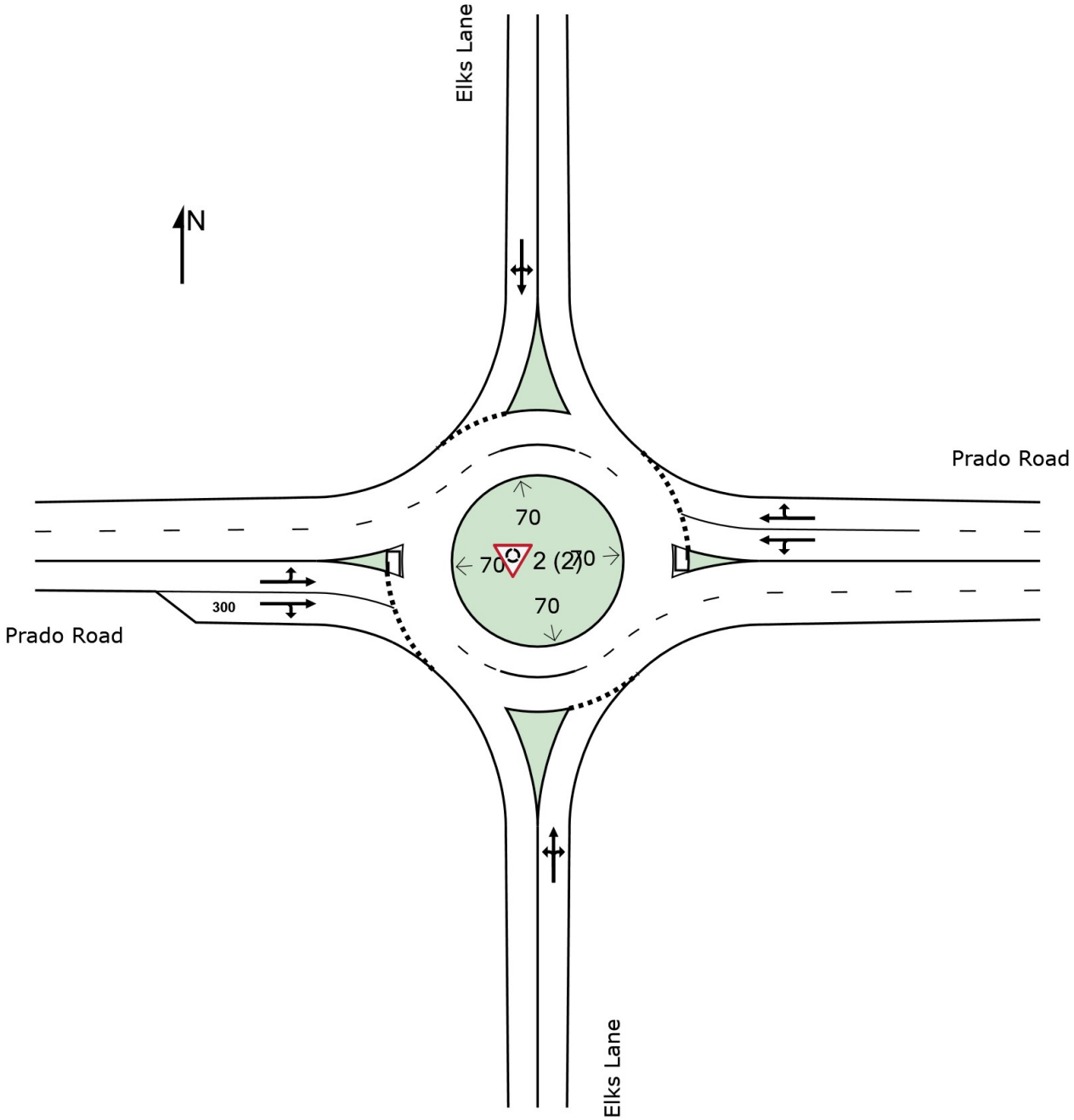
Roundabout Capacity Model: US HCM 6.
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
Short Lanes are not included in determining Queue Storage Ratios.

SITE LAYOUT

Site: [2 (2)] Dual lane EB AM (Elks)

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: [2 (2)] Dual lane EB AM (Elks)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed mph
South: Elks Lane															
3	L2	All MCs	10	4.0	10	4.0	0.049	9.5	LOS A	0.1	3.5	0.68	0.68	0.68	24.3
8	T1	All MCs	5	4.0	5	4.0	0.049	9.5	LOS A	0.1	3.5	0.68	0.68	0.68	24.6
18	R2	All MCs	5	4.0	5	4.0	0.049	9.5	LOS A	0.1	3.5	0.68	0.68	0.68	24.5
Approach			20	4.0	20	4.0	0.049	9.5	LOS A	0.1	3.5	0.68	0.68	0.68	24.4
East: Prado Road															
1	L2	All MCs	20	4.0	20	4.0	0.298	5.3	LOS A	1.5	39.3	0.20	0.07	0.20	26.0
6	T1	All MCs	730	4.0	730	4.0	0.298	5.3	LOS A	1.5	39.3	0.20	0.07	0.20	30.3
16	R2	All MCs	20	4.0	20	4.0	0.298	5.3	LOS A	1.5	39.3	0.20	0.07	0.20	30.1
Approach			770	4.0	770	4.0	0.298	5.3	LOS A	1.5	39.3	0.20	0.07	0.20	30.2
North: Elks Lane															
7	L2	All MCs	40	4.0	40	4.0	0.136	6.9	LOS A	0.4	11.5	0.57	0.53	0.57	28.5
4	T1	All MCs	20	4.0	20	4.0	0.136	6.9	LOS A	0.4	11.5	0.57	0.53	0.57	25.2
14	R2	All MCs	30	4.0	30	4.0	0.136	6.9	LOS A	0.4	11.5	0.57	0.53	0.57	28.8
Approach			90	4.0	90	4.0	0.136	6.9	LOS A	0.4	11.5	0.57	0.53	0.57	27.8
West: Prado Road															
5	L2	All MCs	40	4.0	40	4.0	0.495	7.8	LOS A	3.4	86.5	0.33	0.13	0.33	28.8
2	T1	All MCs	1170	4.0	1170	4.0	0.495	7.8	LOS A	3.4	86.5	0.33	0.13	0.33	29.3
12	R2	All MCs	40	4.0	40	4.0	0.495	7.8	LOS A	3.4	86.5	0.33	0.13	0.33	25.4
Approach			1250	4.0	1250	4.0	0.495	7.8	LOS A	3.4	86.5	0.33	0.13	0.33	29.2
All Vehicles			2130	4.0	2130	4.0	0.495	6.8	LOS A	3.4	86.5	0.30	0.13	0.30	29.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c >1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

QUEUE ANALYSIS

Site: [2 (2)] Dual lane EB AM (Elks)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Lane Queues (Distance)

Lane Number	Contin. Lane	Deg. Satn v/c	Prog. Factor (Queue)	Overflow Queue (ft)	Back of Queue (ft) Av.	Back of Queue (ft) 95%	Queue at Start of Gap (ft) Av.	Queue at Start of Gap (ft) 95%	Cycle-Average Queue (ft) Av.	Cycle-Average Queue (ft) 95%	Queue Storage Ratio Av.	Queue Storage Ratio 95%	Prob. Block. %	Prob. SL Ov. %	Ov. Lane No.
South: Elks Lane															
Lane 1		0.049	1.000	0.0	1.4	3.5	1.4	3.5	1.4	2.5	0.00	0.00	0.0	NA	NA
Approach		0.049			1.4	3.5	1.4	3.5	1.4	2.5	0.00	0.00			
East: Prado Road															
Lane 1		0.298	1.000	0.0	15.8	39.3	11.4	28.2	14.5	26.3	0.01	0.02	0.0	NA	NA
Lane 2		0.298	1.000	0.0	15.8	39.3	11.4	28.2	14.5	26.3	0.01	0.02	0.0	NA	NA
Approach		0.298			15.8	39.3	11.4	28.2	14.5	26.3	0.01	0.02			
North: Elks Lane															
Lane 1		0.136	1.000	0.0	4.6	11.5	4.3	10.7	4.5	8.1	0.00	0.01	0.0	NA	NA
Approach		0.136			4.6	11.5	4.3	10.7	4.5	8.1	0.00	0.01			
West: Prado Road															
Lane 1		0.495	1.000	0.0	34.8	86.5	18.8	46.8	34.8	63.2	0.02	0.05	0.0	NA	NA
Lane 2		0.495	1.000	0.0	34.8	86.5	18.8	46.8	34.8	63.2	0.12	0.29	NA	0.0	1
Approach		0.495			34.8	86.5	18.8	46.8	34.8	63.2	0.02	0.05			
Intersection		0.495			34.8	86.5	18.8	46.8	34.8	63.2	0.02	0.05			

Roundabout Capacity Model: US HCM 6.
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
Short Lanes are not included in determining Queue Storage Ratios.

ALTERNATIVE 3

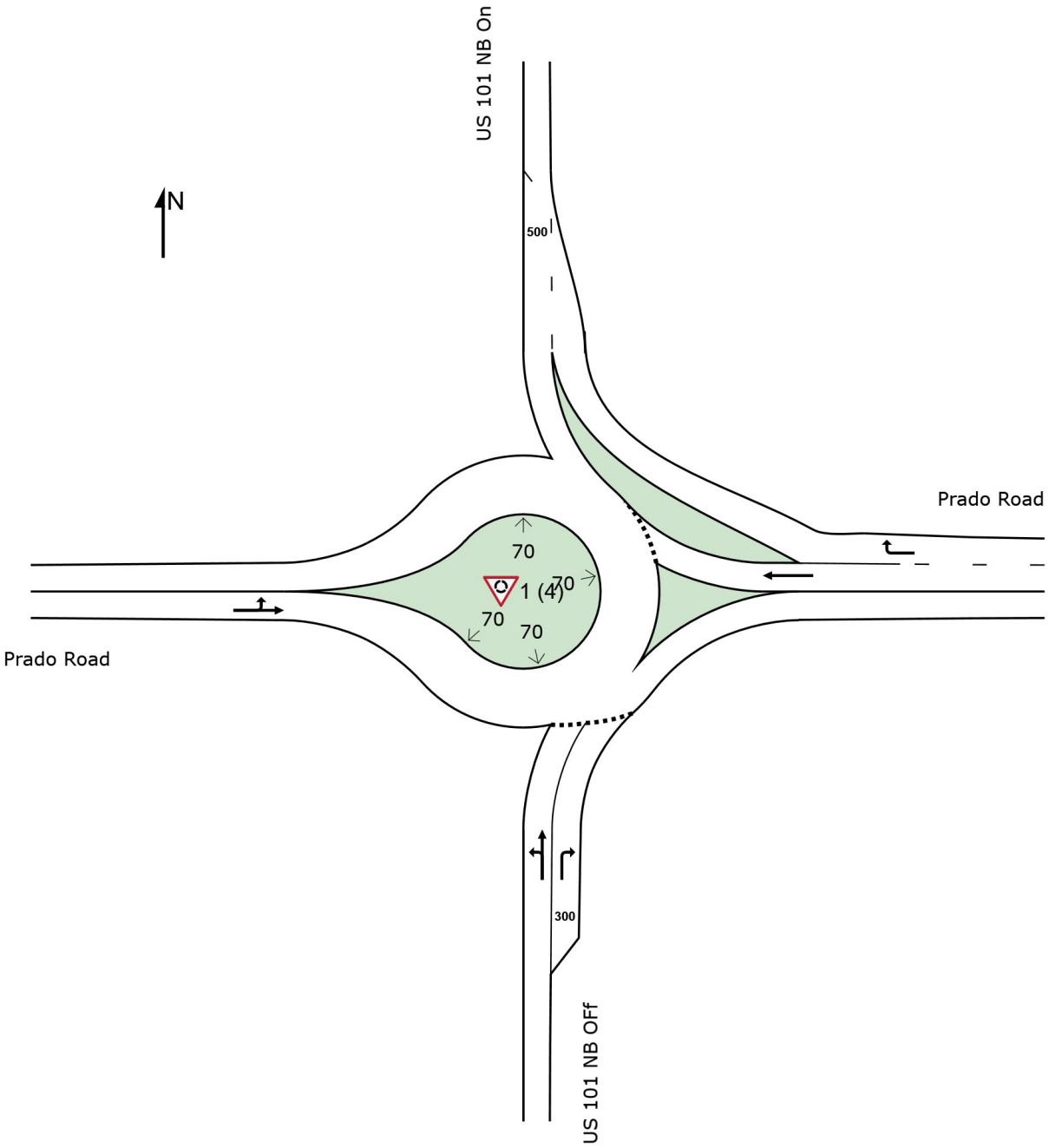
PM PEAK HOUR

SITE LAYOUT

Site: [1 (4)] Single lane PM - NBR Lane (US 101 NB Ramps)

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



Organisation: DKS ASSOCIATES | Licence: NETWORK / FLOATING | Created: Monday, August 18, 2025 12:29:26 PM
Project: L:\All-DKS\SAC\P\24000\900s\P24989-000 City of SLO - US101 Prado Road Interchange\12 Traffic Analysis\Sidra\2050 RABs.sipx

MOVEMENT SUMMARY

Site: [1 (4)] Single lane PM - NBR Lane (US 101 NB Ramps)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Queued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed mph
South: US 101 NB OFf															
3	L2	All MCs	180	4.0	180	4.0	0.268	8.6	LOS A	1.0	26.2	0.63	0.56	0.63	29.1
8	T1	All MCs	1	4.0	1	4.0	0.268	11.6	LOS B	1.0	26.2	0.63	0.56	0.63	31.5
18	R2	All MCs	150	4.0	150	4.0	0.222	7.9	LOS A	0.8	21.1	0.61	0.55	0.61	31.2
Approach			331	4.0	331	4.0	0.268	8.3	LOS A	1.0	26.2	0.62	0.56	0.62	30.0
East: Prado Road															
6	T1	All MCs	910	4.0	910	4.0	0.882	25.7	LOS D	26.3	677.3	1.00	1.37	2.25	23.8
16	R2	All MCs	780	4.0	780	4.0	0.484	6.5	LOS A	0.0	0.0	0.00	0.00	0.00	32.6
Approach			1690	4.0	1690	4.0	0.882	16.8	LOS C	26.3	677.3	0.54	0.74	1.21	27.1
West: Prado Road															
5	L2	All MCs	100	4.0	100	4.0	0.526	8.4	LOS A	0.0	0.0	0.00	0.00	0.00	34.1
2	T1	All MCs	600	4.0	600	4.0	0.526	5.3	LOS A	0.0	0.0	0.00	0.00	0.00	32.4
Approach			700	4.0	700	4.0	0.526	5.8	LOS A	0.0	0.0	0.00	0.00	0.00	32.6
All Vehicles			2721	4.0	2721	4.0	0.882	13.0	LOS B	26.3	677.3	0.41	0.53	0.83	28.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c >1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

QUEUE ANALYSIS

Site: [1 (4)] Single lane PM - NBR Lane (US 101 NB Ramps)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Lane Queues (Distance)

Lane Number	Contin. Lane	Deg. Satn v/c	Prog. Factor (Queue)	Overflow Queue (ft)	Back of Queue (ft) Av.	Back of Queue (ft) 95%	Queue at Start of Gap (ft) Av.	Queue at Start of Gap (ft) 95%	Cycle-Average Queue (ft) Av.	Cycle-Average Queue (ft) 95%	Queue Storage Ratio Av.	Queue Storage Ratio 95%	Prob. Block. %	Prob. SL Ov. %	Ov. Lane No.
South: US 101 NB OFf															
Lane 1		0.268	1.000	0.0	10.5	26.2	9.1	22.6	11.1	20.2	0.01	0.02	0.0	NA	NA
Lane 2		0.222	1.000	0.0	8.5	21.1	7.5	18.7	8.5	15.4	0.03	0.07	NA	0.0	1
Approach		0.268			10.5	26.2	9.1	22.6	11.1	20.2	0.01	0.02			
East: Prado Road															
Lane 1		0.882	1.000	110.1	272.5	677.3	142.5	354.1	167.7	304.3	0.17	0.42	0.0	NA	NA
Lane 2	Y	0.484	1.000	0.0	0.0	0.0	0.0	0.0	1.4	2.5	0.00	0.00	0.0	NA	NA
Approach		0.882			272.5	677.3	142.5	354.1	167.7	304.3	0.17	0.42			
West: Prado Road															
Lane 1		0.526	1.000	0.0	0.0	0.0	0.0	0.0	26.8	48.6	0.00	0.00	0.0	NA	NA
Approach		0.526			0.0	0.0	0.0	0.0	26.8	48.6	0.00	0.00			
Intersection		0.882			272.5	677.3	142.5	354.1	167.7	304.3	0.17	0.42			

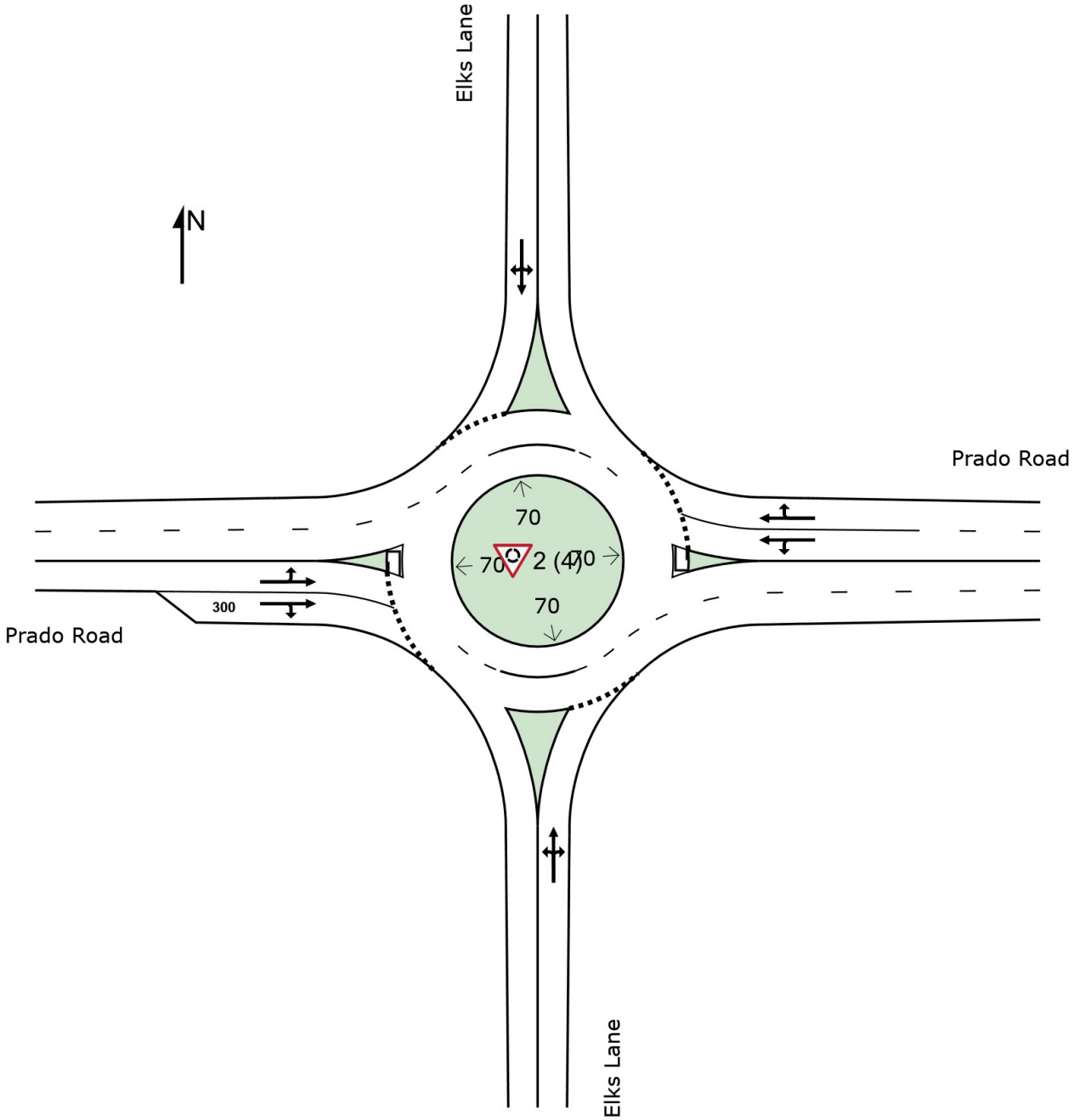
Roundabout Capacity Model: US HCM 6.
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
Short Lanes are not included in determining Queue Storage Ratios.

SITE LAYOUT

Site: [2 (4)] Dual lane EB PM (Elks)

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: [2 (4)] Dual lane EB PM (Elks)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Queued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed mph
South: Elks Lane															
3	L2	All MCs	30	4.0	30	4.0	0.109	6.8	LOS A	0.3	9.0	0.57	0.53	0.57	25.1
8	T1	All MCs	20	4.0	20	4.0	0.109	6.8	LOS A	0.3	9.0	0.57	0.53	0.57	25.4
18	R2	All MCs	20	4.0	20	4.0	0.109	6.8	LOS A	0.3	9.0	0.57	0.53	0.57	25.3
Approach			70	4.0	70	4.0	0.109	6.8	LOS A	0.3	9.0	0.57	0.53	0.57	25.2
East: Prado Road															
1	L2	All MCs	10	4.0	10	4.0	0.659	11.0	LOS B	6.0	154.8	0.51	0.23	0.51	24.4
6	T1	All MCs	1600	4.0	1600	4.0	0.659	11.0	LOS B	6.0	154.8	0.51	0.23	0.51	28.2
16	R2	All MCs	20	4.0	20	4.0	0.659	11.0	LOS B	6.0	154.8	0.51	0.23	0.51	28.0
Approach			1630	4.0	1630	4.0	0.659	11.0	LOS B	6.0	154.8	0.51	0.23	0.51	28.2
North: Elks Lane															
7	L2	All MCs	50	4.0	50	4.0	0.436	24.8	LOS C	1.4	35.4	0.85	0.94	1.16	23.3
4	T1	All MCs	10	4.0	10	4.0	0.436	24.8	LOS C	1.4	35.4	0.85	0.94	1.16	21.0
14	R2	All MCs	60	4.0	60	4.0	0.436	24.8	LOS C	1.4	35.4	0.85	0.94	1.16	23.4
Approach			120	4.0	120	4.0	0.436	24.8	LOS C	1.4	35.4	0.85	0.94	1.16	23.1
West: Prado Road															
5	L2	All MCs	50	4.0	50	4.0	0.294	5.3	LOS A	1.5	38.4	0.23	0.09	0.23	29.6
2	T1	All MCs	690	4.0	690	4.0	0.294	5.3	LOS A	1.5	38.4	0.23	0.09	0.23	30.2
12	R2	All MCs	10	4.0	10	4.0	0.294	5.3	LOS A	1.5	38.4	0.23	0.09	0.23	26.2
Approach			750	4.0	750	4.0	0.294	5.3	LOS A	1.5	38.4	0.23	0.09	0.23	30.1
All Vehicles			2570	4.0	2570	4.0	0.659	9.9	LOS A	6.0	154.8	0.44	0.23	0.46	28.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c >1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

QUEUE ANALYSIS

Site: [2 (4)] Dual lane EB PM (Elks)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Lane Queues (Distance)

Lane Number	Contin. Lane	Deg. Satn v/c	Prog. Factor (Queue)	Overflow Queue (ft)	Back of Queue (ft) Av.	Back of Queue (ft) 95%	Queue at Start of Gap (ft) Av.	Queue at Start of Gap (ft) 95%	Cycle-Average Queue (ft) Av.	Cycle-Average Queue (ft) 95%	Queue Storage Ratio Av.	Queue Storage Ratio 95%	Prob. Block. %	Prob. SL Ov. %	Ov. Lane No.
South: Elks Lane															
Lane 1		0.109	1.000	0.0	3.6	9.0	3.4	8.5	3.4	6.2	0.00	0.01	0.0	NA	NA
Approach		0.109			3.6	9.0	3.4	8.5	3.4	6.2	0.00	0.01			
East: Prado Road															
Lane 1		0.659	1.000	0.0	62.3	154.8	25.0	62.0	64.3	116.7	0.04	0.10	0.0	NA	NA
Lane 2		0.659	1.000	0.0	62.3	154.8	25.0	62.0	64.3	116.7	0.04	0.10	0.0	NA	NA
Approach		0.659			62.3	154.8	25.0	62.0	64.3	116.7	0.04	0.10			
North: Elks Lane															
Lane 1		0.436	1.000	2.8	14.2	35.4	14.2	35.3	21.3	38.7	0.01	0.02	0.0	NA	NA
Approach		0.436			14.2	35.4	14.2	35.3	21.3	38.7	0.01	0.02			
West: Prado Road															
Lane 1		0.294	1.000	0.0	15.5	38.4	11.2	27.8	14.3	26.0	0.01	0.02	0.0	NA	NA
Lane 2		0.294	1.000	0.0	15.5	38.4	11.2	27.8	14.3	26.0	0.05	0.13	NA	0.0	1
Approach		0.294			15.5	38.4	11.2	27.8	14.3	26.0	0.01	0.02			
Intersection		0.659			62.3	154.8	25.0	62.0	64.3	116.7	0.04	0.10			

Roundabout Capacity Model: US HCM 6.
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
Short Lanes are not included in determining Queue Storage Ratios.

SECTION 2: VISSIM RESULTS

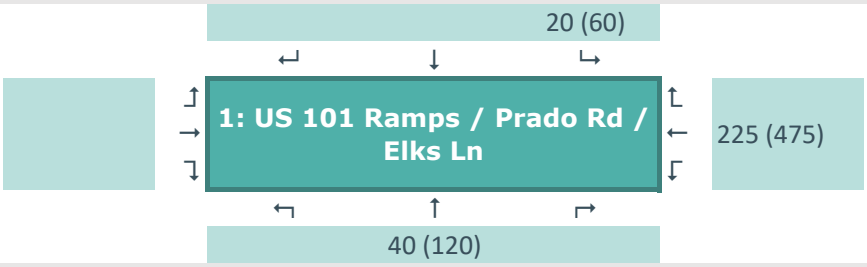
NO BUILD

AM PEAK HOUR

TABLE: AVERAGE DELAY

Intersection	Approach	Movement	Demand Volume	Served Volume	% Served	GEH	Average Delay (s)	LOS
US 101 Ramps / Prado Rd / Elks Ln	NB	Left	-	-				
		Through	30	34	113%	0.7	8	A
		Right	310	308	99%	0.1	4	A
		U-Turn	-	-				
		Total	**340**	**342**	**101%**	**0.1**	**4**	**A**
	SB	Left	55	54	98%	0.1	6	A
		Through	-	-				
		Right	15	14	93%	0.3	3	A
		U-Turn	-	-				
		Total	**70**	**68**	**97%**	**0.2**	**5**	**A**
	EB	Left	-	-				
		Through	-	-				
		Right	-	-				
		U-Turn	-	-				
		Total	**-**	**-**			**0**	
	WB	Left	-	-				
		Through	565	563	100%	0.1	30	D
		Right	15	15	100%	0.0	22	C
		U-Turn	-	-				
		Total	**580**	**578**	**100%**	**0.1**	**30**	**D**
		Total	**990**	**988**	**100%**	**0.1**	**19**	**C**

TABLE: QUEUE COUNTERS (Avg/95th)



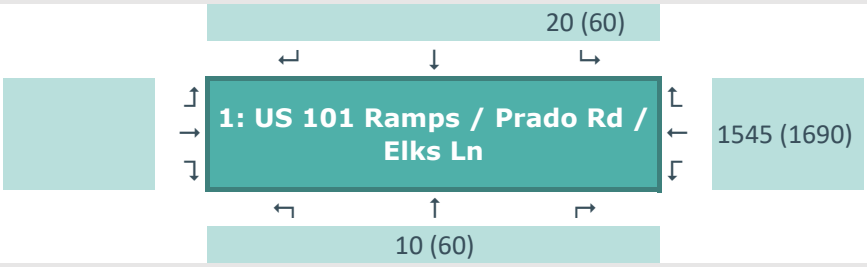
NO BUILD

PM PEAK HOUR

TABLE: AVERAGE DELAY

Intersection	Approach	Movement	Demand Volume	Served Volume	% Served	GEH	Average Delay (s)	LOS
US 101 Ramps / Prado Rd / Elks Ln	NB	Left	-	-				
		Through	10	11	110%	0.3	7	A
		Right	125	123	98%	0.2	2	A
		U-Turn	-	-				
		Total	**135**	**134**	**99%**	**0.1**	**2**	**A**
	SB	Left	45	44	98%	0.1	6	A
		Through	-	-				
		Right	25	23	92%	0.4	4	A
		U-Turn	-	-				
		Total	**70**	**67**	**96%**	**0.4**	**5**	**A**
	EB	Left	-	-				
		Through	-	-				
		Right	-	-				
		U-Turn	-	-				
		Total	**-**	**-**			**0**	
	WB	Left	-	-				
		Through	980	600	61%	13.5	267	F
		Right	30	19	63%	2.2	260	F
		U-Turn	-	-				
		Total	**1010**	**619**	**61%**	**13.7**	**267**	**F**
	Total		**1215**	**820**	**67%**	**12.4**	**202**	**F**

TABLE: QUEUE COUNTERS (Avg/95th)



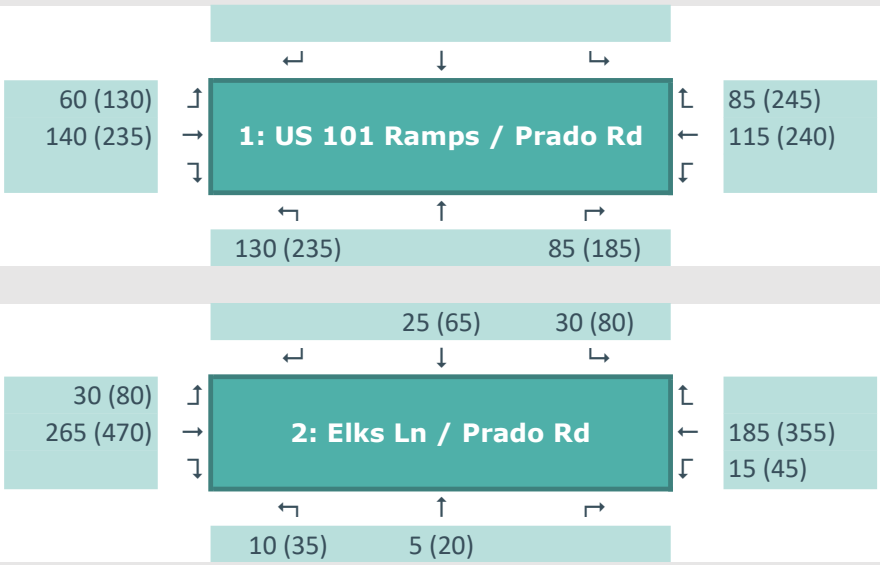
ALTERNATIVE 1A

AM PEAK HOUR

TABLE: AVERAGE DELAY

Intersection	Approach	Movement	Demand Volume	Served Volume	% Served	GEH	Average Delay (s)	LOS
US 101 Ramps / Prado Rd	NB	Left	240	234	98%	0.4	34	C
		Through	-	-				
		Right	300	305	102%	0.3	13	B
		U-Turn	-	-				
		Total	**540**	**539**	**100%**	**0.0**	**22**	**C**
	SB	Left	-	-				
		Through	-	-				
		Right	-	-				
		U-Turn	-	-				
		Total	**-**	**-**			**0**	
	EB	Left	100	97	97%	0.3	34	C
		Through	1150	1146	100%	0.1	8	A
		Right	-	-				
		U-Turn	-	-				
		Total	**1250**	**1243**	**99%**	**0.2**	**10**	**A**
	WB	Left	-	-				
		Through	620	616	99%	0.2	13	B
		Right	350	353	101%	0.2	9	A
		U-Turn	-	-				
		Total	**970**	**969**	**100%**	**0.0**	**11**	**B**
	Total		**2760**	**2751**	**100%**	**0.2**	**13**	**B**
Elks Ln / Prado Rd	NB	Left	10	11	110%	0.3	51	D
		Through	5	5	100%	0.0	33	C
		Right	5	4	80%	0.5	7	A
		U-Turn	-	-				
		Total	**20**	**20**	**100%**	**0.0**	**38**	**D**
	SB	Left	40	39	98%	0.2	47	D
		Through	20	20	100%	0.0	31	C
		Right	30	28	93%	0.4	11	B
		U-Turn	-	-				
		Total	**90**	**87**	**97%**	**0.3**	**32**	**C**
	EB	Left	40	36	90%	0.6	49	D
		Through	1370	1375	100%	0.1	13	B
		Right	40	40	100%	0.0	11	B
		U-Turn	-	-				
		Total	**1450**	**1451**	**100%**	**0.0**	**14**	**B**
	WB	Left	20	19	95%	0.2	47	D
		Through	930	930	100%	0.0	14	B
		Right	20	19	95%	0.2	12	B
		U-Turn	-	-				
		Total	**970**	**968**	**100%**	**0.1**	**14**	**B**
	Total		**2530**	**2526**	**100%**	**0.1**	**15**	**B**

TABLE: QUEUE COUNTERS (Avg/95th)



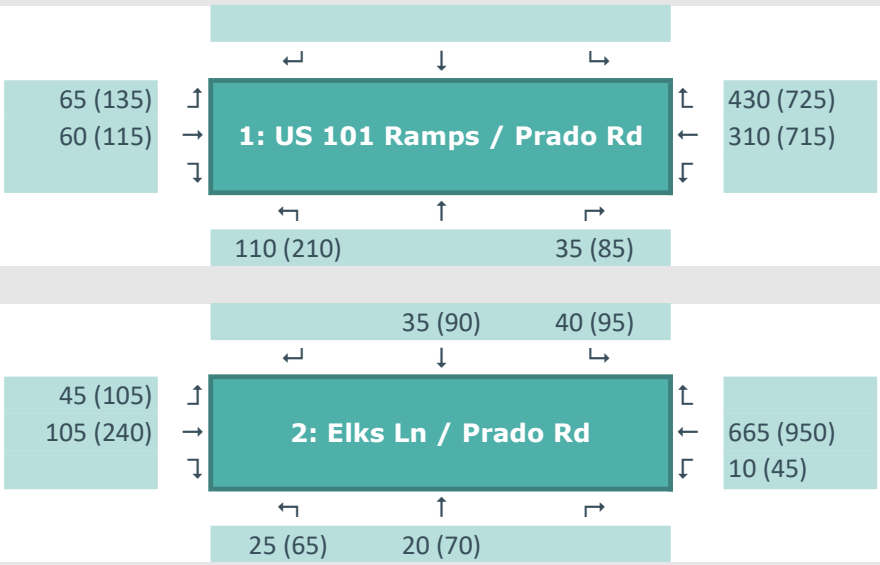
ALTERNATIVE 1A

PM PEAK HOUR

TABLE: AVERAGE DELAY

Intersection	Approach	Movement	Demand Volume	Served Volume	% Served	GEH	Average Delay (s)	LOS
US 101 Ramps / Prado Rd	NB	Left	180	177	98%	0.2	37	D
		Through	-	-				
		Right	150	152	101%	0.2	7	A
		U-Turn	-	-				
		Total	**330**	**329**	**100%**	**0.1**	**23**	**C**
	SB	Left	-	-				
		Through	-	-				
		Right	-	-				
		U-Turn	-	-				
		Total	**-**	**-**			**0**	
	EB	Left	100	95	95%	0.5	39	D
		Through	610	612	100%	0.1	5	A
		Right	-	-				
		U-Turn	-	-				
		Total	**710**	**707**	**100%**	**0.1**	**9**	**A**
	WB	Left	-	-				
		Through	1110	1107	100%	0.1	16	B
		Right	780	788	101%	0.3	29	C
		U-Turn	-	-				
		Total	**1890**	**1895**	**100%**	**0.1**	**21**	**C**
		Total	**2930**	**2931**	**100%**	**0.0**	**19**	**B**
Elks Ln / Prado Rd	NB	Left	30	28	93%	0.4	53	D
		Through	20	22	110%	0.4	41	D
		Right	20	19	95%	0.2	11	B
		U-Turn	-	-				
		Total	**70**	**69**	**99%**	**0.1**	**38**	**D**
	SB	Left	50	51	102%	0.1	49	D
		Through	10	11	110%	0.3	45	D
		Right	60	58	97%	0.3	22	C
		U-Turn	-	-				
		Total	**120**	**120**	**100%**	**0.0**	**36**	**D**
	EB	Left	50	50	100%	0.0	55	D
		Through	700	705	101%	0.2	10	A
		Right	10	8	80%	0.7	6	A
		U-Turn	-	-				
		Total	**760**	**763**	**100%**	**0.1**	**13**	**B**
	WB	Left	10	9	90%	0.3	64	E
		Through	1800	1799	100%	0.0	39	D
		Right	20	22	110%	0.4	38	D
		U-Turn	-	-				
		Total	**1830**	**1830**	**100%**	**0.0**	**39**	**D**
		Total	**2780**	**2782**	**100%**	**0.0**	**31**	**C**

TABLE: QUEUE COUNTERS (Avg/95th)



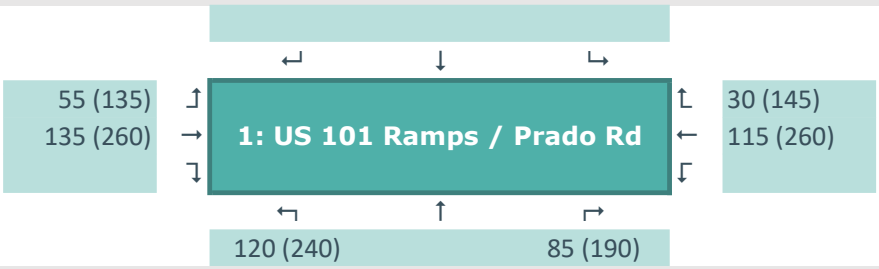
ALTERNATIVE 1B

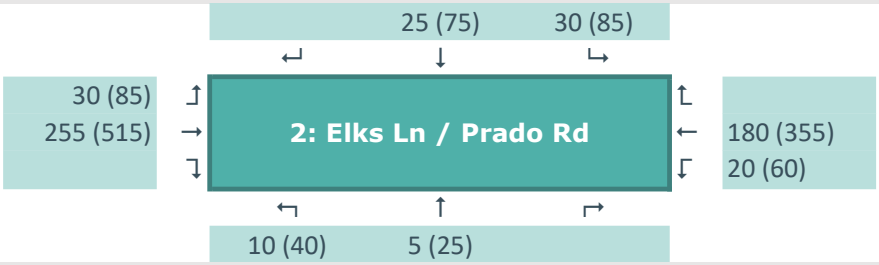
AM PEAK HOUR

TABLE: AVERAGE DELAY

Intersection	Approach	Movement	Demand Volume	Served Volume	% Served	GEH	Average Delay (s)	LOS
US 101 Ramps / Prado Rd	NB	Left	240	235	98%	0.3	31	C
		Through	-	-				
		Right	300	305	102%	0.3	13	B
		U-Turn	-	-				
		Total	**540**	**540**	**100%**	**0.0**	**21**	**C**
	SB	Left	-	-				
		Through	-	-				
		Right	-	-				
		U-Turn	-	-				
		Total	**-**	**-**			**0**	
	EB	Left	100	97	97%	0.3	31	C
		Through	1150	1150	100%	0.0	8	A
		Right	-	-				
		U-Turn	-	-				
		Total	**1250**	**1247**	**100%**	**0.1**	**10**	**B**
	WB	Left	-	-				
		Through	620	613	99%	0.3	13	B
		Right	350	352	101%	0.1	3	A
		U-Turn	-	-				
		Total	**970**	**965**	**99%**	**0.2**	**9**	**A**
	Total		**2760**	**2752**	**100%**	**0.2**	**12**	**B**
Elks Ln / Prado Rd	NB	Left	10	10	100%	0.0	51	D
		Through	5	5	100%	0.0	38	D
		Right	5	5	100%	0.0	10	B
		U-Turn	-	-				
		Total	**20**	**20**	**100%**	**0.0**	**38**	**D**
	SB	Left	40	39	98%	0.2	49	D
		Through	20	22	110%	0.4	36	D
		Right	30	28	93%	0.4	11	B
		U-Turn	-	-				
		Total	**90**	**89**	**99%**	**0.1**	**34**	**C**
	EB	Left	40	36	90%	0.6	47	D
		Through	1370	1373	100%	0.1	13	B
		Right	40	40	100%	0.0	11	B
		U-Turn	-	-				
		Total	**1450**	**1449**	**100%**	**0.0**	**14**	**B**
	WB	Left	20	19	95%	0.2	48	D
		Through	930	927	100%	0.1	13	B
		Right	20	18	90%	0.5	12	B
		U-Turn	-	-				
		Total	**970**	**964**	**99%**	**0.2**	**14**	**B**
	Total		**2530**	**2522**	**100%**	**0.2**	**15**	**B**

TABLE: QUEUE COUNTERS (Avg/95th)





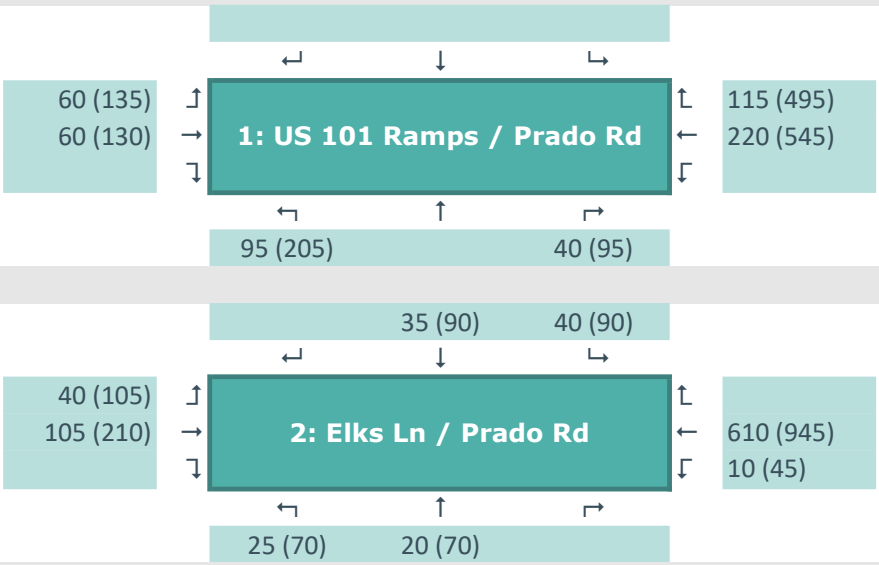
ALTERNATIVE 1B

PM PEAK HOUR

TABLE: AVERAGE DELAY

Intersection	Approach	Movement	Demand Volume	Served Volume	% Served	GEH	Average Delay (s)	LOS
US 101 Ramps / Prado Rd	NB	Left	180	177	98%	0.2	33	C
		Through	-	-				
		Right	150	152	101%	0.2	7	A
		U-Turn	-	-				
		Total	**330**	**329**	**100%**	**0.1**	**21**	**C**
	SB	Left	-	-				
		Through	-	-				
		Right	-	-				
		U-Turn	-	-				
		Total	**-**	**-**			**0**	
	EB	Left	100	95	95%	0.5	34	C
		Through	610	613	100%	0.1	5	A
		Right	-	-				
		U-Turn	-	-				
		Total	**710**	**708**	**100%**	**0.1**	**9**	**A**
	WB	Left	-	-				
		Through	1110	1110	100%	0.0	13	B
		Right	780	789	101%	0.3	7	A
		U-Turn	-	-				
		Total	**1890**	**1899**	**100%**	**0.2**	**10**	**B**
		Total	**2930**	**2936**	**100%**	**0.1**	**11**	**B**
Elks Ln / Prado Rd	NB	Left	30	27	90%	0.6	53	D
		Through	20	22	110%	0.4	41	D
		Right	20	19	95%	0.2	11	B
		U-Turn	-	-				
		Total	**70**	**68**	**97%**	**0.2**	**37**	**D**
	SB	Left	50	52	104%	0.3	48	D
		Through	10	11	110%	0.3	40	D
		Right	60	59	98%	0.1	20	C
		U-Turn	-	-				
		Total	**120**	**122**	**102%**	**0.2**	**34**	**C**
	EB	Left	50	49	98%	0.1	55	D
		Through	700	704	101%	0.2	10	A
		Right	10	8	80%	0.7	7	A
		U-Turn	-	-				
		Total	**760**	**761**	**100%**	**0.0**	**12**	**B**
	WB	Left	10	8	80%	0.7	63	E
		Through	1800	1802	100%	0.0	32	C
		Right	20	22	110%	0.4	30	C
		U-Turn	-	-				
		Total	**1830**	**1832**	**100%**	**0.0**	**32**	**C**
		Total	**2780**	**2783**	**100%**	**0.1**	**27**	**C**

TABLE: QUEUE COUNTERS (Avg/95th)



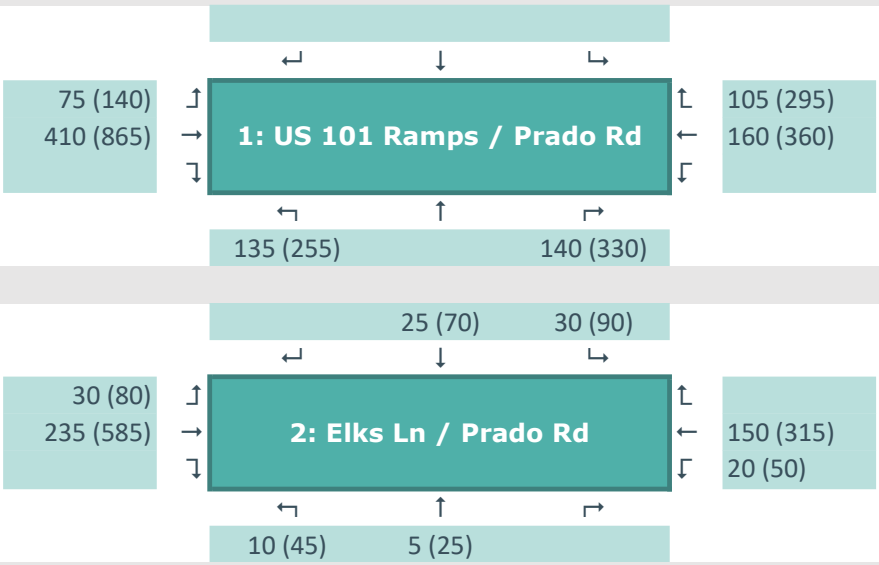
ALTERNATIVE 2A

AM PEAK HOUR

TABLE: AVERAGE DELAY

Intersection	Approach	Movement	Demand Volume	Served Volume	% Served	GEH	Average Delay (s)	LOS
US 101 Ramps / Prado Rd	NB	Left	240	236	98%	0.3	37	D
		Through	-	-				
		Right	300	305	102%	0.3	27	C
		U-Turn	-	-				
		Total	**540**	**541**	**100%**	**0.0**	**31**	**C**
	SB	Left	-	-				
		Through	-	-				
		Right	-	-				
		U-Turn	-	-				
		Total	**-**	**-**			**0**	
	EB	Left	100	99	99%	0.1	42	D
		Through	950	949	100%	0.0	17	B
		Right	-	-				
		U-Turn	-	-				
		Total	**1050**	**1048**	**100%**	**0.1**	**19**	**B**
	WB	Left	-	-				
		Through	420	415	99%	0.2	16	B
		Right	350	350	100%	0.0	10	B
		U-Turn	-	-				
		Total	**770**	**765**	**99%**	**0.2**	**13**	**B**
	Total		**2360**	**2354**	**100%**	**0.1**	**20**	**B**
Elks Ln / Prado Rd	NB	Left	10	10	100%	0.0	51	D
		Through	5	5	100%	0.0	41	D
		Right	5	5	100%	0.0	7	A
		U-Turn	-	-				
		Total	**20**	**20**	**100%**	**0.0**	**38**	**D**
	SB	Left	40	40	100%	0.0	46	D
		Through	20	21	105%	0.2	33	C
		Right	30	29	97%	0.2	9	A
		U-Turn	-	-				
		Total	**90**	**90**	**100%**	**0.0**	**31**	**C**
	EB	Left	40	37	93%	0.5	44	D
		Through	1170	1176	101%	0.2	12	B
		Right	40	39	98%	0.2	9	A
		U-Turn	-	-				
		Total	**1250**	**1252**	**100%**	**0.1**	**13**	**B**
	WB	Left	20	19	95%	0.2	40	D
		Through	730	731	100%	0.0	13	B
		Right	20	20	100%	0.0	10	A
		U-Turn	-	-				
		Total	**770**	**770**	**100%**	**0.0**	**13**	**B**
	Total		**2130**	**2132**	**100%**	**0.0**	**14**	**B**

TABLE: QUEUE COUNTERS (Avg/95th)



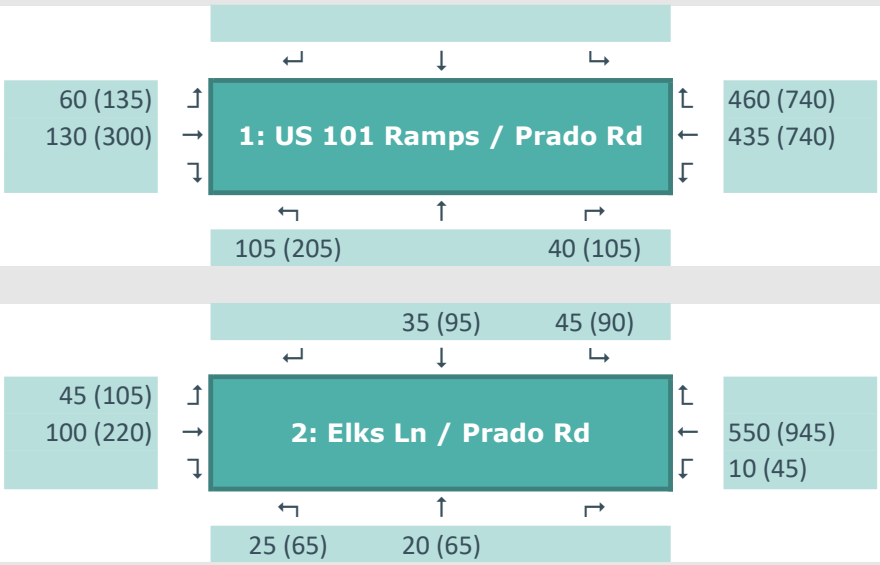
ALTERNATIVE 2A

PM PEAK HOUR

TABLE: AVERAGE DELAY

Intersection	Approach	Movement	Demand Volume	Served Volume	% Served	GEH	Average Delay (s)	LOS
US 101 Ramps / Prado Rd	NB	Left	180	178	99%	0.1	37	D
		Through	-	-				
		Right	150	152	101%	0.2	9	A
		U-Turn	-	-				
		Total	**330**	**330**	**100%**	**0.0**	**24**	**C**
	SB	Left	-	-				
		Through	-	-				
		Right	-	-				
		U-Turn	-	-				
		Total	**-**	**-**			**0**	
	EB	Left	100	96	96%	0.4	35	D
		Through	600	603	101%	0.1	7	A
		Right	-	-				
		U-Turn	-	-				
		Total	**700**	**699**	**100%**	**0.0**	**11**	**B**
	WB	Left	-	-				
		Through	910	901	99%	0.3	16	B
		Right	780	784	101%	0.1	27	C
		U-Turn	-	-				
		Total	**1690**	**1685**	**100%**	**0.1**	**21**	**C**
	Total		**2720**	**2714**	**100%**	**0.1**	**19**	**B**
Elks Ln / Prado Rd	NB	Left	30	28	93%	0.4	53	D
		Through	20	21	105%	0.2	39	D
		Right	20	20	100%	0.0	10	B
		U-Turn	-	-				
		Total	**70**	**69**	**99%**	**0.1**	**36**	**D**
	SB	Left	50	52	104%	0.3	48	D
		Through	10	11	110%	0.3	46	D
		Right	60	58	97%	0.3	18	B
		U-Turn	-	-				
		Total	**120**	**121**	**101%**	**0.1**	**33**	**C**
	EB	Left	50	50	100%	0.0	58	E
		Through	690	694	101%	0.2	10	A
		Right	10	8	80%	0.7	7	A
		U-Turn	-	-				
		Total	**750**	**752**	**100%**	**0.1**	**13**	**B**
	WB	Left	10	8	80%	0.7	66	E
		Through	1600	1593	100%	0.2	30	C
		Right	20	19	95%	0.2	27	C
		U-Turn	-	-				
		Total	**1630**	**1620**	**99%**	**0.2**	**30**	**C**
	Total		**2570**	**2562**	**100%**	**0.2**	**26**	**C**

TABLE: QUEUE COUNTERS (Avg/95th)



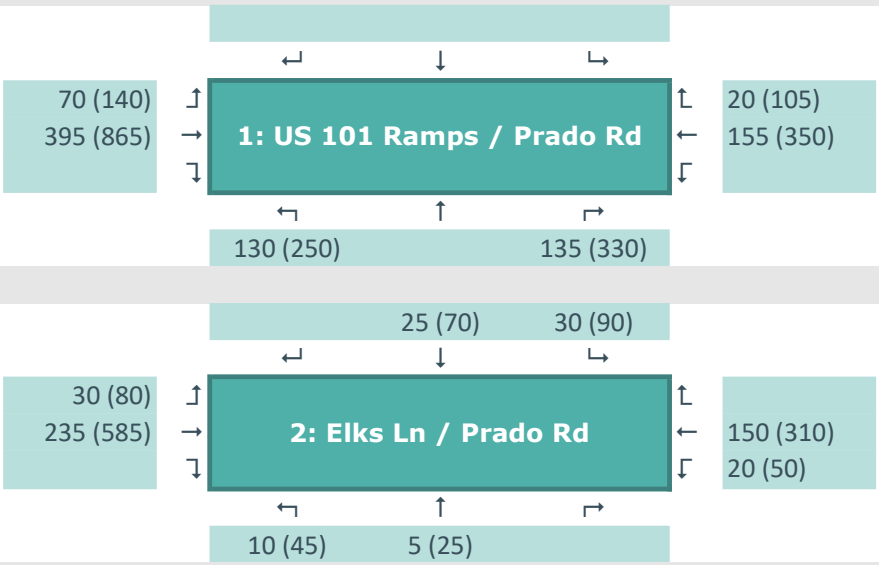
ALTERNATIVE 2B

AM PEAK HOUR

TABLE: AVERAGE DELAY

Intersection	Approach	Movement	Demand Volume	Served Volume	% Served	GEH	Average Delay (s)	LOS
US 101 Ramps / Prado Rd	NB	Left	240	236	98%	0.3	36	D
		Through	-	-				
		Right	300	304	101%	0.2	26	C
		U-Turn	-	-				
		Total	**540**	**540**	**100%**	**0.0**	**31**	**C**
	SB	Left	-	-				
		Through	-	-				
		Right	-	-				
		U-Turn	-	-				
		Total	**-**	**-**			**0**	
	EB	Left	100	99	99%	0.1	42	D
		Through	950	947	100%	0.1	16	B
		Right	-	-				
		U-Turn	-	-				
		Total	**1050**	**1046**	**100%**	**0.1**	**19**	**B**
	WB	Left	-	-				
		Through	420	417	99%	0.1	16	B
		Right	350	352	101%	0.1	2	A
		U-Turn	-	-				
		Total	**770**	**769**	**100%**	**0.0**	**9**	**A**
	Total		**2360**	**2355**	**100%**	**0.1**	**18**	**B**
Elks Ln / Prado Rd	NB	Left	10	10	100%	0.0	51	D
		Through	5	5	100%	0.0	41	D
		Right	5	5	100%	0.0	7	A
		U-Turn	-	-				
		Total	**20**	**20**	**100%**	**0.0**	**37**	**D**
	SB	Left	40	40	100%	0.0	45	D
		Through	20	20	100%	0.0	33	C
		Right	30	29	97%	0.2	10	A
		U-Turn	-	-				
		Total	**90**	**89**	**99%**	**0.1**	**31**	**C**
	EB	Left	40	37	93%	0.5	42	D
		Through	1170	1178	101%	0.2	12	B
		Right	40	39	98%	0.2	8	A
		U-Turn	-	-				
		Total	**1250**	**1254**	**100%**	**0.1**	**13**	**B**
	WB	Left	20	19	95%	0.2	41	D
		Through	730	729	100%	0.0	13	B
		Right	20	20	100%	0.0	10	A
		U-Turn	-	-				
		Total	**770**	**768**	**100%**	**0.1**	**13**	**B**
	Total		**2130**	**2131**	**100%**	**0.0**	**14**	**B**

TABLE: QUEUE COUNTERS (Avg/95th)



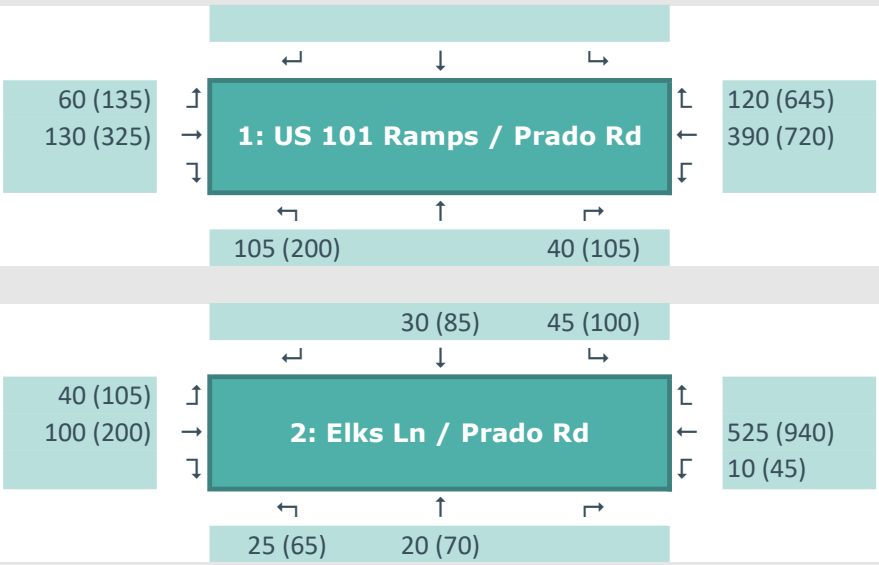
ALTERNATIVE 2B

PM PEAK HOUR

TABLE: AVERAGE DELAY

Intersection	Approach	Movement	Demand Volume	Served Volume	% Served	GEH	Average Delay (s)	LOS
US 101 Ramps / Prado Rd	NB	Left	180	176	98%	0.3	37	D
		Through	-	-				
		Right	150	152	101%	0.2	10	A
		U-Turn	-	-				
		Total	**330**	**328**	**99%**	**0.1**	**24**	**C**
	SB	Left	-	-				
		Through	-	-				
		Right	-	-				
		U-Turn	-	-				
		Total	**-**	**-**			**0**	
	EB	Left	100	96	96%	0.4	35	D
		Through	600	604	101%	0.2	7	A
		Right	-	-				
		U-Turn	-	-				
		Total	**700**	**700**	**100%**	**0.0**	**11**	**B**
	WB	Left	-	-				
		Through	910	903	99%	0.2	16	B
		Right	780	785	101%	0.2	6	A
		U-Turn	-	-				
		Total	**1690**	**1688**	**100%**	**0.0**	**11**	**B**
	Total		**2720**	**2716**	**100%**	**0.1**	**13**	**B**
Elks Ln / Prado Rd	NB	Left	30	28	93%	0.4	54	D
		Through	20	22	110%	0.4	42	D
		Right	20	20	100%	0.0	10	A
		U-Turn	-	-				
		Total	**70**	**70**	**100%**	**0.0**	**38**	**D**
	SB	Left	50	52	104%	0.3	50	D
		Through	10	11	110%	0.3	42	D
		Right	60	58	97%	0.3	15	B
		U-Turn	-	-				
		Total	**120**	**121**	**101%**	**0.1**	**32**	**C**
	EB	Left	50	50	100%	0.0	57	E
		Through	690	696	101%	0.2	9	A
		Right	10	8	80%	0.7	4	A
		U-Turn	-	-				
		Total	**750**	**754**	**101%**	**0.1**	**13**	**B**
	WB	Left	10	8	80%	0.7	58	E
		Through	1600	1594	100%	0.2	28	C
		Right	20	19	95%	0.2	24	C
		U-Turn	-	-				
		Total	**1630**	**1621**	**99%**	**0.2**	**28**	**C**
	Total		**2570**	**2566**	**100%**	**0.1**	**24**	**C**

TABLE: QUEUE COUNTERS (Avg/95th)



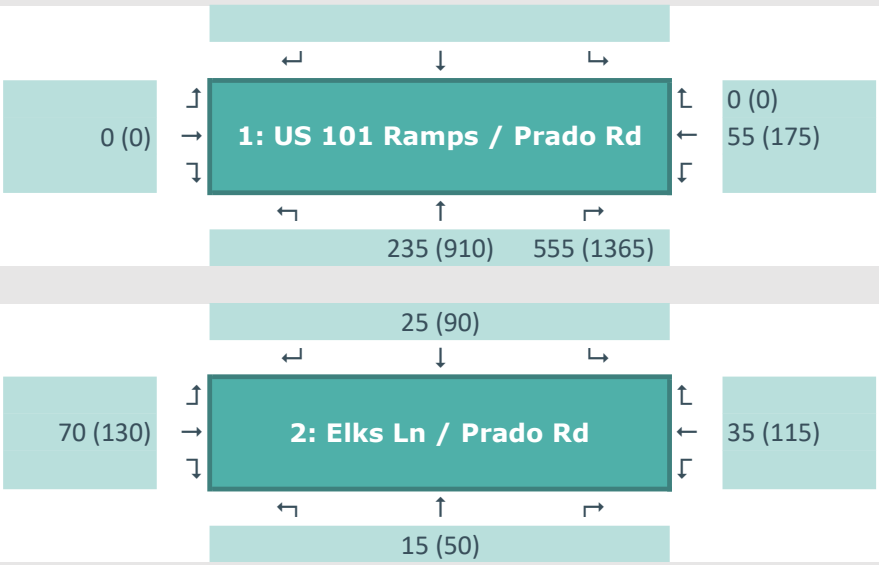
ALTERNATIVE 3

AM PEAK HOUR

TABLE: AVERAGE DELAY

Intersection	Approach	Movement	Demand Volume	Served Volume	% Served	GEH	Average Delay (s)	LOS
US 101 Ramps / Prado Rd	NB	Left	240	235	98%	0.3	76	F
		Through	-	-				
		Right	300	304	101%	0.2	118	F
		U-Turn	-	-				
		Total	**540**	**539**	**100%**	**0.0**	**100**	**F**
	SB	Left	-	-				
		Through	-	-				
		Right	-	-				
		U-Turn	-	-				
		Total	**-**	**-**			**0**	
	EB	Left	100	98	98%	0.2	5	A
		Through	950	948	100%	0.1	5	A
		Right	-	-				
		U-Turn	-	-				
		Total	**1050**	**1046**	**100%**	**0.1**	**5**	**A**
	WB	Left	-	-				
		Through	420	417	99%	0.1	5	A
		Right	350	352	101%	0.1	1	A
		U-Turn	-	-				
		Total	**770**	**769**	**100%**	**0.0**	**3**	**A**
	Total		**2360**	**2354**	**100%**	**0.1**	**26**	**D**
Elks Ln / Prado Rd	NB	Left	10	10	100%	0.0	13	B
		Through	5	5	100%	0.0	10	B
		Right	5	5	100%	0.0	3	A
		U-Turn	-	-				
		Total	**20**	**20**	**100%**	**0.0**	**10**	**A**
	SB	Left	40	40	100%	0.0	4	A
		Through	20	21	105%	0.2	4	A
		Right	30	28	93%	0.4	1	A
		U-Turn	-	-				
		Total	**90**	**89**	**99%**	**0.1**	**3**	**A**
	EB	Left	40	36	90%	0.6	7	A
		Through	1170	1178	101%	0.2	7	A
		Right	40	39	98%	0.2	2	A
		U-Turn	-	-				
		Total	**1250**	**1253**	**100%**	**0.1**	**7**	**A**
	WB	Left	20	19	95%	0.2	2	A
		Through	730	729	100%	0.0	1	A
		Right	20	21	105%	0.2	1	A
		U-Turn	-	-				
		Total	**770**	**769**	**100%**	**0.0**	**1**	**A**
	Total		**2130**	**2131**	**100%**	**0.0**	**5**	**A**

TABLE: QUEUE COUNTERS (Avg/95th)



ALTERNATIVE 3

PM PEAK HOUR

TABLE: AVERAGE DELAY

Intersection	Approach	Movement	Demand Volume	Served Volume	% Served	GEH	Average Delay (s)	LOS
US 101 Ramps / Prado Rd	NB	Left	180	177	98%	0.2	6	A
		Through	-	-				
		Right	150	152	101%	0.2	6	A
		U-Turn	-	-				
		Total	**330**	**329**	**100%**	**0.1**	**6**	**A**
	SB	Left	-	-				
		Through	-	-				
		Right	-	-				
		U-Turn	-	-				
		Total	**-**	**-**			**0**	
	EB	Left	100	95	95%	0.5	2	A
		Through	600	604	101%	0.2	2	A
		Right	-	-				
		U-Turn	-	-				
		Total	**700**	**699**	**100%**	**0.0**	**2**	**A**
	WB	Left	-	-				
		Through	910	901	99%	0.3	16	C
		Right	780	782	100%	0.1	3	A
		U-Turn	-	-				
		Total	**1690**	**1683**	**100%**	**0.2**	**10**	**B**
	Total		**2720**	**2711**	**100%**	**0.2**	**8**	**A**
Elks Ln / Prado Rd	NB	Left	30	29	97%	0.2	6	A
		Through	20	21	105%	0.2	5	A
		Right	20	20	100%	0.0	2	A
		U-Turn	-	-				
		Total	**70**	**70**	**100%**	**0.0**	**4**	**A**
	SB	Left	50	52	104%	0.3	18	C
		Through	10	11	110%	0.3	19	C
		Right	60	57	95%	0.4	10	B
		U-Turn	-	-				
		Total	**120**	**120**	**100%**	**0.0**	**14**	**B**
	EB	Left	50	51	102%	0.1	5	A
		Through	690	698	101%	0.3	4	A
		Right	10	8	80%	0.7	1	A
		U-Turn	-	-				
		Total	**750**	**757**	**101%**	**0.3**	**4**	**A**
	WB	Left	10	9	90%	0.3	7	A
		Through	1600	1597	100%	0.1	6	A
		Right	20	19	95%	0.2	4	A
		U-Turn	-	-				
		Total	**1630**	**1625**	**100%**	**0.1**	**6**	**A**
	Total		**2570**	**2572**	**100%**	**0.0**	**6**	**A**

TABLE: QUEUE COUNTERS (Avg/95th)