Endo Engineering *Traffic Engineering Air Quality Studies Noise Assessments*

September 20, 2006

Mr. David Barakian
Director of Public Works/ City Engineer
City of Palm Springs
3200 E. Tahquitz Canyon Way
Palm Springs, CA 92262

SUBJECT: Palm Springs General Plan Update Peak Hour Intersection Level of Service Analysis

Dear Mr. Barakian;

Endo Engineering is pleased to submit this letter report summarizing the General Plan buildout midday and evening peak hour intersection control delay, volume-to-capacity ratio, and level of service values at twelve major intersections located throughout the City of Palm Springs. The existing intersection approach lanes, the future intersection approach lanes required to achieve LOS D or better operation, and the projected General Plan Update buildout turning movement volume projections for each intersection evaluated are documented herein.

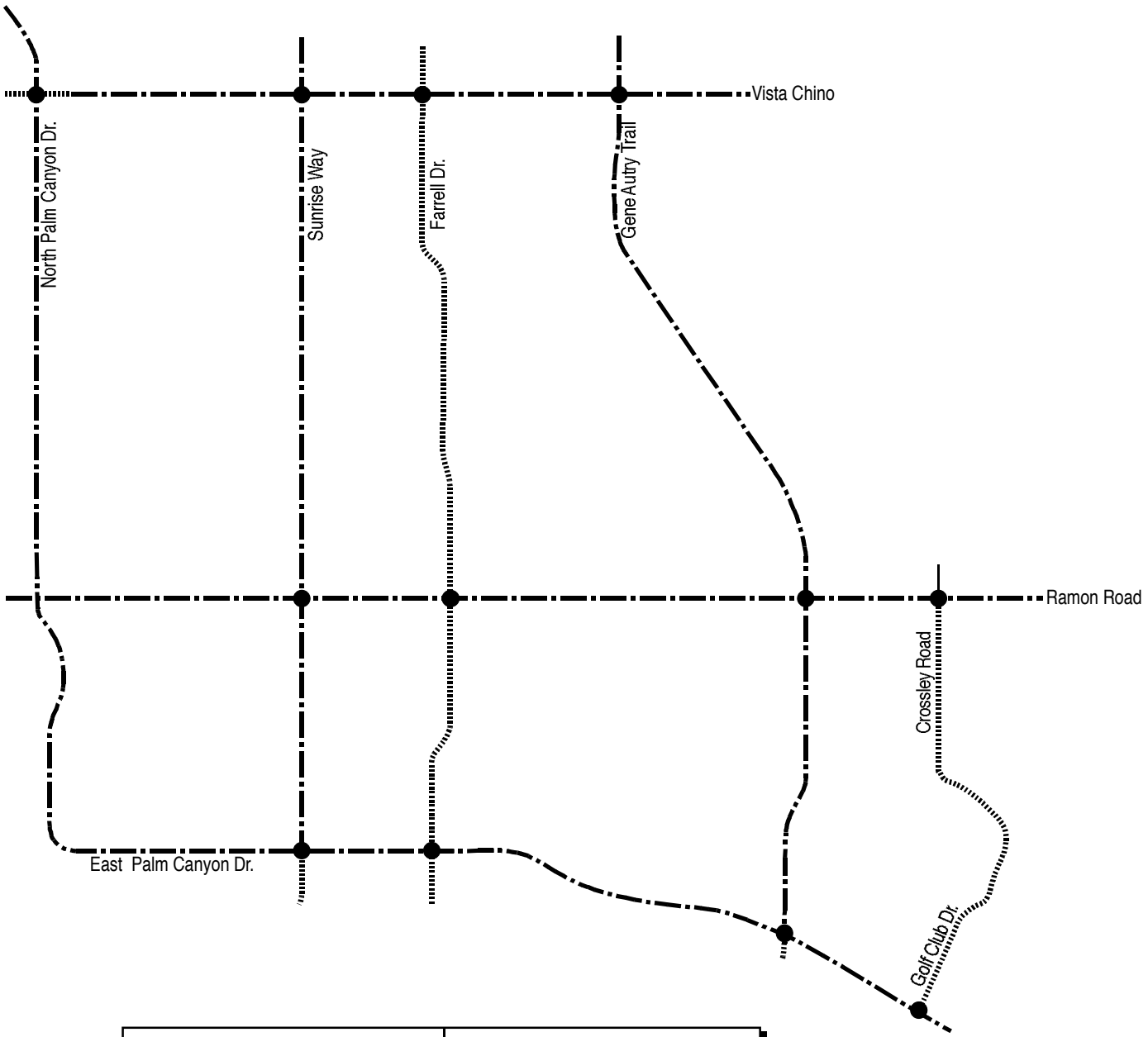
The intersections evaluated are shown in Figure 1 with the maximum intersection approach lane configurations that can be accommodated by major and secondary thoroughfares in the City of Palm Springs. The midday and evening peak hour evaluation determined that five of these intersections will meet the City of Palm Springs minimum intersection performance standard (LOS D) with the General Plan buildout traffic volumes and existing approach lanes. Two intersections will require a third eastbound and westbound through lane as well as additional turn lanes to provide acceptable levels of service upon General Plan buildout. Five intersections will require one or more exclusive turn lanes to provide acceptable levels of service in the future.

Background Information

Future traffic demands are directly related to the type and intensity of future land uses. The City of Palm Springs is currently in the process of updating the General Plan Circulation Element to include a roadway plan that meets the desires of the community for mobility and accessibility while supporting the development intensity anticipated by the Land Use Element. Peak season average weekday traffic projections representing buildout of the Palm Springs General Plan can be compared to the daily design capacity of each master planned roadway to determine the portion of the roadway capacity that will be utilized by the future traffic volumes. However, as invariably happens, the projected demand appears to exceed the capacity along some of the master planned major thoroughfares. The daily General Plan buildout traffic projections appear to indicate a need to increase the Circulation Element classifications of some master planned streets to provide additional capacity in areas where this is impractical.

28811 Woodcock Drive, Laguna Niguel, CA 92677-1330
Phone: (949) 362-0020 FAX: (949) 362-0015

Figure 1
Intersections Evaluated



Classification	Maximum Number Of Approach Lanes Left	Through	Right
Secondary Thoroughfare	1	2	1
Secondary Thoroughfare (Alt.)	2	2	0
Major Thoroughfare	2	3	1

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Scale: 1" = 3300'

It should be noted that a daily level of service analysis is a "broad-brush" tool used to provide an indication of when traffic congestion may be expected on a typical urban arterial street segment. It is based on the daily traffic volume, the number of midblock through lanes, and a generalized estimate of the capacity of a typical master planned facility in an urbanized area with a similar number of through lanes. A peak hour intersection analysis can more clearly define the circulation system required to satisfy the General Plan buildout travel demands.

Capacity is always an issue when the property in the vicinity of a major street becomes fully urbanized. When capacity becomes a problem, increasing signal spacing and limiting median access (with directional median openings) are two alternatives to widening from four to six lanes. A four-lane divided roadway with 0.50-mile signal spacing and limited access can provide service comparable to that of a six-lane roadway with 0.25-mile signal spacing and full-turn median openings between signals.[1]

Cycle lengths should be as short as possible to minimize delay for all users and queue lengths. But as volumes on arterials and cross streets increase, longer cycle lengths can be used to increase capacity by minimizing lost time. Furthermore, longer signal cycle lengths permit longer pedestrian crossing times. Flaring the minor street to provide additional turn lanes can compensate for the reduced green time on the minor street caused by increases in the portion of the cycle devoted to green on the major thoroughfare.

Since the capacity of a roadway link is limited by the amount of traffic that can flow through the intersections, favorable intersection conditions can provide better levels of service on a roadway segment than indicated by the daily volume and level of service. In particular, low-volume cross streets or tee intersections can result in a higher percentage of the traffic signal cycle being allocated to the primary traffic flow, and allow acceptable levels of service with higher traffic volumes. Additional turn lanes can increase the flow through the intersection without additional through lanes. A daily volume-to-capacity analysis is, therefore, an indicator of high traffic demand rather than an absolute indication of an unavoidable significant impact.

Capacity augmentation features can be identified and applied to intersections with restricted rights-of-way that experience high demand during peak hours. In those instances where a roadway is found to be operating at acceptable levels of service except along one link, localized capacity enhancements at intersections can be identified and implemented to maintain network continuity. In most cases, this type of localized improvement will be more effective than upgrading a short roadway segment with additional through lanes.

Study Objectives

The objective of the analysis is to conduct a detailed peak hour evaluation of specific intersections in areas where potential capacity constraints may occur upon General Plan buildout. The evaluation will provide valuable information regarding future intersection improvements that may be needed to accommodate all transportation modes. More importantly, it should clarify whether or not localized capacity enhancements can be implemented at intersections (rather than Circulation Element upgrades along various master planned segments) to meet future travel demands while maintaining network continuity along existing and master planned four-lane and six-lane major thoroughfares.

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1. Stover, Vergil G. and Koepke, Frank J., *Transportation and Land Development,* (Second Edition), 2002, Figure 4-20.

Methodology and Minimum Performance Standard

Peak hour traffic creates the heaviest demand on the circulation system and the lane configuration at intersections is the limiting factor in roadway capacity. Consequently, peak hour intersection capacity analyses are useful indicators of "worst-case" conditions. The City of Palm Springs requires the use of the *Highway Capacity Manual* methodology to determine the level of service at intersections. The latest update of the *Highway Capacity Manual* (HCM 2000) presents the best available techniques for determining capacity, delay, and LOS for transportation facilities.[2] The Circulation Element includes as a policy, the provision and maintenance of level of service (LOS) D operation for the City's circulation network, based upon average weekday conditions during the peak month of March. The peak hour delay and levels of service were determined at the intersections of interest with the methodologies outlined in the HCM 2000.

When mitigation was deemed to be required to achieve LOS D operation, a protocol was followed to identify additional intersection approach lanes. It entailed assuming the existing approach lane configurations and adding localized capacity enhancements at intersections (such as flaring to accommodate additional turn lanes) only where indicated by the future traffic volume, in an effort to maintain network continuity. In most cases, this type of localized improvement is more cost effective than upgrading a short roadway segment with additional through lanes. Consideration was given to the use of additional through lanes only when warranted, based upon the effectiveness of the additional lane in mitigating the impact identified.

Peak Hour Traffic Volumes

Recent peak season midday (11:30 AM to 1:30 PM) and evening (4:00 PM to 6:00 PM) peak hour turning movement traffic count data was available for typical weekdays at nine of the intersections evaluated. The date of each traffic count is provided in Attachment A. New traffic count data was collected at the end of August, 2006 (after the school year began) at three additional intersections. The new traffic count data is included in Attachment A. The new traffic count data was seasonally adjusted by increasing it by fifteen percent to reflect peak season conditions.

The existing peak season weekday peak hour traffic volume data in Figure 2 was used in conjunction with the daily General Plan buildout traffic projections (developed in conjunction with the City of Palm Springs General Plan Update process) to develop year 2025 General Plan buildout peak hour turning movement volume projections. Year 2025 peak hour traffic volumes were developed by assuming that the increase in peak hour volumes between today and the year 2025 would mirror the change in the daily volumes. It was assumed that 8 percent of the daily volume occurs in the evening peak hour.

The existing turning movement volumes were proportionally increased to represent year 2025 turning movement projections by multiplying them by the ratio of future year 2025 daily traffic divided by current daily traffic volumes on both intersection legs associated with each turning movement. The increase in peak hour turning volumes was normalized to the growth in daily traffic volumes to ensure that the future peak hour volumes more accurately reflected the overall increase in daily traffic volumes. In those few instances where current volumes exceeded the future volume projections, the current volume was

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2. *Highway Capacity Manual;* Fourth Edition; TRB Report 209; Transportation Research Board, National Research Council; Washington, D.C.; 2000.

Figure 2

Existing Peak Hour Turning Movement Volumes
(Peak Season Weekday)

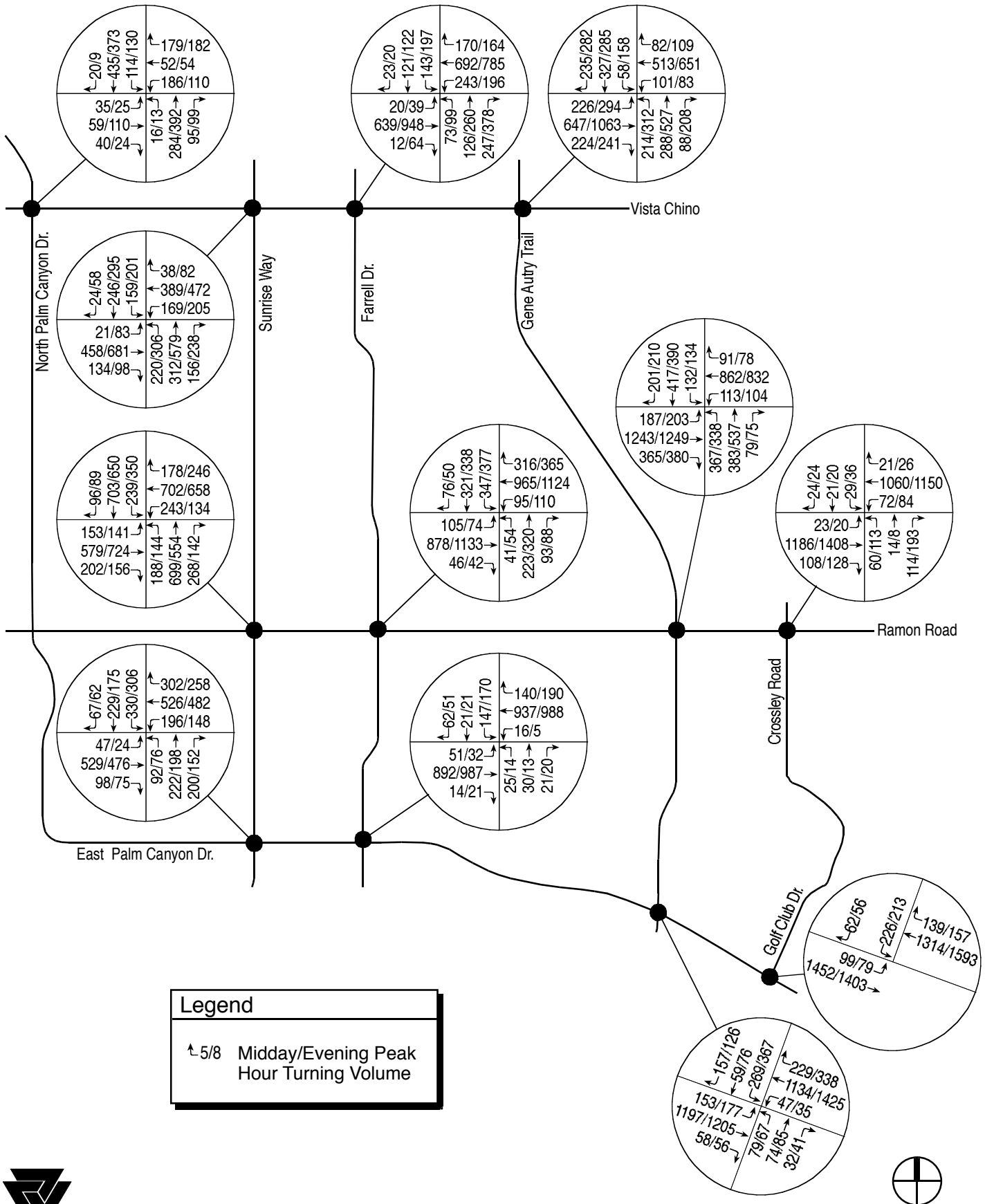
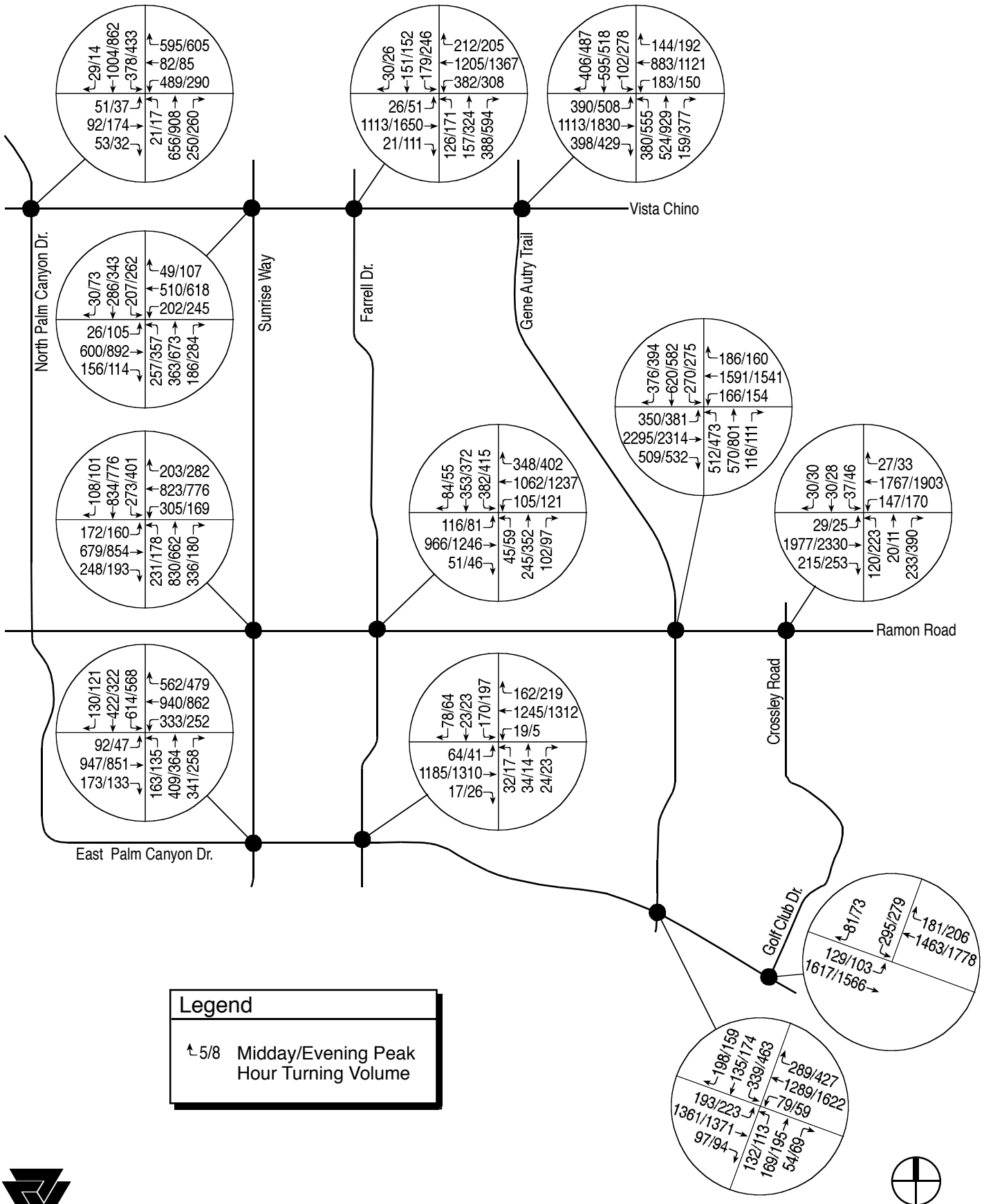


Figure 3

General Plan Buildout Peak Hour Turning Movement Projections



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Scale: 1" = 3300'

increased by ten percent to represent the future year 2025 peak hour volume. The resulting General Plan buildout peak hour turning movement projections are shown in Figure 3.

Intersection Approach Lanes

The twelve intersections were initially evaluated with the existing approach lanes (shown in Figure 4) to determine whether or not widening to the full General Plan cross-section would be required to accommodate the future traffic demand. Based upon this evaluation, it was determined that the existing approach lanes at five intersections would be able to accommodate the General Plan Buildout traffic volumes with a signal cycle length to 120 seconds. These intersections included:

- Sunrise Way at East Palm Canyon Drive;
- Farrell Drive at East Palm Canyon Drive;
- Gene Autry Trail at East Palm Canyon Drive;
- Golf Club Drive at East Palm Canyon Drive; and
- Gene Autry Trail at Ramon Road.

Those intersections that would not meet the City of Palm Springs minimum intersection performance standard of LOS D with the existing approach lane configuration were evaluated further. Initially, full improvement to the master planned cross-section was assumed for those intersections which required improvement. However, that resulted in many additional approach lanes being assumed that did not correspond directly with the identified General Plan Buildout travel demands. In addition, the wider roadways that resulted required longer pedestrians crossing times. This tended to reduce the motor vehicle capacity of those intersections serving the highest future traffic demands.

Approach lanes were added only where required to effectively serve the future traffic volumes at acceptable levels of service. In no case were more intersection approach lanes assumed than the maximum number of approach lanes shown in Figure 1 for major and secondary thoroughfares (i.e., up to six lanes for majors and four lanes for secondaries with a maximum of two left-turn lanes and exclusive right-turn lanes where warranted). As shown in Figure 1, an alternate approach lane configuration was assumed, where appropriate, for secondary thoroughfares with a low right-turn volume and high left-turn volume.

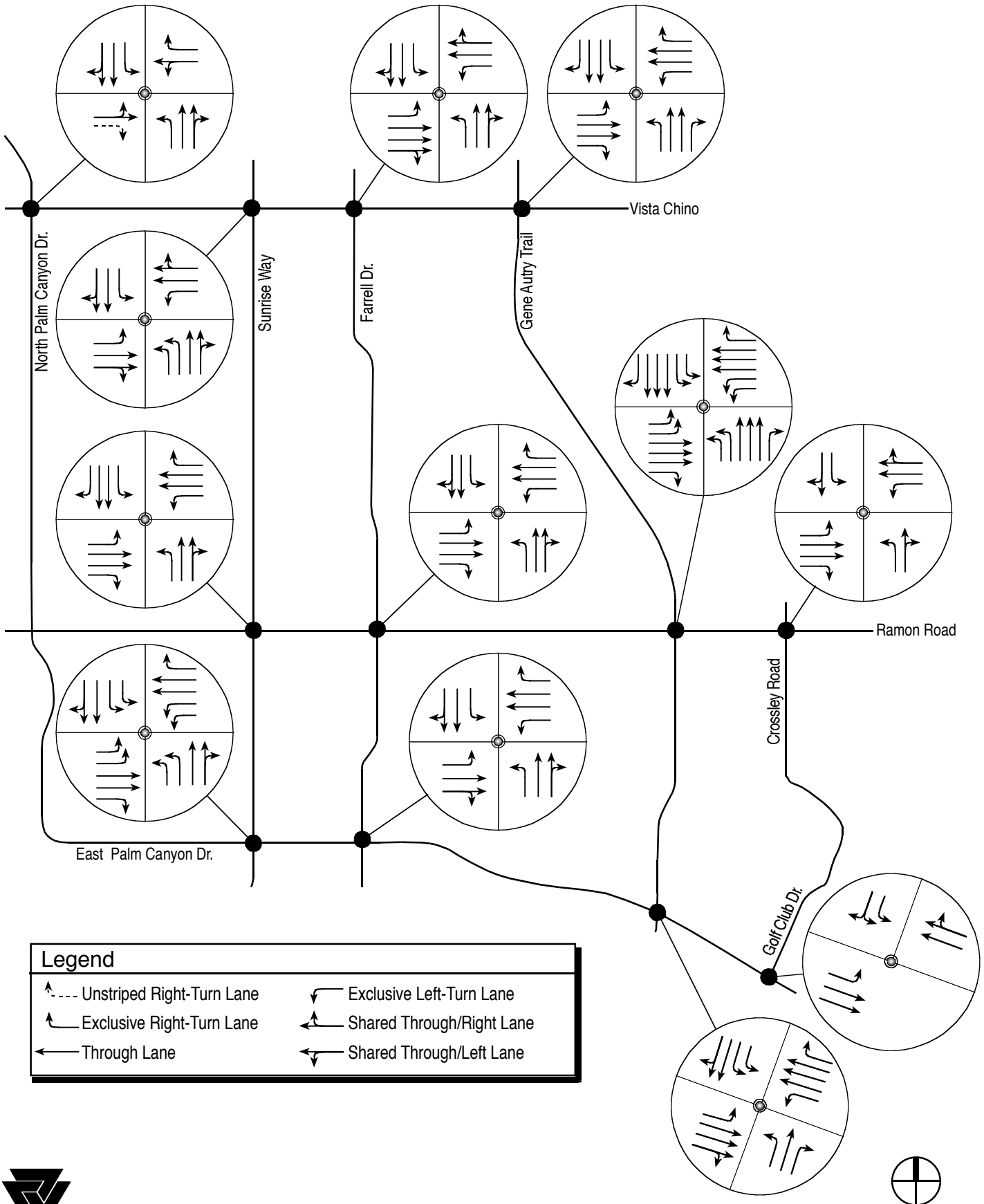
In analyzing options at intersections, pedestrians and motor vehicles have equal status; therefore, some loss of motor vehicle capacity must be accepted in order to accommodate minimum pedestrian crossing times. All of the signals were timed to accommodate pedestrian crossing preemption on all intersection legs, as discussed below.

Pedestrian Crossing Time Requirements

Pedestrian crossing-time requirements can have a significant impact on intersection operations, especially in coordinated signal systems where a background cycle length is used to achieve consistent operation between consecutive intersections. In general, shorter cycle lengths are preferable to longer ones because they result in less delay and shorter queues. However, the need to accommodate multiple pedestrian movements across wide roadways, coupled with complex signal phasing and minimum green requirements to accommodate signal progression in multiple directions, may sometimes require the use of longer cycle lengths. To achieve acceptable levels of service with General Plan buildout traffic volumes and accommodate minimum pedestrian crossing times, it was necessary to increase the 90-second signal cycle length in the coordinated signal system along Ramon Road to a 120-second cycle length.

Figure 4

Existing Intersection Approach Lanes



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The MUTCD states that the pedestrian clearance time should allow a pedestrian crossing in the crosswalk to leave the curb and travel to at least the far side of the traveled way or to a median of sufficient width for pedestrians to wait before opposing vehicles receive a green indication. The MUTCD uses a walk speed of 4.0 feet per second for determining crossing times. The pedestrian clearance time may be entirely contained within the vehicular green interval or may be entirely contained within the vehicular green and yellow clearance interval. At high-volume locations, it may be necessary as a tradeoff for vehicular capacity to use the lost time (the yellow change interval and all-red time) in satisfying the calculated pedestrian clearance time.

The pedestrian clearance time (in seconds) was calculated as the crossing distance (in feet) divided by the walking speed. The crossing distance was determined from the near curb to the far side of the traveled way by assuming standard twelve-foot wide lanes and counting all approach lanes as well as the number of departing through lanes to be crossed on each intersection leg. The control delay and LOS evaluations assumed a three-second pedestrian start-up time. A walk speed of 4.0 feet per second was assumed to determine the pedestrian crossing times. Figure 5 illustrates the minimum pedestrian crossing times assumed for the twelve intersections evaluated.

The ITE recommends that median widths ideally be ten feet or wider to provide enough space for pedestrians to stand. Median refuge islands should be at least six feet wide and in no case less than four feet wide when used by pedestrians and bicyclists.[3] Based on this criteria, the raised medians at the twelve intersections evaluated were assumed to not provide sufficient width for pedestrians to wait and the two-stage crossing concept was not considered applicable.

Since all of the signals were timed to accommodate pedestrian crossing preemption on all intersection legs, many will operate with higher motor vehicle capacities if the signal preemption does not occur. In particular, the intersections of major thoroughfares with secondary thoroughfares are likely to operate with higher intersection capacities than indicated herein. The alteration of the optimum signal timing for motor vehicle capacity is most likely to occur where a smaller street intersects a high volume larger street with motor vehicle demands that require most of the green time. Pedestrians require more time to cross wider streets; therefore, more green time must be allocated to the secondary thoroughfare when pedestrians are crossing a major thoroughfare.

Peak Hour Control Delay and LOS

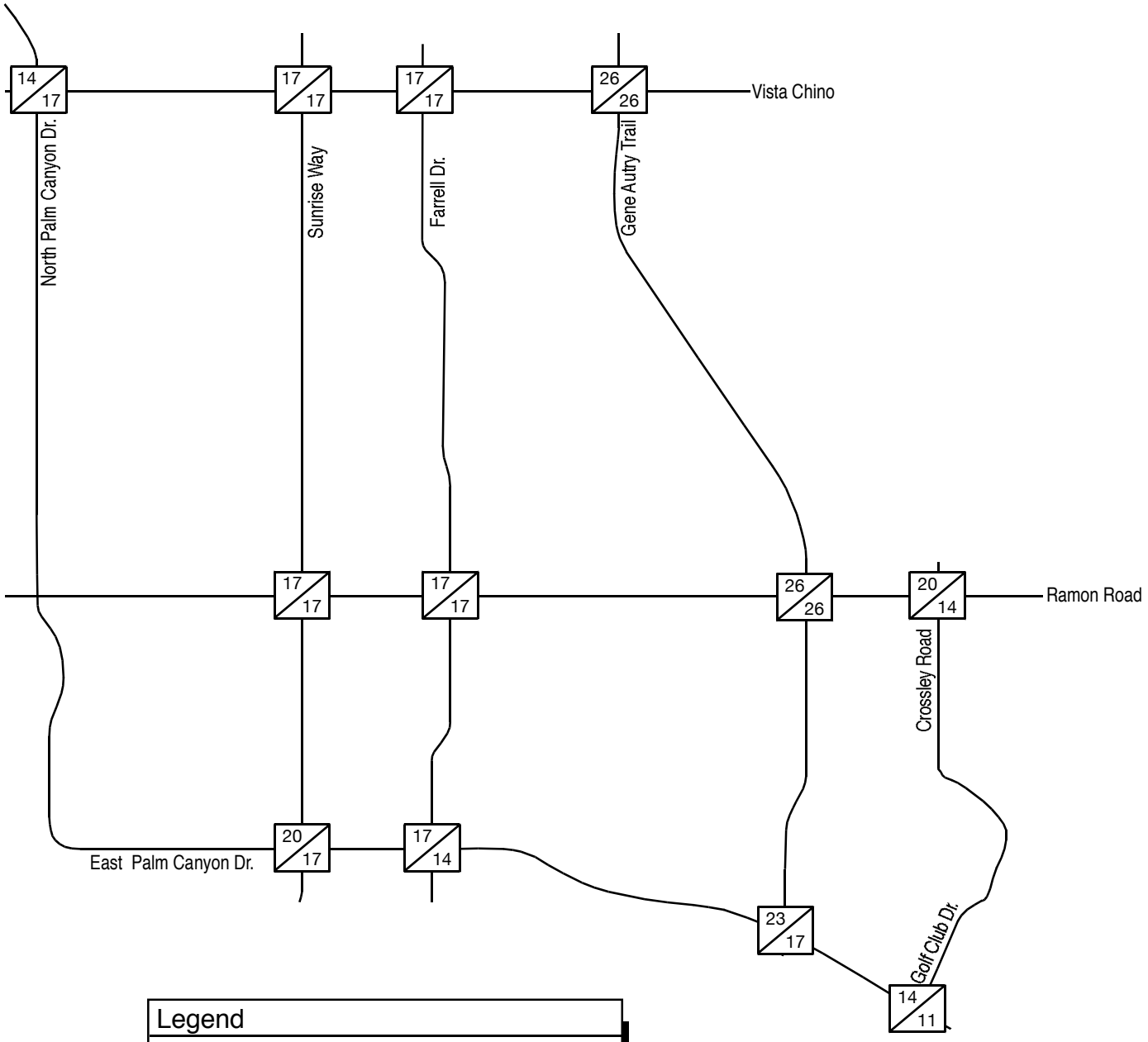
The Highway Capacity Software (HCS 2000) package is a direct computerized implementation of the HCM 2000 procedures, prepared under FHWA sponsorship and maintained by the McTrans Center at the University of Florida Transportation Research Center. HCS 2000 Version 4.1e was employed to evaluate the signalized intersections. The various HCS input parameter assumptions are provided in Attachment B (see Table B-1 and B-2). The relationship between peak hour intersection control delay and levels of service is provided in Attachment B (see Table B-3). The Highway Capacity Software (HCS) detailed reports are also provided for each intersection in Attachment B.

Various traffic analysis tools that are contained within the *Highway Capacity Manual* can be utilized to assist in the decision-making process regarding changes to the transportation system. The HCM 2000 methodology addresses the capacity, V/C ratio, and LOS of

3. Zegeer, Charles V., *Design and Safety of Pedestrian Facilities* A Recommended Practice of the Institute of Transportation Engineers, March 1998, pg. 48.

Figure 5

Minimum Pedestrian Crossing Time Assumed
(120-Second Cycle)



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Scale: 1" = 3300'

intersection approaches as well as the LOS of the intersection as a whole. The analysis is undertaken in terms of the ratio of demand flow rate to capacity (V/C ratio) for individual movements or approach lane groups during the peak hour and the composite V/C ratio for the sum of the critical movements or lane groups within the intersection. The critical V/C ratio is an indicator of whether or not the physical geometry and signal design provide sufficient capacity for the movements.

The volume-to-capacity ratio for each individual movement or approach lane group during the peak hour indicates how close the volume is to the capacity. When the volume-to-capacity ratio is less than 0.60 for all movements, there is ample capacity available for each of the turning movement volumes and it can be concluded that additional intersection approach lanes are not needed.

The measures of effectiveness for signalized intersections are: average control delay per vehicle, the critical V/C ratio, and level of service. The level of service is based on the average control delay for all entering vehicles. Average control delay is the total time vehicles are stopped in an intersection approach during a specified time interval divided by the volume departing from the approach during the same time period. It includes queue follow-up time (i.e. the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position). When delay levels are acceptable for the intersection as a whole but unacceptable for certain lane groups, the phase plan, allocation of green time, or both, may be examined to provide more efficient handling of the disadvantaged movement or movements.

A critical V/C ratio less than 1.00 indicates that all movements at the intersection can be accommodated within the defined cycle length and phase sequence by proportionally allocating green time. In other words, the total available green time in the phase sequence is adequate to handle all movements, if properly allocated. When V/C ratios are greater than 1.0 for either an individual lane group or for the overall intersection, departure volumes are less than arrival volumes and lengthy queues of vehicles may be expected.

Figure 6 illustrates the intersection approach lanes required to achieve LOS D or better operation in the peak hours upon General Plan buildout. These approach lanes were assumed to determine the intersection control delay and level of service values. Table 1 summarizes the peak hour average intersection control delay, the critical volume-to-capacity ratio, and the level of service for the twelve intersections evaluated.

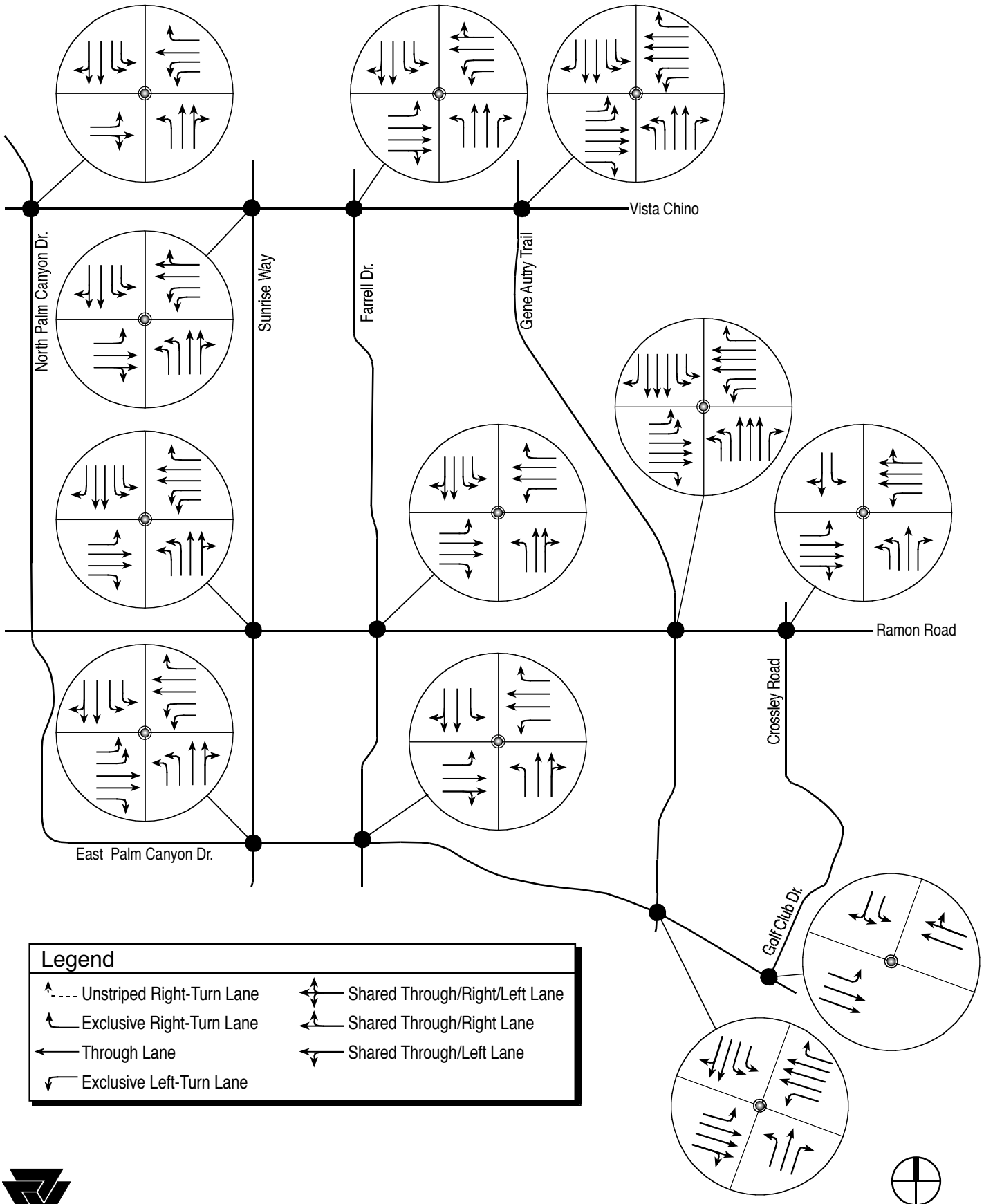
Intersection Improvements That Achieve Performance Standard

By comparing the intersection approach lanes that were assumed in the General Plan buildout LOS evaluation (see Figure 6) to the existing intersection approach lanes (see Figure 4) the intersection improvements that would accommodate future traffic volumes at acceptable levels of service were identified. Figure 7 illustrates where improvements were assumed and the additional approach lanes that would assure peak hour intersection operation at LOS D or better and adequate pedestrian crossing times at the intersections evaluated.

Table 2 lists the improvements by intersection that would achieve the City's minimum intersection performance standard upon General Plan buildout. The fully improved intersection of Gene Autry Trail and Ramon Road and all four intersections evaluated along East Palm Canyon Drive are expected to provide acceptable levels of service with existing approach lanes. Two intersections will require additional through lanes; Gene Autry Trail at Vista Chino and Crossley Road at Ramon Road are expected to require a third westbound and a third eastbound through lane to accommodate year 2025 traffic demands.

Figure 6

Assumed General Plan Buildout Intersection Approach Lanes



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Scale: 1" = 3300'

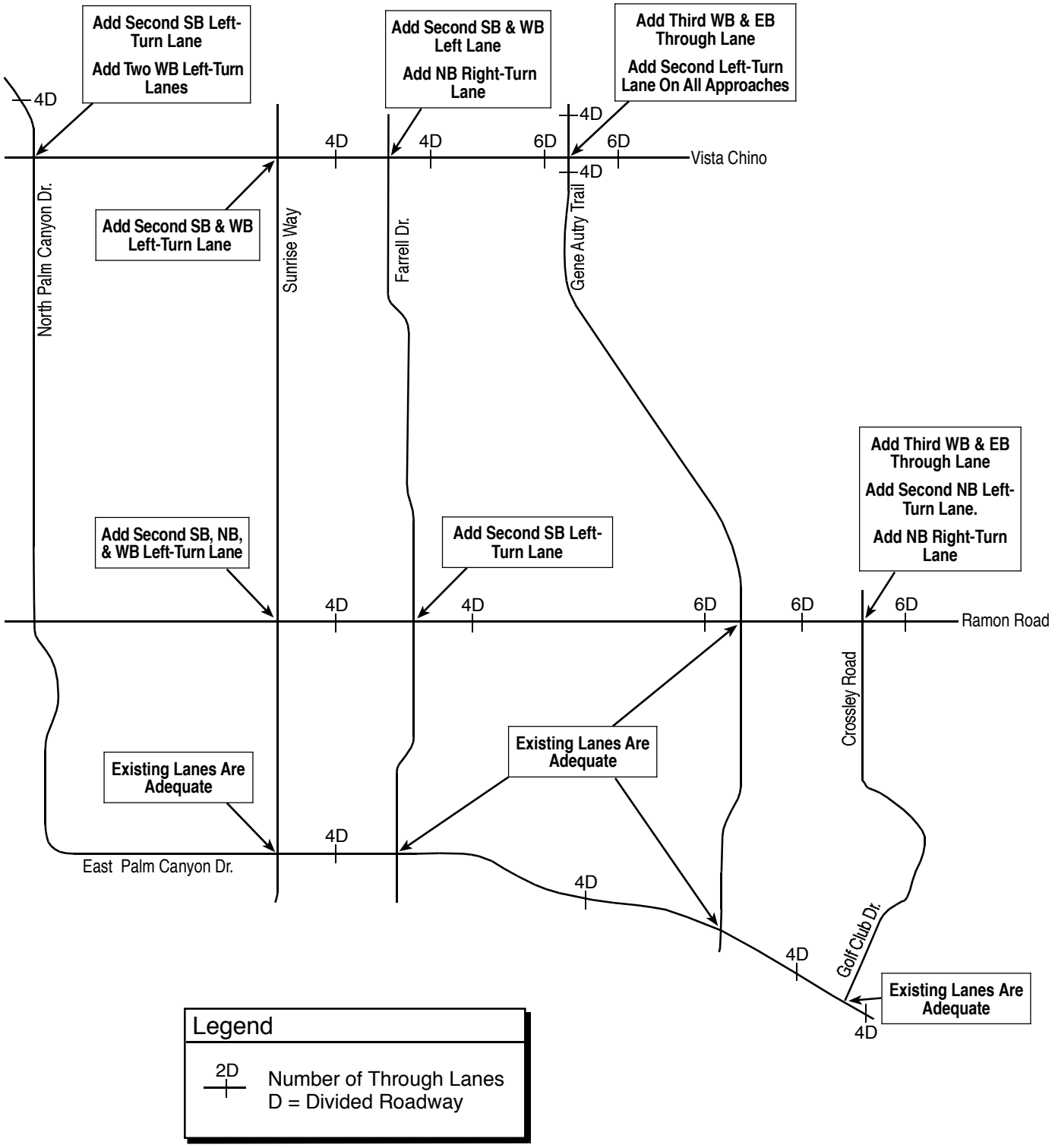
Table 1
General Plan Buildout Peak Season Typical Weekday
Peak Hour Intersection Delay and LOS Summary

Signalized Intersection (Weekday Interval)	Delay[a] (Sec./Veh.)	Critical V/C Ratio	Level of[b] Service
North Palm Canyon Drive @ Vista Chino			
- Midday Peak Hour	41.4	0.74	D
- Evening Peak Hour	38.4	0.79	D
Sunrise Way @ Vista Chino			
- Midday Peak Hour	38.0	0.61	D
- Evening Peak Hour	50.1	0.89	D
Farrell Drive @ Vista Chino			
- Midday Peak Hour	36.7	0.76	D
- Evening Peak Hour	39.6	0.87	D
Gene Autry Trail @ Vista Chino			
- Midday Peak Hour	33.0	0.67	C
- Evening Peak Hour	44.3	0.90	D
Sunrise Way @ Ramon Road			
- Midday Peak Hour	53.5	0.89	D
- Evening Peak Hour	41.6	0.82	D
Farrell Drive @ Ramon Road			
- Midday Peak Hour	32.9	0.69	C
- Evening Peak Hour	36.3	0.80	D
Gene Autry Trail @ Ramon Road			
- Midday Peak Hour	46.5	0.92	D
- Evening Peak Hour	45.6	0.89	D
Crossley Road @ Ramon Road			
- Midday Peak Hour	24.7	0.70	C
- Evening Peak Hour	46.7	0.84	D
Sunrise Way @ East Palm Canyon Drive			
- Midday Peak Hour	50.0	0.91	D
- Evening Peak Hour	38.7	0.79	D
Farrell Drive @ East Palm Canyon Drive			
- Midday Peak Hour	26.7	0.61	C
- Evening Peak Hour	27.1	0.64	C
Gene Autry Trail @ East Palm Canyon Drive			
- Midday Peak Hour	33.0	0.67	C
- Evening Peak Hour	39.6	0.81	D
Golf Club Drive @ East Palm Canyon Drive			
- Midday Peak Hour	21.7	0.81	C
- Evening Peak Hour	24.1	0.90	C

a. Delay = Intersection Control Delay. Assumes a 120-second signal cycle, approach lanes shown in Figure 6, five percent heavy vehicles, and minimum green times sufficient to accommodate pedestrians.

b. Intersection LOS was determined from the delay (≤10 sec./veh.=LOS A; >10 and ≤20 sec./veh.=LOS B; >20 and ≤35 sec./veh.=LOS C; >35 and ≤55 sec./veh.=LOS D; >55 and ≤80 sec./veh.=LOS E; >80 sec./veh. = LOS F) per 2000 HCM page 10-16.

Figure 7
General Plan Buildout Intersection Mitigation



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Scale: 1" = 3300'

Table 2
Improvements That Achieve Required Level of Service

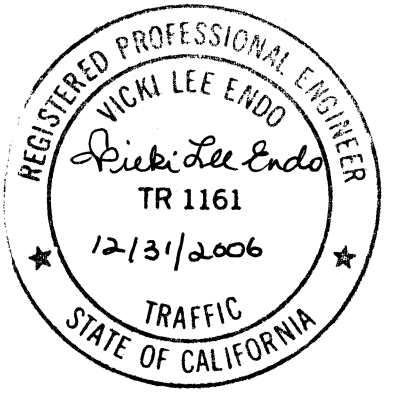
Intersection	Required Improvements
Palm Canyon Drive @ Vista Chino	Add a second southbound left-turn lane. Add two westbound left-turn lanes.
Sunrise Way @ Vista Chino	Add a second southbound left-turn lane. Add a second westbound left-turn lane.
Farrell Drive @ Vista Chino	Add a second southbound left-turn lane. Add a second westbound left-turn lane. Add a northbound right-turn lane.
Gene Autry Trail @ Vista Chino	Add a third westbound through lane. Add a third eastbound through lane. Add a second northbound left-turn lane. Add a second southbound left-turn lane. Add a second eastbound left-turn lane. Add a second westbound left-turn lane.
Sunrise Way @ Ramon Road	Add a second northbound left-turn lane. Add a second southbound left-turn lane. Add a second westbound left-turn lane.
Farrell Drive @ Ramon Road	Add a second southbound left-turn lane.
Gene Autry Trail @ Ramon Road	The existing lanes are adequate.
Crossley Road @ Ramon Road	Add a third westbound through lane. Add a third eastbound through lane. Add a second northbound left-turn lane. Add a northbound right-turn lane.
Sunrise Way @ East Palm Canyon Drive	The existing lanes are adequate.
Farrell Drive @ East Palm Canyon Drive	The existing lanes are adequate.
Gene Autry Trail @ East Palm Canyon Drive	The existing lanes are adequate.
Golf Club Drive @ East Palm Canyon Drive	The existing lanes are adequate.

We hope that the information herein meets your needs. Should you have questions or comments, please do not hesitate to contact our offices by telephone at (949) 362-0020, by facsimile at (949) 362-0015, or via e-mail at endoengr@cox.net. We look forward to discussing our findings with you.

Cordially,
ENDO ENGINEERING

Gregory Endo
Principal

Attachments



Attachment A
Existing Peak Hour Traffic Volumes

Current peak season traffic count data was available for nine of the twelve intersections in recent traffic studies completed for projects in the City of Palm Springs. New peak hour traffic counts were initiated at the three remaining intersections in August, 2006. The traffic count data for these three intersections is attached. The date of each traffic count utilized to develop the General Plan buildout turning movement volume projections is provided in Table A-1.

Table A-1
Peak Hour Traffic Count Dates

Intersection	Date Traffic Count Was Made
Palm Canyon Drive @ Vista Chino	August 29, 2006 (New Count)[a]
Sunrise Way @ Vista Chino	March 15, 2005
Farrell Drive @ Vista Chino	March 15, 2005
Gene Autry Trail @ Vista Chino	March 1, 2005
Sunrise Way @ Ramon Road	January 11, 2005
Farrell Drive @ Ramon Road	January 12, 2005
Gene Autry Trail @ Ramon Road	January 13, 2005
Crossley Road @ Ramon Road	January 25, 2005
Sunrise Way @ East Palm Canyon Drive	August 30, 2006 (New Count)[a]
Farrell Drive @ East Palm Canyon Drive	August 29, 2006 (New Count)[a]
Gene Autry Trail @ East Palm Canyon Drive	January 20, 2005
Golf Club Drive @ East Palm Canyon Drive	January 25, 2005

a. These counts were made after the school year began. The August, 2006 traffic count data was increased by 15 percent to reflect peak season conditions, prior to being used to develop the General Plan buildout traffic volume projections.

New Traffic Count Data
For Three Intersections

COUNTS UNLIMITED INC.
25424 JACLYN AVENUE
MORENO VALLEY CA. 92557
951-247-6716

CITY OF PALM SPRINGS
N/S: PALM CANYON DRIVE
E/W: VISTA CHINO
WEATHER: SUNNY

File Name : PSPCVCMD
Site Code : 0099132
Start Date : 8/29/2006

Groups Printed- TOTAL VOLUME

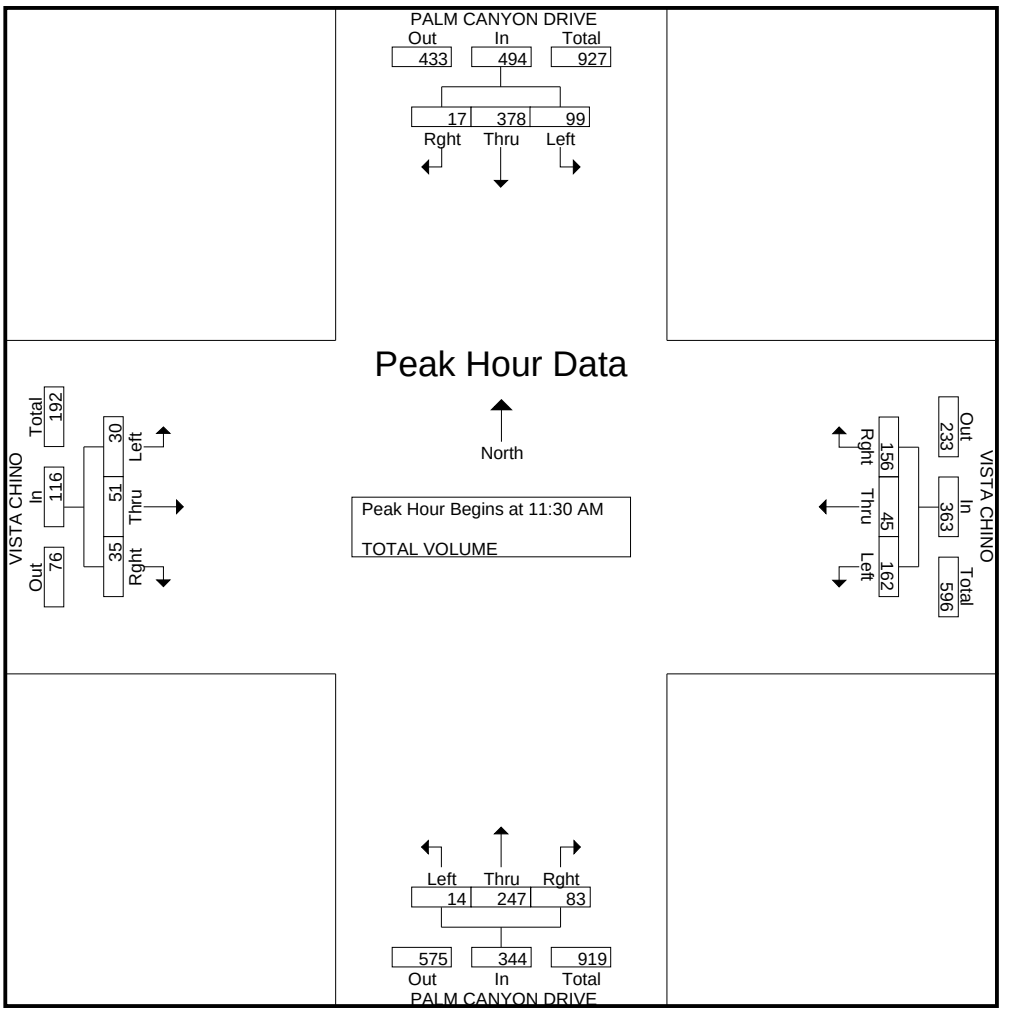
	PALM CANYON DRIVE Southbound				VISTA CHINO Westbound				PALM CANYON DRIVE Northbound				VISTA CHINO Eastbound				
Start Time	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Int. Total
11:30 AM	27	89	6	122	50	9	34	93	6	50	21	77	10	18	12	40	332
11:45 AM	22	99	3	124	38	10	36	84	2	69	21	92	3	14	13	30	330
Total	49	188	9	246	88	19	70	177	8	119	42	169	13	32	25	70	662
12:00 PM	24	107	3	134	34	16	45	95	3	67	19	89	3	12	7	22	340
12:15 PM	26	83	5	114	40	10	41	91	3	61	22	86	14	7	3	24	315
12:30 PM	18	89	4	111	20	17	34	71	4	73	18	95	1	18	4	23	300
12:45 PM	25	94	5	124	35	19	40	94	4	67	24	95	7	14	7	28	341
Total	93	373	17	483	129	62	160	351	14	268	83	365	25	51	21	97	1296
01:00 PM	33	92	3	128	38	13	33	84	5	53	21	79	8	7	5	20	311
01:15 PM	21	106	7	134	38	11	35	84	5	66	14	85	3	11	6	20	323
Grand Total	196	759	36	991	293	105	298	696	32	506	160	698	49	101	57	207	2592
Apprch %	19.8	76.6	3.6		42.1	15.1	42.8		4.6	72.5	22.9		23.7	48.8	27.5		
Total %	7.6	29.3	1.4	38.2	11.3	4.1	11.5	26.9	1.2	19.5	6.2	26.9	1.9	3.9	2.2	8	

	PALM CANYON DRIVE Southbound				VISTA CHINO Westbound				PALM CANYON DRIVE Northbound				VISTA CHINO Eastbound				
Start Time	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Int. Total
Peak Hour Analysis From 11:30 AM to 01:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:30 AM																	
11:30 AM	**27**	89	**6**	122	**50**	9	34	93	**6**	50	21	77	10	**18**	12	**40**	332
11:45 AM	22	99	3	124	38	10	36	84	2	**69**	21	**92**	3	14	**13**	30	330
12:00 PM	24	**107**	3	**134**	34	**16**	**45**	**95**	3	67	19	89	3	12	7	22	**340**
12:15 PM	26	83	5	114	40	10	41	91	3	61	**22**	86	**14**	7	3	24	315
Total Volume	99	378	17	494	162	45	156	363	14	247	83	344	30	51	35	116	1317
% App. Total	20	76.5	3.4		44.6	12.4	43		4.1	71.8	24.1		25.9	44	30.2		
PHF	.917	.883	.708	.922	.810	.703	.867	.955	.583	.895	.943	.935	.536	.708	.673	.725	.968

COUNTS UNLIMITED INC.
25424 JACLYN AVENUE
MORENO VALLEY CA. 92557
951-247-6716

CITY OF PALM SPRINGS
N/S: PALM CANYON DRIVE
E/W: VISTA CHINO
WEATHER: SUNNY

File Name : PSPCVCMD
Site Code : 0099132
Start Date : 8/29/2006



Peak Hour Analysis From 11:30 AM to 01:15 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	12:30 PM				11:30 AM				12:00 PM				11:30 AM			
+0 mins.	18	89	4	111	**50**	9	34	93	3	67	19	89	10	**18**	12	**40**
+15 mins.	25	94	5	124	38	10	36	84	3	61	22	86	3	14	**13**	30
+30 mins.	**33**	92	3	128	34	**16**	**45**	**95**	**4**	**73**	18	**95**	3	12	7	22
+45 mins.	21	**106**	**7**	**134**	40	10	41	91	4	67	**24**	95	**14**	7	3	24
Total Volume	97	381	19	497	162	45	156	363	14	268	83	365	30	51	35	116
% App. Total	19.5	76.7	3.8		44.6	12.4	43		3.8	73.4	22.7		25.9	44	30.2	
PHF	.735	.899	.679	.927	.810	.703	.867	.955	.875	.918	.865	.961	.536	.708	.673	.725

COUNTS UNLIMITED INC.
25424 JACLYN AVENUE
MORENO VALLEY CA. 92557
951-247-6716

CITY OF PALM SPRINGS
N/S: PALM CANYON DRIVE
E/W: VISTA CHINO
WEATHER: SUNNY

File Name : PSPCVCPM
Site Code : 0090132
Start Date : 8/29/2006
Page No : 1

Groups Printed- TOTAL VOLUME

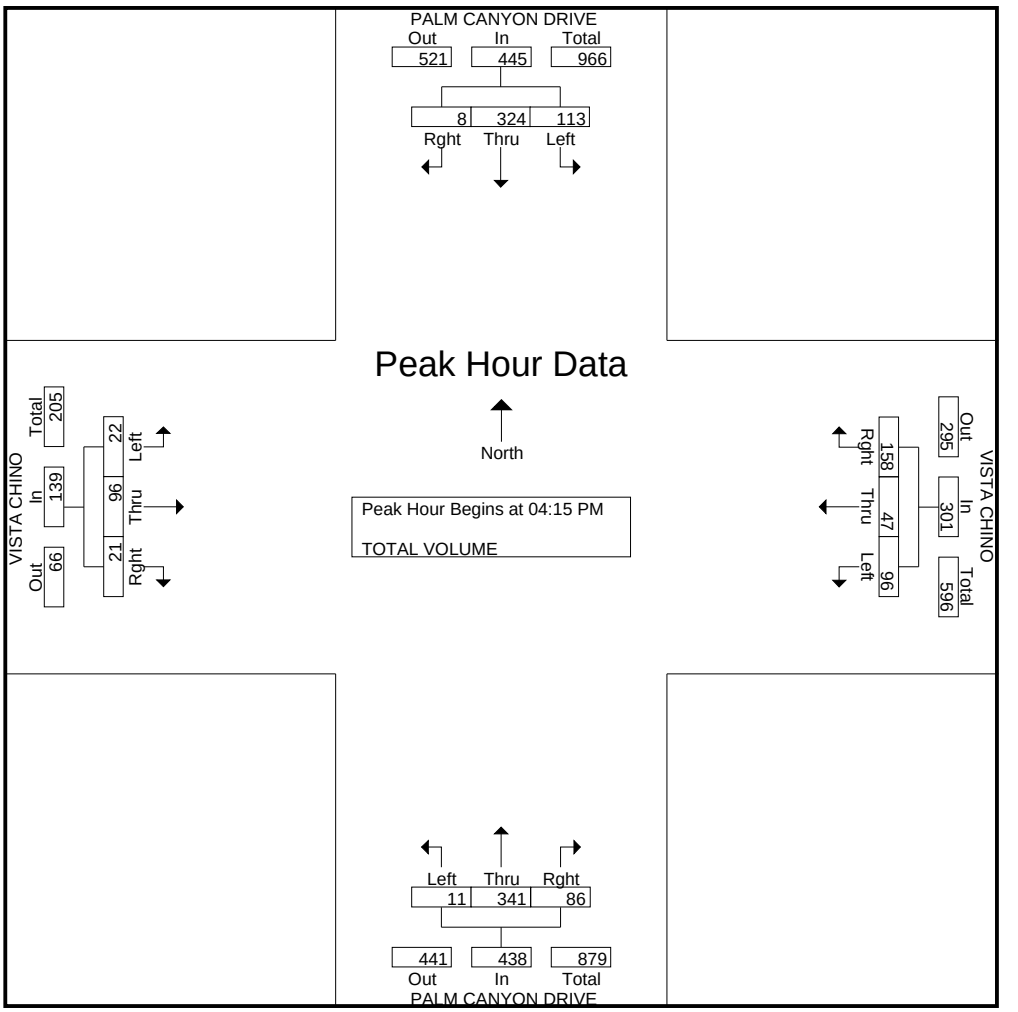
	PALM CANYON DRIVE Southbound				VISTA CHINO Westbound				PALM CANYON DRIVE Northbound				VISTA CHINO Eastbound				
Start Time	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Int. Total
04:00 PM	22	65	1	88	28	12	40	80	2	59	20	81	4	22	10	36	285
04:15 PM	34	73	3	110	26	15	32	73	2	81	20	103	7	51	2	60	346
04:30 PM	32	89	2	123	29	12	35	76	1	75	24	100	5	10	3	18	317
04:45 PM	21	83	1	105	17	8	49	74	4	77	17	98	6	10	7	23	300
Total	109	310	7	426	100	47	156	303	9	292	81	382	22	93	22	137	1248
05:00 PM	26	79	2	107	24	12	42	78	4	108	25	137	4	25	9	38	360
05:15 PM	36	79	3	118	30	17	36	83	1	84	21	106	3	12	8	23	330
05:30 PM	21	78	2	101	30	11	24	65	2	66	24	92	3	17	5	25	283
05:45 PM	14	82	3	99	20	14	44	78	2	68	16	86	1	17	3	21	284
Total	97	318	10	425	104	54	146	304	9	326	86	421	11	71	25	107	1257
Grand Total	206	628	17	851	204	101	302	607	18	618	167	803	33	164	47	244	2505
Apprch %	24.2	73.8	2		33.6	16.6	49.8		2.2	77	20.8		13.5	67.2	19.3		
Total %	8.2	25.1	0.7	34	8.1	4	12.1	24.2	0.7	24.7	6.7	32.1	1.3	6.5	1.9	9.7	

	PALM CANYON DRIVE Southbound				VISTA CHINO Westbound				PALM CANYON DRIVE Northbound				VISTA CHINO Eastbound				
Start Time	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Left	Thru	Rght	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	**34**	73	**3**	110	26	**15**	32	73	2	81	20	103	**7**	**51**	2	**60**	346
04:30 PM	32	**89**	2	**123**	**29**	12	35	76	1	75	24	100	5	10	3	18	317
04:45 PM	21	83	1	105	17	8	**49**	74	**4**	77	17	98	6	10	7	23	300
05:00 PM	26	79	2	107	24	12	42	**78**	4	**108**	**25**	**137**	4	25	**9**	38	**360**
Total Volume	113	324	8	445	96	47	158	301	11	341	86	438	22	96	21	139	1323
% App. Total	25.4	72.8	1.8		31.9	15.6	52.5		2.5	77.9	19.6		15.8	69.1	15.1		
PHF	.831	.910	.667	.904	.828	.783	.806	.965	.688	.789	.860	.799	.786	.471	.583	.579	.919

COUNTS UNLIMITED INC.
25424 JACLYN AVENUE
MORENO VALLEY CA. 92557
951-247-6716

CITY OF PALM SPRINGS
N/S: PALM CANYON DRIVE
E/W: VISTA CHINO
WEATHER: SUNNY

File Name : PSPCVCPM
Site Code : 0090132
Start Date : 8/29/2006
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:15 PM			
+0 mins.	32	**89**	2	**123**	29	12	35	76	1	75	24	100	**7**	**51**	2	**60**
+15 mins.	21	83	1	105	17	8	**49**	74	**4**	77	17	98	5	10	3	18
+30 mins.	26	79	2	107	24	12	42	78	4	**108**	**25**	**137**	6	10	7	23
+45 mins.	**36**	79	**3**	118	**30**	**17**	36	**83**	1	84	21	106	4	25	**9**	38
Total Volume	115	330	8	453	100	49	162	311	10	344	87	441	22	96	21	139
% App. Total	25.4	72.8	1.8		32.2	15.8	52.1		2.3	78	19.7		15.8	69.1	15.1	
PHF	.799	.927	.667	.921	.833	.721	.827	.937	.625	.796	.870	.805	.786	.471	.583	.579

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W E
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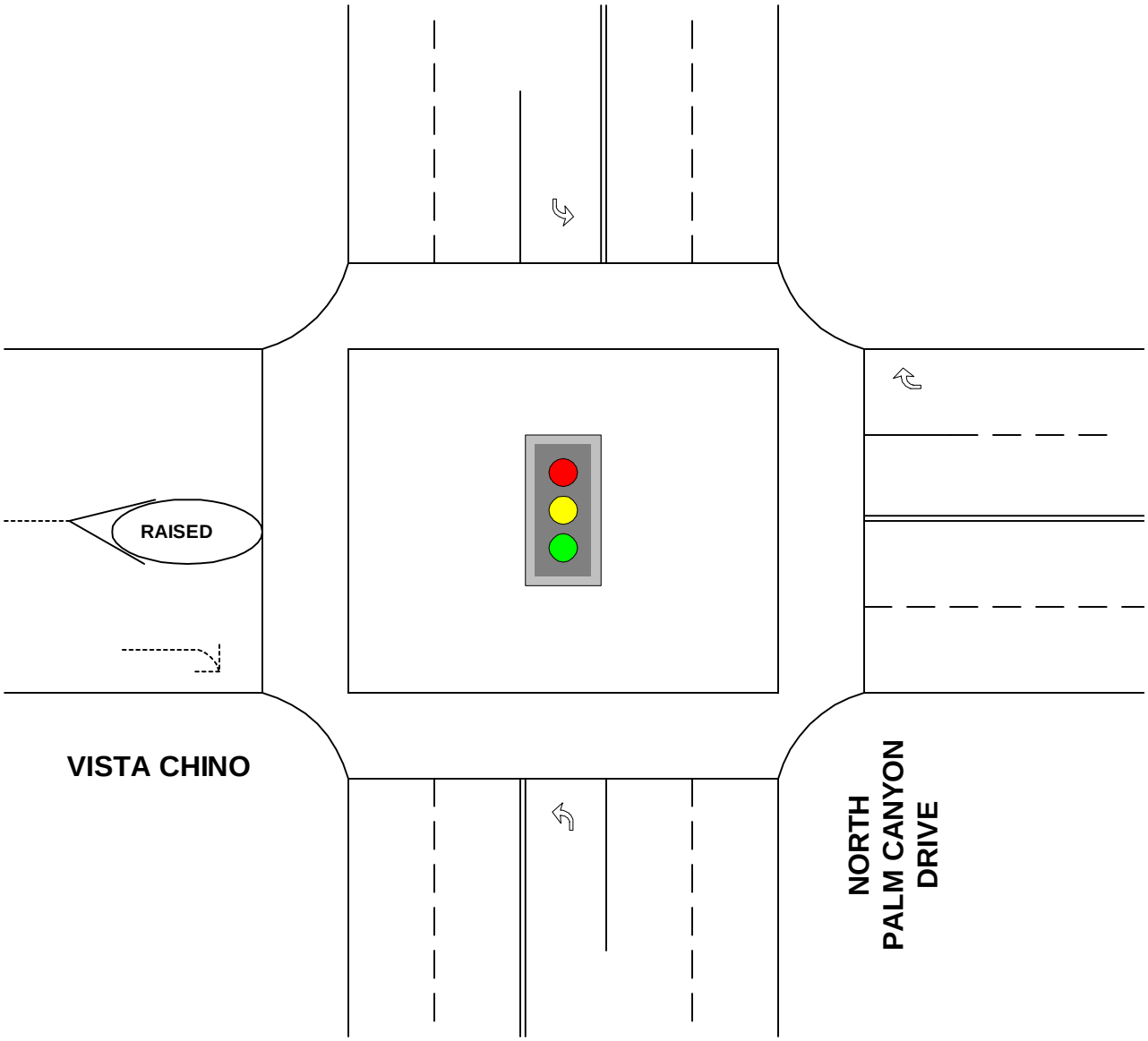
NOT TO SCALE



CITY OF PALM SPRINGS

COUNTS UNLIMITED INC.
25424 JACLYN AVENUE
MORENO VALLEY CA. 92557
951-247-6716

CITY OF PALM SPRINGS
N/S: SUNRISE WAY
E/W: E PALM CANYON DDRIVE
WEATHER: SUNNY

File Name : PSSUPCMD
Site Code : 0099138
Start Date : 8/30/2006
Page No : 1

Groups Printed- TOTAL VOLUME

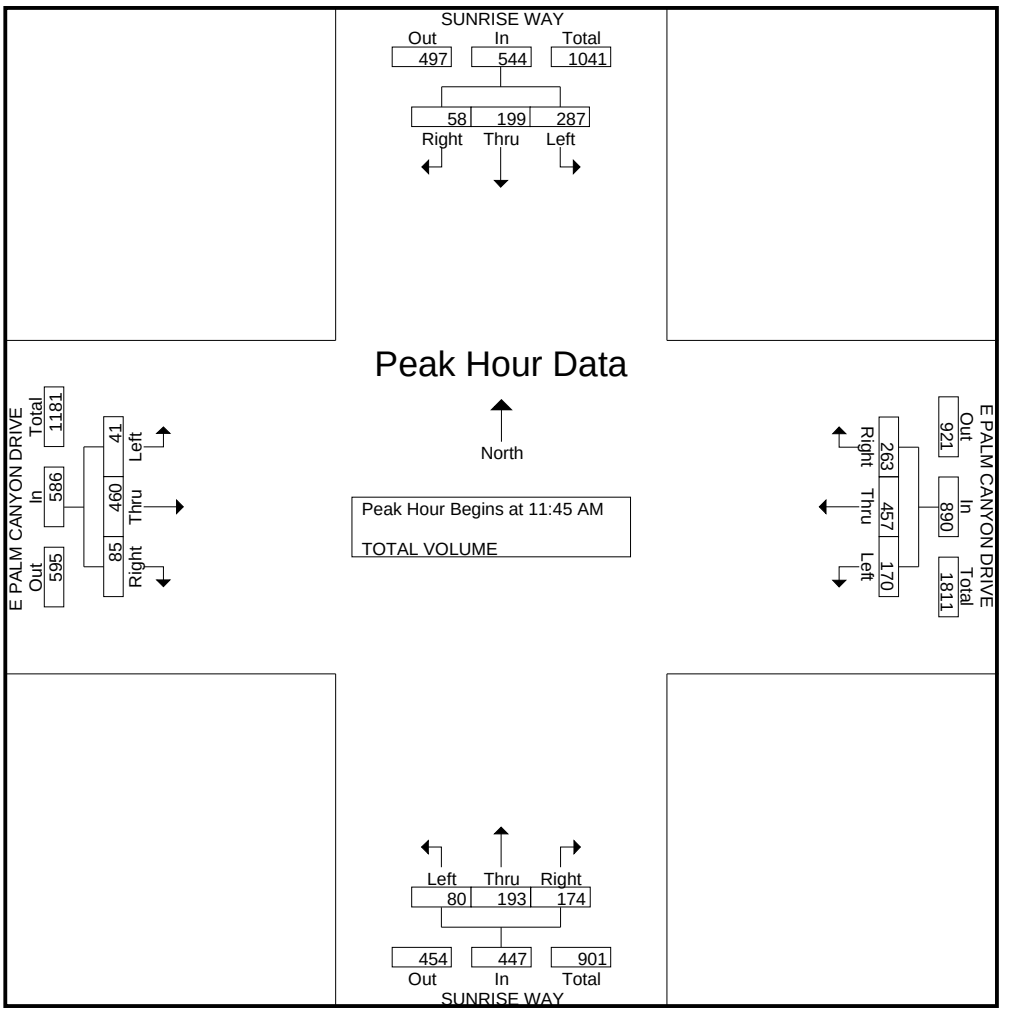
	SUNRISE WAY Southbound				E PALM CANYON DRIVE Westbound				SUNRISE WAY Northbound				E PALM CANYON DRIVE Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
11:30 AM	47	50	7	104	36	118	73	227	20	57	52	129	14	105	18	137	597
11:45 AM	59	40	9	108	40	112	66	218	22	49	39	110	8	117	23	148	584
Total	106	90	16	212	76	230	139	445	42	106	91	239	22	222	41	285	1181
12:00 PM	74	50	17	141	46	105	75	226	27	59	55	141	13	116	14	143	651
12:15 PM	72	62	21	155	36	120	65	221	18	37	42	97	12	104	32	148	621
12:30 PM	82	47	11	140	48	120	57	225	13	48	38	99	8	123	16	147	611
12:45 PM	51	47	4	102	48	115	52	215	21	55	50	126	15	97	14	126	569
Total	279	206	53	538	178	460	249	887	79	199	185	463	48	440	76	564	2452
01:00 PM	49	40	9	98	27	121	64	212	19	37	52	108	5	125	12	142	560
01:15 PM	71	53	16	140	32	108	67	207	16	48	46	110	12	105	16	133	590
Grand Total	505	389	94	988	313	919	519	1751	156	390	374	920	87	892	145	1124	4783
Apprch %	51.1	39.4	9.5		17.9	52.5	29.6		17	42.4	40.7		7.7	79.4	12.9		
Total %	10.6	8.1	2	20.7	6.5	19.2	10.9	36.6	3.3	8.2	7.8	19.2	1.8	18.6	3	23.5	

	SUNRISE WAY Southbound				E PALM CANYON DRIVE Westbound				SUNRISE WAY Northbound				E PALM CANYON DRIVE Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 11:30 AM to 01:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:45 AM																	
11:45 AM	59	40	9	108	40	112	66	218	22	49	39	110	8	117	23	**148**	584
12:00 PM	74	50	17	141	46	105	**75**	**226**	**27**	**59**	**55**	**141**	**13**	116	14	143	**651**
12:15 PM	72	**62**	**21**	**155**	36	**120**	65	221	18	37	42	97	12	104	**32**	148	621
12:30 PM	**82**	47	11	140	**48**	120	57	225	13	48	38	99	8	**123**	16	147	611
Total Volume	287	199	58	544	170	457	263	890	80	193	174	447	41	460	85	586	2467
% App. Total	52.8	36.6	10.7		19.1	51.3	29.6		17.9	43.2	38.9		7	78.5	14.5		
PHF	.875	.802	.690	.877	.885	.952	.877	.985	.741	.818	.791	.793	.788	.935	.664	.990	.947

COUNTS UNLIMITED INC.
25424 JACLYN AVENUE
MORENO VALLEY CA. 92557
951-247-6716

CITY OF PALM SPRINGS
N/S: SUNRISE WAY
E/W: E PALM CANYON DDRIVE
WEATHER: SUNNY

File Name : PSSUPCMD
Site Code : 0099138
Start Date : 8/30/2006
Page No : 2



Peak Hour Analysis From 11:30 AM to 01:15 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	11:45 AM				11:30 AM				11:30 AM				11:45 AM			
+0 mins.	59	40	9	108	36	118	73	**227**	20	57	52	129	8	117	23	**148**
+15 mins.	74	50	17	141	40	112	66	218	22	49	39	110	**13**	116	14	143
+30 mins.	72	**62**	**21**	**155**	**46**	105	**75**	226	**27**	**59**	**55**	**141**	12	104	**32**	148
+45 mins.	**82**	47	11	140	36	**120**	65	221	18	37	42	97	8	**123**	16	147
Total Volume	287	199	58	544	158	455	279	892	87	202	188	477	41	460	85	586
% App. Total	52.8	36.6	10.7		17.7	51	31.3		18.2	42.3	39.4		7	78.5	14.5	
PHF	.875	.802	.690	.877	.859	.948	.930	.982	.806	.856	.855	.846	.788	.935	.664	.990

COUNTS UNLIMITED INC.
25424 JACLYN AVENUE
MORENO VALLEY CA. 92557
951-247-6716

CITY OF PALM SPRINGS
N/S: SUNRISE WAY
E/W: E PALM CANYON DDRIVE
WEATHER: SUNNY

File Name : PSSUPCPM
Site Code : 0099138
Start Date : 8/30/2006
Page No : 1

Groups Printed- TOTAL VOLUME

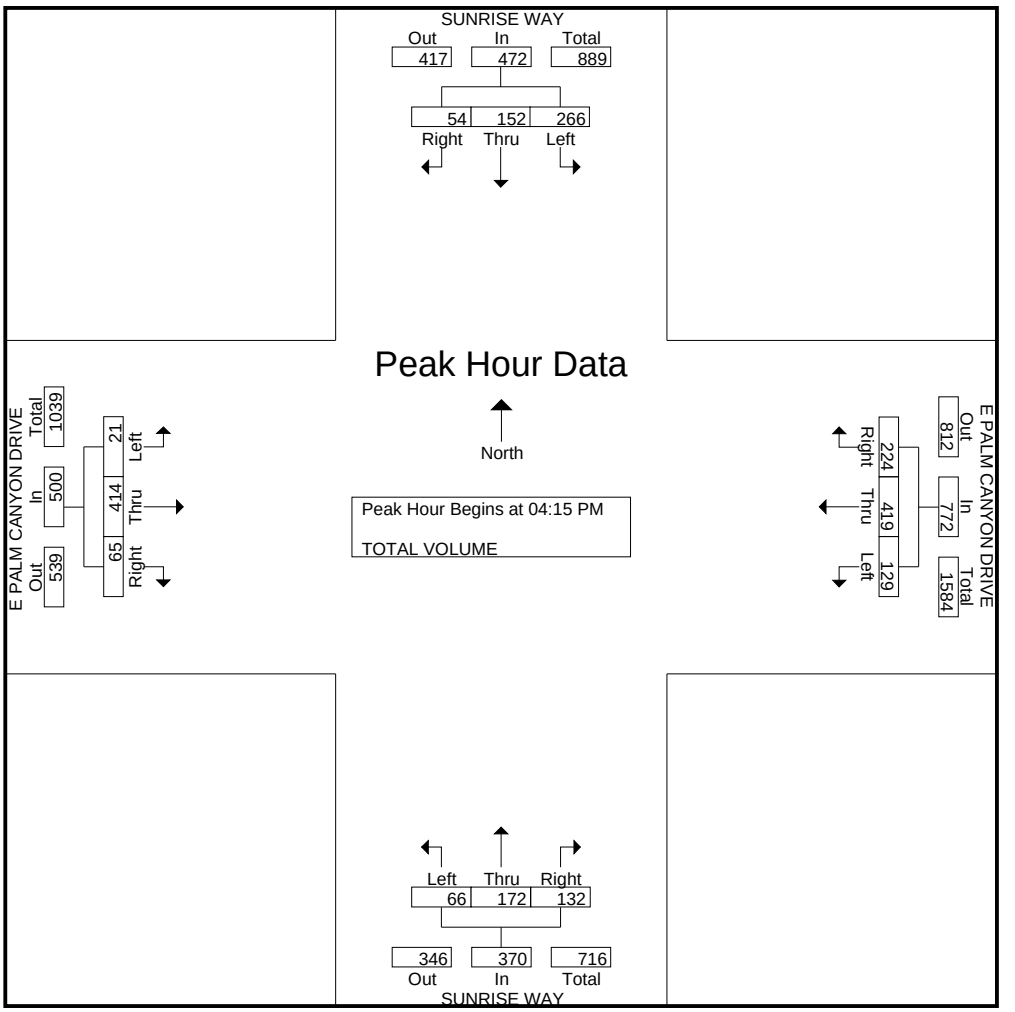
	SUNRISE WAY Southbound				E PALM CANYON DRIVE Westbound				SUNRISE WAY Northbound				E PALM CANYON DRIVE Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	49	42	9	100	33	138	51	222	18	42	28	88	11	85	19	115	525
04:15 PM	62	46	16	124	28	92	52	172	14	51	38	103	5	113	20	138	537
04:30 PM	83	32	13	128	15	87	54	156	18	35	38	91	3	76	10	89	464
04:45 PM	61	49	11	121	43	117	50	210	15	45	30	90	4	116	20	140	561
Total	255	169	49	473	119	434	207	760	65	173	134	372	23	390	69	482	2087
05:00 PM	60	25	14	99	43	123	68	234	19	41	26	86	9	109	15	133	552
05:15 PM	36	46	16	98	41	117	57	215	17	42	36	95	8	97	11	116	524
05:30 PM	40	24	7	71	30	115	56	201	11	39	24	74	14	97	17	128	474
05:45 PM	58	36	14	108	22	92	40	154	10	32	30	72	7	86	11	104	438
Total	194	131	51	376	136	447	221	804	57	154	116	327	38	389	54	481	1988
Grand Total	449	300	100	849	255	881	428	1564	122	327	250	699	61	779	123	963	4075
Apprch %	52.9	35.3	11.8		16.3	56.3	27.4		17.5	46.8	35.8		6.3	80.9	12.8		
Total %	11	7.4	2.5	20.8	6.3	21.6	10.5	38.4	3	8	6.1	17.2	1.5	19.1	3	23.6	

	SUNRISE WAY Southbound				E PALM CANYON DRIVE Westbound				SUNRISE WAY Northbound				E PALM CANYON DRIVE Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	62	46	**16**	124	28	92	52	172	14	**51**	**38**	**103**	5	113	**20**	138	537
04:30 PM	**83**	32	13	**128**	15	87	54	156	18	35	38	91	3	76	10	89	464
04:45 PM	61	**49**	11	121	**43**	117	50	210	15	45	30	90	4	**116**	20	**140**	**561**
05:00 PM	60	25	14	99	43	**123**	**68**	**234**	**19**	41	26	86	**9**	109	15	133	552
Total Volume	266	152	54	472	129	419	224	772	66	172	132	370	21	414	65	500	2114
% App. Total	56.4	32.2	11.4		16.7	54.3	29		17.8	46.5	35.7		4.2	82.8	13		
PHF	.801	.776	.844	.922	.750	.852	.824	.825	.868	.843	.868	.898	.583	.892	.813	.893	.942

COUNTS UNLIMITED INC.
25424 JACLYN AVENUE
MORENO VALLEY CA. 92557
951-247-6716

CITY OF PALM SPRINGS
N/S: SUNRISE WAY
E/W: E PALM CANYON DDRIVE
WEATHER: SUNNY

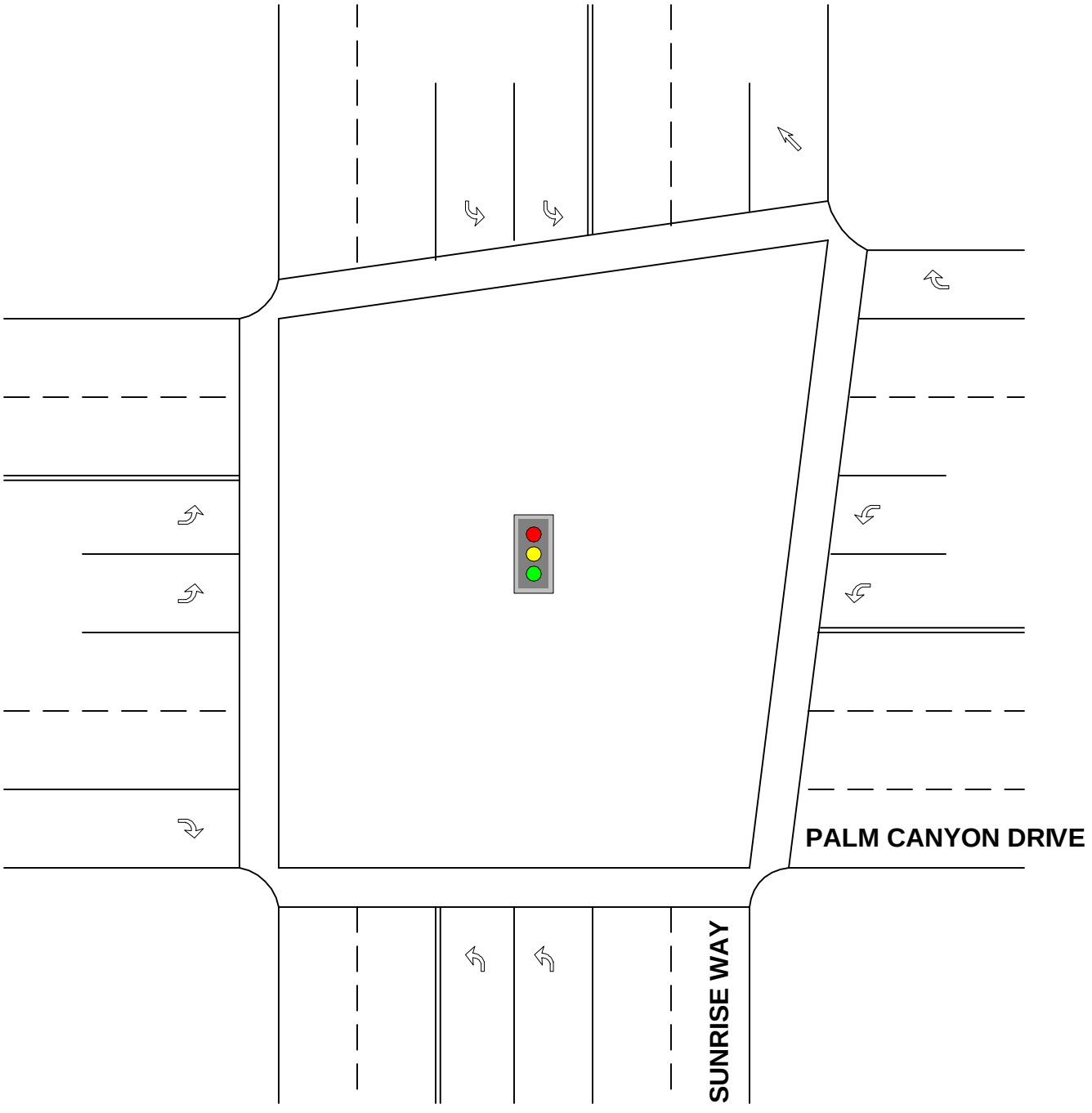
File Name : PSSUPCPM
Site Code : 0099138
Start Date : 8/30/2006
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:00 PM				04:45 PM				04:00 PM				04:45 PM			
+0 mins.	49	42	9	100	**43**	117	50	210	**18**	42	28	88	4	**116**	**20**	**140**
+15 mins.	62	46	**16**	124	43	**123**	**68**	**234**	14	**51**	**38**	**103**	9	109	15	133
+30 mins.	**83**	32	13	**128**	41	117	57	215	18	35	38	91	8	97	11	116
+45 mins.	61	**49**	11	121	30	115	56	201	15	45	30	90	**14**	97	17	128
Total Volume	255	169	49	473	157	472	231	860	65	173	134	372	35	419	63	517
% App. Total	53.9	35.7	10.4		18.3	54.9	26.9		17.5	46.5	36		6.8	81	12.2	
PHF	.768	.862	.766	.924	.913	.959	.849	.919	.903	.848	.882	.903	.625	.903	.788	.923



CITY OF PALM SPRINGS

COUNTS UNLIMITED INC.
25424 JACLYN AVENUE
MORENO VALLEY CA. 92557
951-247-6716

CITY OF PALM SPRINGS
N/S: FARRELL DRIVE
E/W:E PALM CANYON DRIVE
WEATHER: SUNNY

File Name : PSFAPCMD
Site Code : 0099138
Start Date : 8/29/2006
Page No : 1

Groups Printed- TOTAL VOLUME

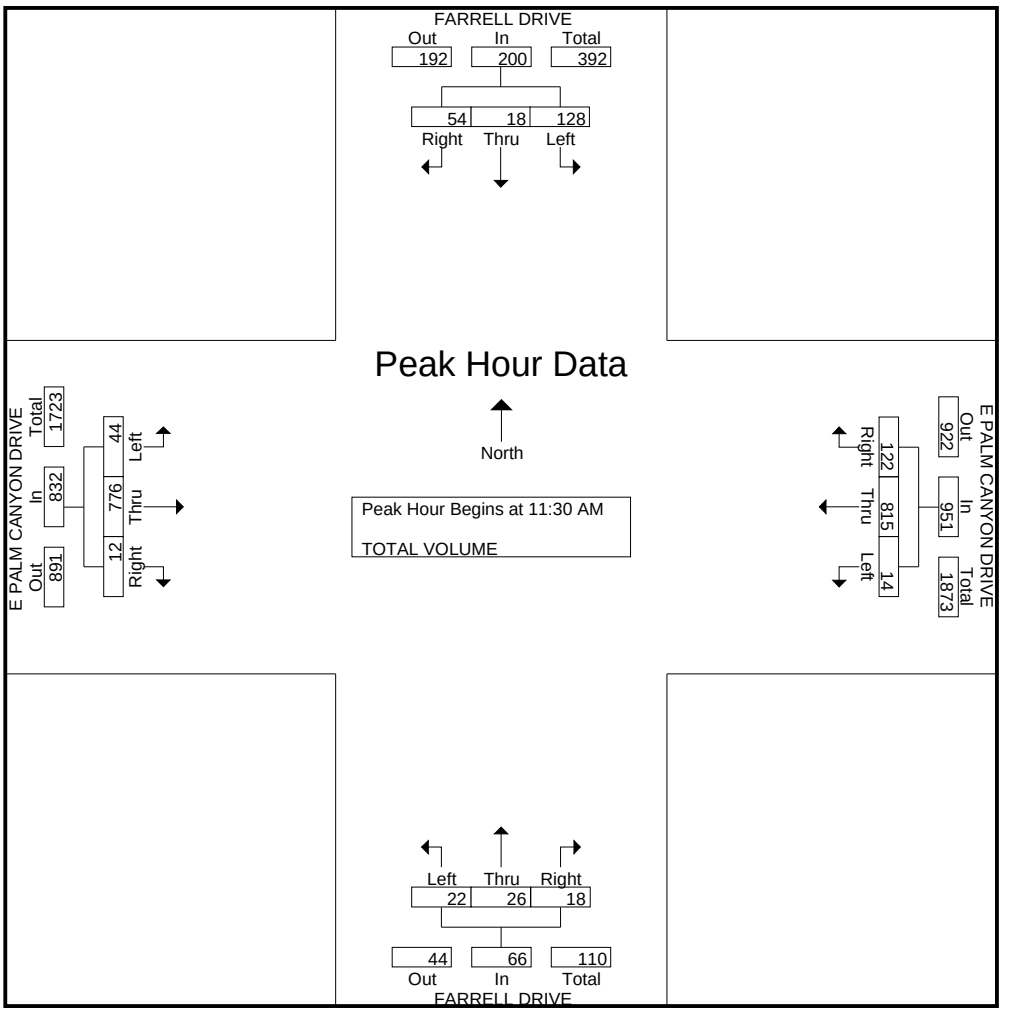
	FARRELL DRIVE Southbound				E PALM CANYON DRIVE Westbound				FARRELL DRIVE Northbound				E PALM CANYON DRIVE Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
11:30 AM	39	4	22	65	5	201	40	246	4	7	5	16	8	182	3	193	520
11:45 AM	33	6	9	48	5	180	22	207	5	10	4	19	11	200	1	212	486
Total	72	10	31	113	10	381	62	453	9	17	9	35	19	382	4	405	1006
12:00 PM	23	3	14	40	1	206	31	238	8	3	7	18	13	199	5	217	513
12:15 PM	33	5	9	47	3	228	29	260	5	6	2	13	12	195	3	210	530
12:30 PM	26	3	7	36	3	196	36	235	6	2	4	12	11	202	6	219	502
12:45 PM	31	4	8	43	0	174	17	191	3	1	1	5	7	206	4	217	456
Total	113	15	38	166	7	804	113	924	22	12	14	48	43	802	18	863	2001
01:00 PM	28	3	10	41	2	203	30	235	5	4	4	13	11	226	4	241	530
01:15 PM	27	4	14	45	1	182	29	212	7	3	4	14	8	184	2	194	465
Grand Total	240	32	93	365	20	1570	234	1824	43	36	31	110	81	1594	28	1703	4002
Apprch %	65.8	8.8	25.5		1.1	86.1	12.8		39.1	32.7	28.2		4.8	93.6	1.6		
Total %	6	0.8	2.3	9.1	0.5	39.2	5.8	45.6	1.1	0.9	0.8	2.7	2	39.8	0.7	42.6	

	FARRELL DRIVE Southbound				E PALM CANYON DRIVE Westbound				FARRELL DRIVE Northbound				E PALM CANYON DRIVE Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 11:30 AM to 01:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:30 AM																	
11:30 AM	**39**	4	**22**	**65**	**5**	201	**40**	246	4	7	5	16	8	182	3	193	520
11:45 AM	33	**6**	9	48	5	180	22	207	5	**10**	4	**19**	11	**200**	1	212	486
12:00 PM	23	3	14	40	1	206	31	238	**8**	3	**7**	18	**13**	199	**5**	**217**	513
12:15 PM	33	5	9	47	3	**228**	29	**260**	5	6	2	13	12	195	3	210	**530**
Total Volume	128	18	54	200	14	815	122	951	22	26	18	66	44	776	12	832	2049
% App. Total	64	9	27		1.5	85.7	12.8		33.3	39.4	27.3		5.3	93.3	1.4		
PHF	.821	.750	.614	.769	.700	.894	.763	.914	.688	.650	.643	.868	.846	.970	.600	.959	.967

COUNTS UNLIMITED INC.
25424 JACLYN AVENUE
MORENO VALLEY CA. 92557
951-247-6716

CITY OF PALM SPRINGS
N/S: FARRELL DRIVE
E/W:E PALM CANYON DRIVE
WEATHER: SUNNY

File Name : PSFAPCMD
Site Code : 0099138
Start Date : 8/29/2006
Page No : 2



Peak Hour Analysis From 11:30 AM to 01:15 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	11:30 AM				11:30 AM				11:30 AM				12:15 PM			
+0 mins.	**39**	4	**22**	**65**	**5**	201	**40**	246	4	7	5	16	**12**	195	3	210
+15 mins.	33	**6**	9	48	5	180	22	207	5	**10**	4	**19**	11	202	**6**	219
+30 mins.	23	3	14	40	1	206	31	238	**8**	3	**7**	18	7	206	4	217
+45 mins.	33	5	9	47	3	**228**	29	**260**	5	6	2	13	11	**226**	4	**241**
Total Volume	128	18	54	200	14	815	122	951	22	26	18	66	41	829	17	887
% App. Total	64	9	27		1.5	85.7	12.8		33.3	39.4	27.3		4.6	93.5	1.9	
PHF	.821	.750	.614	.769	.700	.894	.763	.914	.688	.650	.643	.868	.854	.917	.708	.920

COUNTS UNLIMITED INC.
25424 JACLYN AVENUE
MORENO VALLEY CA. 92557
951-247-6716

CITY OF PALM SPRINGS
N/S: FARRELL DRIVE
E/W: E PALM CANYON DRIVE
WEATHER : SUNNY

File Name : PSFAPCPM
Site Code : 0099138
Start Date : 8/29/2006

Groups Printed- TOTAL VOLUME

	FARRELL DRIVE Southbound				E PALM CANYON DRIVE Westbound				FARRELL DRIVE Northbound				E PALM CANYON DRIVE Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	23	4	16	43	1	216	36	253	1	4	7	12	12	192	2	206	514
04:15 PM	31	3	11	45	1	242	38	281	5	2	4	11	7	228	4	239	576
04:30 PM	45	8	12	65	1	188	38	227	1	5	4	10	8	222	1	231	533
04:45 PM	33	2	10	45	1	198	39	238	4	2	7	13	9	205	3	217	513
Total	132	17	49	198	4	844	151	999	11	13	22	46	36	847	10	893	2136
05:00 PM	39	5	11	55	1	231	50	282	2	2	2	6	4	203	10	217	560
05:15 PM	25	4	5	34	0	211	44	255	4	2	4	10	19	164	1	184	483
05:30 PM	18	2	19	39	3	223	53	279	10	3	2	15	3	189	8	200	533
05:45 PM	26	3	9	38	2	174	32	208	2	2	3	7	16	152	2	170	423
Total	108	14	44	166	6	839	179	1024	18	9	11	38	42	708	21	771	1999
Grand Total	240	31	93	364	10	1683	330	2023	29	22	33	84	78	1555	31	1664	4135
Apprch %	65.9	8.5	25.5		0.5	83.2	16.3		34.5	26.2	39.3		4.7	93.4	1.9		
Total %	5.8	0.7	2.2	8.8	0.2	40.7	8	48.9	0.7	0.5	0.8	2	1.9	37.6	0.7	40.2	

	FARRELL DRIVE Southbound				E PALM CANYON DRIVE Westbound				FARRELL DRIVE Northbound				E PALM CANYON DRIVE Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	31	3	11	45	**1**	**242**	38	281	**5**	2	4	11	7	**228**	4	**239**	**576**
04:30 PM	**45**	**8**	**12**	**65**	1	188	38	227	1	**5**	4	10	8	222	1	231	533
04:45 PM	33	2	10	45	1	198	39	238	4	2	**7**	**13**	**9**	205	3	217	513
05:00 PM	39	5	11	55	1	231	**50**	**282**	2	2	2	6	4	203	**10**	217	560
Total Volume	148	18	44	210	4	859	165	1028	12	11	17	40	28	858	18	904	2182
% App. Total	70.5	8.6	21		0.4	83.6	16.1		30	27.5	42.5		3.1	94.9	2		
PHF	.822	.563	.917	.808	1.000	.887	.825	.911	.600	.550	.607	.769	.778	.941	.450	.946	.947

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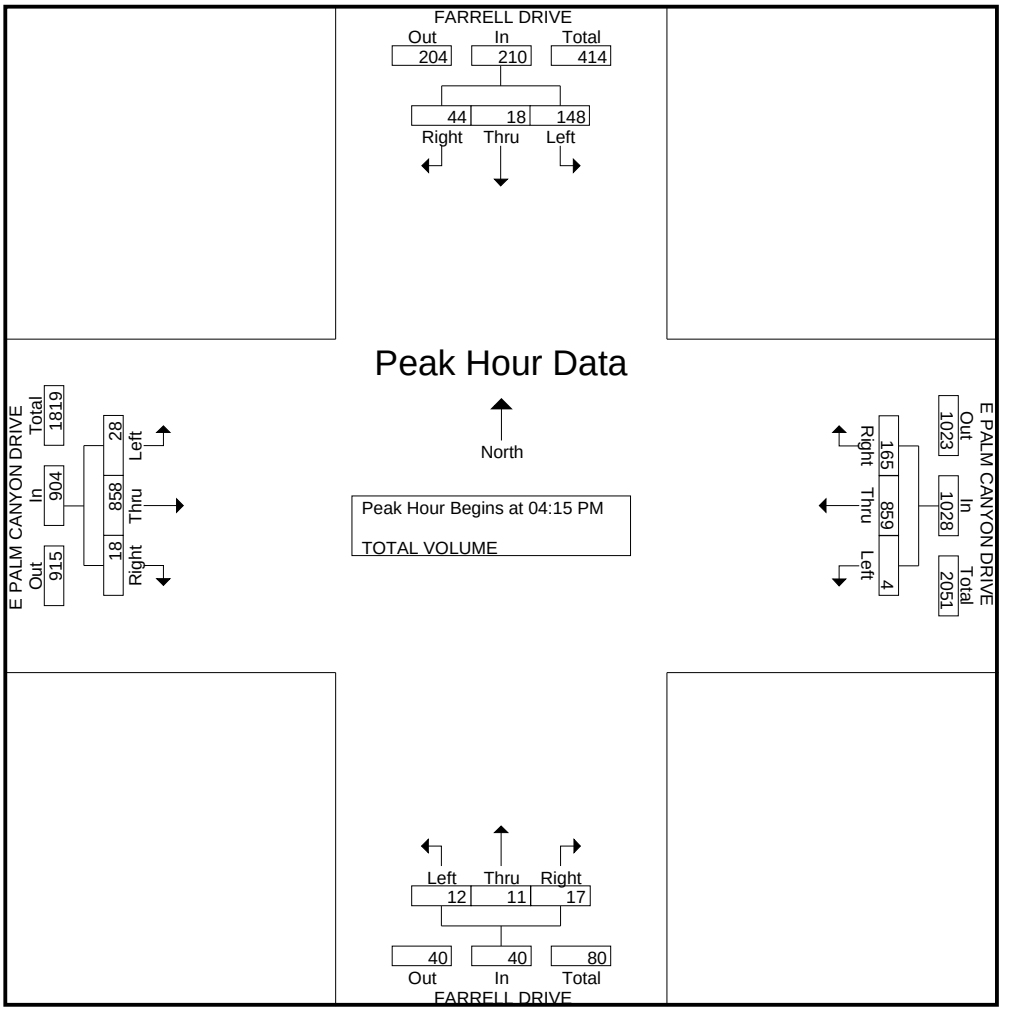
File Name : PSFAPCPM
Site Code : 0099138
Start Date : 8/29/2006
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:15 PM				04:45 PM				04:00 PM				04:15 PM			
+0 mins.	31	3	11	45	1	198	39	238	1	4	**7**	12	7	**228**	4	**239**
+15 mins.	**45**	**8**	**12**	**65**	1	**231**	50	**282**	**5**	2	4	11	8	222	1	231
+30 mins.	33	2	10	45	0	211	44	255	1	**5**	4	10	**9**	205	3	217
+45 mins.	39	5	11	55	**3**	223	**53**	279	4	2	7	**13**	4	203	**10**	217
Total Volume	148	18	44	210	5	863	186	1054	11	13	22	46	28	858	18	904
% App. Total	70.5	8.6	21		0.5	81.9	17.6		23.9	28.3	47.8		3.1	94.9	2	
PHF	.822	.563	.917	.808	.417	.934	.877	.934	.550	.650	.786	.885	.778	.941	.450	.946

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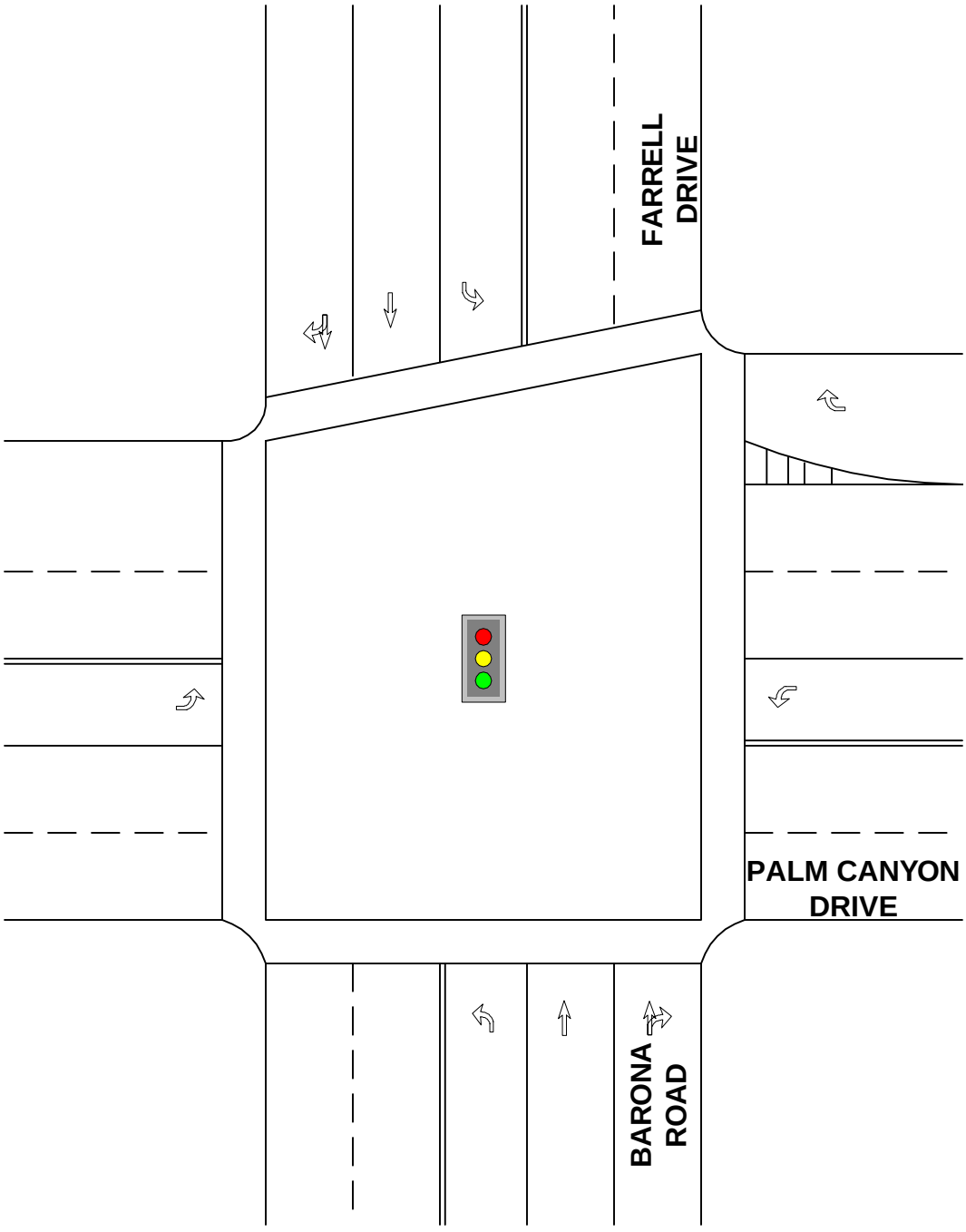
W E

S

NOT TO SCALE



CITY OF PALM SPRINGS

Exhibit B
HCS Signalized Intersection Analysis

Since all of the intersections are currently signalized, the midday and evening peak hour control delay and levels of service were evaluated utilizing the operational methodology outlined in Chapter 16 Section II of the Transportation Research Board publication entitled *Highway Capacity Manual* (HCM 2000). The Highway Capacity Software (HCS 2000) package is a direct computerized implementation of the HCM 2000 procedures, prepared under FHWA sponsorship and maintained by the McTrans Center at the University of Florida Transportation Research Center. The HCS input parameters are included below.

Table B-1
HCS Input Parameters

Parameter	Value Assumed
Base Saturation Flow Rate	1,900 Passenger Cars/Hour/Lane
Heavy Vehicle Factor	5 Percent
K Factor	8% of Daily Volume in Peak Hour
Peak Hour Factor (PHF)	1.0
Grade	Level
Exclusive Left-Turn Lane	Peak Hour Volume > 100
Dual Left-Turn Lanes	Peak Hour Volume > 300
Exclusive Right-Turn Lane	Peak Hour Volume > 300
Minimum Green Time	5 Seconds Per Movement
Minimum Pedestrian Crossing Time[a]	
- Pedestrian Start-Up Time	3 Seconds
- Yellow Clearance+All-Red Time	4 Seconds
- Walk Rate	4 Feet/Second
- Crosswalk Length	12 Feet/Lane Crossed
Cycle Length	120 Seconds

a. 9 Lanes=26 Seconds, 8 Lanes=23 Seconds, 7 Lanes=20 Seconds, 6 Lanes=17 Seconds, 5 Lanes=14 Seconds, 4 Lanes=11 Seconds, 3 Lanes=8 Seconds.

Table B-2
Loss Time Assumptions

Major Street	Minor Street	Number of Phases	Lost Time
Protected	Protected	Four	16 Seconds
Protected	Permitted	Three	12 Seconds
Permitted	Protected	Three	12 Seconds
Permitted	Permitted	Two	8 Seconds

Table B-3
Signalized Intersection LOS Criteria

Level of Service	Traffic Flow Characteristics	Avg. Control Delay (Seconds/Vehicle)
A	Extremely favorable progression with very low control delay. Most vehicles arrive during the green phase. Many do not stop.	≤ 10
B	Good progression, short cycle lengths or both. More vehicles stop than with LOS A, causing higher levels of average delay.	> 10 and ≤ 20
C	Satisfactory operation with fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear. Cycle failure occurs when a given green phase does not serve queued vehicles and overflow occurs. A significant number of vehicles stop but many pass through without stopping.	> 20 and ≤ 35
D	Tolerable delay, where congestion becomes more noticeable and many vehicles stop. Individual cycle failures are noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high V/C ratios.	> 35 and ≤ 55
E	Unstable flow with poor progression, frequent cycle failures, long cycle lengths and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered the limit of acceptable delay by many agencies.	> 55 and ≤ 80
F	Oversaturation with arrival flow rates exceeding the capacity of intersection lane groups and many individual cycle failures. Poor progression and long cycle lengths as well as high V/C ratios and high delay values occur at LOS F. Considered unacceptable to most drivers.	> 80

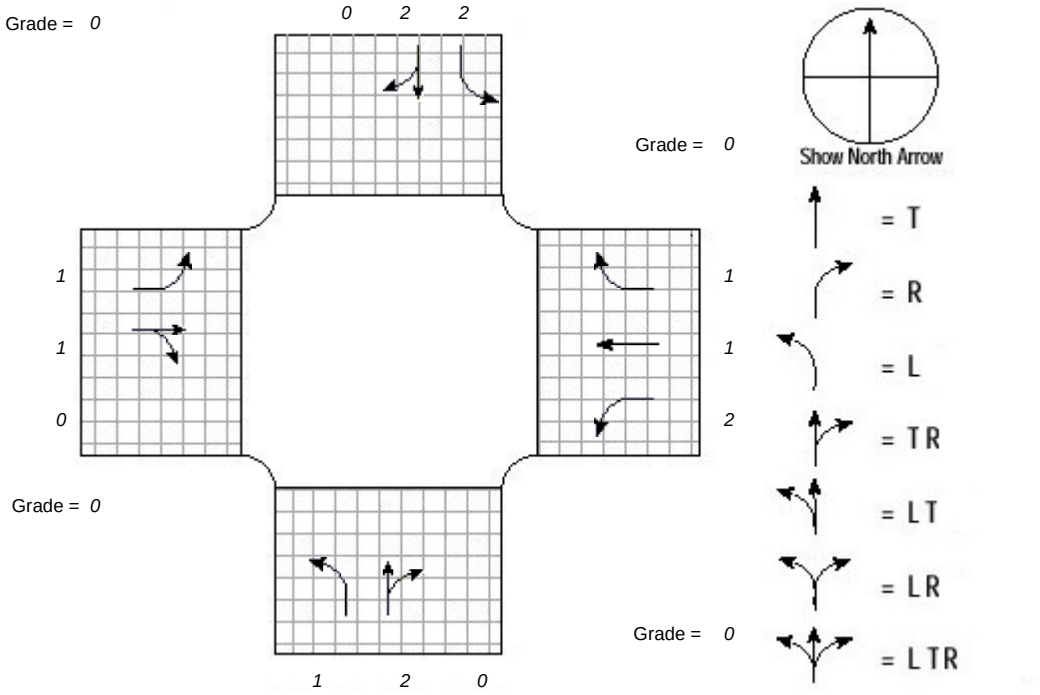
Source: *Highway Capacity Manual,* Special Report 209, Transportation Research Board, Fourth Edition, 2000; pp. 10-16.

HCS Long Reports

LONG REPORT

General Information		Site Information	
Analyst		Intersection	*Palm Canyon Dr @ Vista Chino*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*9/11/06*	Jurisdiction	*Palm Springs*
Time Period	*Midday Peak Hour*	Analysis Year	*GP Buildout*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*51*	*92*	*53*	*489*	*82*	*595*	*21*	*656*	*250*	*378*	*1004*	*29*
% Heavy veh	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Ext. eff. green	*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Arrival type	*3*	*3*		*3*	*3*	*3*	*3*	*3*		*3*	*3*	
Unit Extension	*3.0*	*3.0*		*3.0*	*3.0*	*3.0*	*3.0*	*3.0*		*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*		*12.0*	*12.0*	*12.0*	*12.0*	*12.0*		*12.0*	*12.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr	*0*	*0*		*0*	*0*	*0*	*0*	*0*		*0*	*0*	
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	Excl. Left	Thru & RT	03	04	Excl. Left	Thru & RT	07	08
Timing	G = *20.0*	G = *26.0*	G =	G =	G = *16.0*	G = *42.0*	G =	G =
	Y = *4*	Y = *4*	Y =	Y =	Y = *4*	Y = *4*	Y =	Y =
Duration of Analysis (hrs) = *1.00*					Cycle Length C = *120.0*			

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *GP Update*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*51*	*92*	*53*	*489*	*82*	*595*	*21*	*656*	*250*	*378*	*1004*	*29*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Adj. Flow Rate	*51*	*92*	*53*	*489*	*82*	*595*	*21*	*656*	*250*	*378*	*1004*	*29*
Lane Group	*L*	*TR*		*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Adj. flow rate	*51*	*145*		*489*	*82*	*595*	*21*	*906*		*378*	*1033*	
Prop. LT or RT	*0.000*	*--*	*0.366*	*0.000*	*--*	*0.000*	*0.000*	*--*	*0.276*	*0.000*	*--*	*0.028*

Saturation Flow Rate

Base satflow	*1900*	*1900*		*1900*	*1900*	*1900*	*1900*	*1900*		*1900*	*1900*	
Num. of lanes	*1*	*1*	*0*	*2*	*1*	*1*	*1*	*2*	*0*	*2*	*2*	*0*
fW	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fHV	*0.952*	*0.952*		*0.952*	*0.952*	*0.952*	*0.952*	*0.952*		*0.952*	*0.952*	
fg	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fp	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fbb	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fa	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fLU	*1.000*	*1.000*		*0.971*	*1.000*	*1.000*	*1.000*	*0.952*		*0.971*	*0.952*	
fLT	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*
Secondary fLT			*--*			*--*			*--*			*--*
fRT	*--*	*0.945*		*--*	*1.000*	*0.850*	*--*	*0.959*		*--*	*0.996*	
fLpb	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*
fRpb	*--*	*1.000*		*--*	*1.000*	*1.000*	*--*	*1.000*		*--*	*1.000*	
Adj. satflow	*1719*	*1710*		*3338*	*1810*	*1538*	*1719*	*3303*		*3338*	*3431*	
Sec. adj. satflow			*--*			*--*			*--*			*--*

CAPACITY AND LOS WORKSHEET

General Information

Project Description *GP Update*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Adj. flow rate	*51*	*145*		*489*	*82*	*595*	*21*	*906*		*378*	*1033*	
Satflow rate	*1719*	*1710*		*3338*	*1810*	*1538*	*1719*	*3303*		*3338*	*3431*	
Lost time	*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Green ratio	*0.17*	*0.22*		*0.17*	*0.22*	*0.77*	*0.13*	*0.35*		*0.13*	*0.35*	
Lane group cap.	*287*	*371*		*556*	*392*	*1179*	*229*	*1156*		*445*	*1201*	
v/c ratio	*0.18*	*0.39*		*0.88*	*0.21*	*0.50*	*0.09*	*0.78*		*0.85*	*0.86*	
Flow ratio	*0.03*	*0.08*		*0.15*	*0.05*	*0.39*	*0.01*	*0.27*		*0.11*	*0.30*	
Crit. lane group	*N*	*Y*		*Y*	*N*	*N*	*N*	*N*		*Y*	*Y*	
Sum flow ratios	*0.65*											
Lost time/cycle	*16.00*											
Critical v/c ratio	*0.74*											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Adj. flow rate	*51*	*145*		*489*	*82*	*595*	*21*	*906*		*378*	*1033*	
Lane group cap.	*287*	*371*		*556*	*392*	*1179*	*229*	*1156*		*445*	*1201*	
v/c ratio	*0.18*	*0.39*		*0.88*	*0.21*	*0.50*	*0.09*	*0.78*		*0.85*	*0.86*	
Green ratio	*0.17*	*0.22*		*0.17*	*0.22*	*0.77*	*0.13*	*0.35*		*0.13*	*0.35*	
Unif. delay d1	*42.9*	*40.2*		*48.8*	*38.6*	*5.3*	*45.6*	*34.9*		*50.8*	*36.3*	
Delay factor k	*0.11*	*0.11*		*0.41*	*0.11*	*0.11*	*0.11*	*0.33*		*0.38*	*0.39*	
Increm. delay d2	*0.3*	*0.7*		*17.7*	*0.3*	*0.4*	*0.2*	*3.7*		*16.5*	*7.0*	
PF factor	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
Control delay	*43.2*	*40.9*		*66.6*	*38.8*	*5.7*	*45.8*	*38.6*		*67.3*	*43.3*	
Lane group LOS	*D*	*D*		*E*	*D*	*A*	*D*	*D*		*E*	*D*	
Apprch. delay	*41.5*			*33.5*			*38.8*			*49.7*		
Approach LOS	*D*			*C*			*D*			*D*		
Intersec. delay	*41.4*			Intersection LOS						*D*		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *GP Update*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*120.0*			
Prot. phase eff. green intvl, g (s)				
Opposed queue eff. green intvl, g_q (s)				
Unopposed green intvl, g_u (s)				
Red time, r(s)				
Arrival rate, q_a (veh/s)				
Prot. phase departure rate, s_p (veh/s)				
Perm. phase departure rate, s_s (veh/s)				
X_{perm}				
X_{prot} (N/A for lagging left-turns)				

Uniform Queue Size and Delay Computations

	EB	WB	NB	SB
Queue at start of green arrow, Q_a				
Queue at start of unsaturated green, Q_u				
Residual queue, Q_r				
Uniform delay, d_1				

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(S_p - q_s)} + g_q Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(s_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(S_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(S_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(S_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(S_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *GP Update*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	*L*	*TR*		*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Init. queue/lane	*0.0*	*0.0*		*0.0*	*0.0*	*0.0*	*0.0*	*0.0*		*0.0*	*0.0*	
Flow rate/lane	*51*	*145*		*489*	*82*	*595*	*21*	*906*		*378*	*1033*	
Satflow per lane	*1719*	*1710*		*1719*	*1810*	*1538*	*1719*	*1734*		*1719*	*1801*	
Capacity/lane	*287*	*371*		*556*	*392*	*1179*	*229*	*1156*		*445*	*1201*	
Flow ratio	*0.03*	*0.08*		*0.15*	*0.05*	*0.39*	*0.01*	*0.27*		*0.11*	0.30	
v/c ratio	*0.18*	*0.39*		*0.88*	*0.21*	*0.50*	*0.09*	*0.78*		*0.85*	*0.86*	
I factor	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
Arrival type	*3*	*3*		*3*	*3*	*3*	*3*	*3*		*3*	*3*	
Platoon ratio	*1.00*	*1.00*		*1.00*	*1.00*	*1.00*	*1.00*	*1.00*		*1.00*	*1.00*	
PF factor	*1.00*	*1.00*		*1.00*	*1.00*	*1.00*	*1.00*	*1.00*		*1.00*	*1.00*	
Q_1	*1.5*	*4.1*		*8.2*	*2.2*	*7.5*	*0.6*	*14.2*		*6.3*	*16.8*	
k_B	*0.4*	*0.5*		*0.4*	*0.5*	*0.9*	*0.3*	*0.6*		*0.3*	*0.6*	
Q_2	*0.1*	*0.3*		*2.4*	*0.1*	*0.9*	*0.0*	*2.1*		*1.7*	*3.5*	
Q avg.	*1.5*	*4.4*		*10.6*	*2.4*	*8.5*	*0.6*	*16.3*		*8.0*	*20.3*	

Percentile Back of Queue (95th percentile)

$f_{B\%}$	*2.1*	*2.0*		*1.8*	*2.0*	*1.9*	*2.1*	*1.7*		*1.9*	*1.7*	
BOQ, $Q_{\%}$	*3.2*	*8.7*		*19.4*	*4.8*	*15.9*	*1.3*	*28.4*		*15.1*	*34.5*	

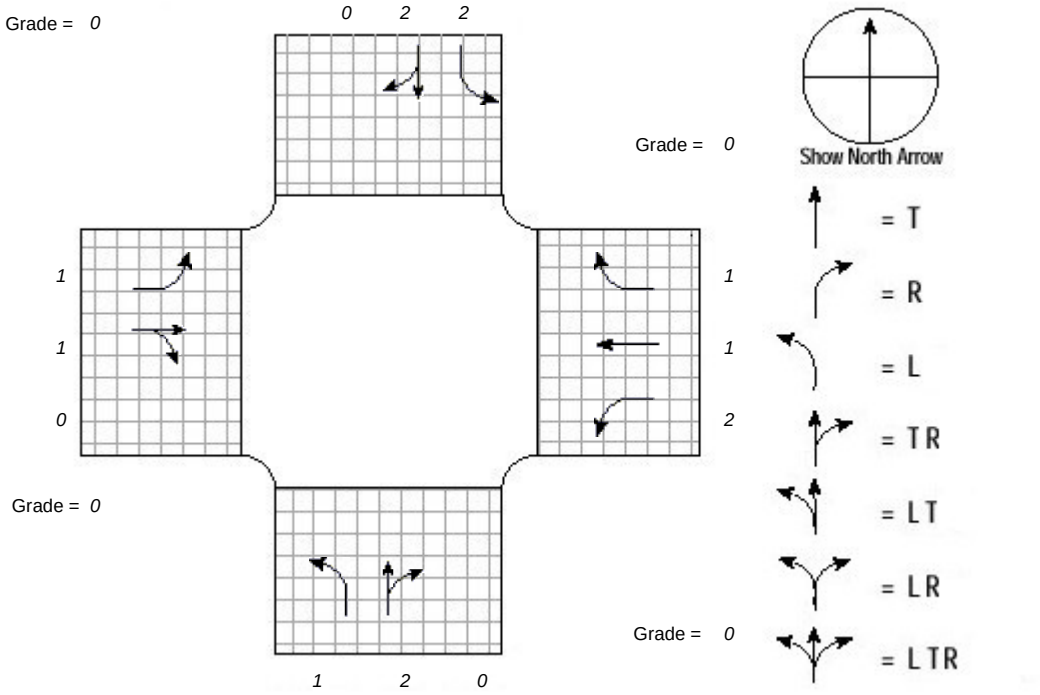
Queue Storage Ratio

Q spacing	*25.0*	*25.0*		*25.0*	*25.0*	*25.0*	*25.0*	*25.0*		*25.0*	*25.0*	
Q storage	*0*	*0*		*0*	*0*	*0*	*0*	*0*		*0*	*0*	
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst		Intersection	*Palm Canyon Dr @ Vista Chino*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*9/11/06*	Jurisdiction	*Palm Springs*
Time Period	*PM Peak Hour*	Analysis Year	*GP Buildout*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*37*	*174*	*32*	*290*	*85*	*605*	*17*	*908*	*260*	*433*	*862*	*14*
% Heavy veh	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Ext. eff. green	*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Arrival type	*3*	*3*		*3*	*3*	*3*	*3*	*3*		*3*	*3*	
Unit Extension	*3.0*	*3.0*		*3.0*	*3.0*	*3.0*	*3.0*	*3.0*		*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*		*12.0*	*12.0*	*12.0*	*12.0*	*12.0*		*12.0*	*12.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr	*0*	*0*		*0*	*0*	*0*	*0*	*0*		*0*	*0*	
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	Excl. Left	Thru & RT	03	04	Excl. Left	Thru & RT	07	08
Timing	G = *13.0*	G = *26.0*	G =	G =	G = *18.0*	G = *47.0*	G =	G =
	Y = *4*	Y = *4*	Y =	Y =	Y = *4*	Y = *4*	Y =	Y =
Duration of Analysis (hrs) = *1.00*					Cycle Length C = *120.0*			

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *GP Update*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*37*	*174*	*32*	*290*	*85*	*605*	*17*	*908*	*260*	*433*	*862*	*14*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Adj. Flow Rate	*37*	*174*	*32*	*290*	*85*	*605*	*17*	*908*	*260*	*433*	*862*	*14*
Lane Group	*L*	*TR*		*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Adj. flow rate	*37*	*206*		*290*	*85*	*605*	*17*	*1168*		*433*	*876*	
Prop. LT or RT	*0.000*	*--*	*0.155*	*0.000*	*--*	*0.000*	*0.000*	*--*	*0.223*	*0.000*	*--*	*0.016*

Saturation Flow Rate

Base satflow	*1900*	*1900*		*1900*	*1900*	*1900*	*1900*	*1900*		*1900*	*1900*	
Num. of lanes	*1*	*1*	*0*	*2*	*1*	*1*	*1*	*2*	*0*	*2*	*2*	*0*
fW	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fHV	*0.952*	*0.952*		*0.952*	*0.952*	*0.952*	*0.952*	*0.952*		*0.952*	*0.952*	
fg	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fp	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fbb	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fa	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fLU	*1.000*	*1.000*		*0.971*	*1.000*	*1.000*	*1.000*	*0.952*		*0.971*	*0.952*	
fLT	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*
Secondary fLT			*--*			*--*			*--*			*--*
fRT	*--*	*0.977*		*--*	*1.000*	*0.850*	*--*	*0.967*		*--*	*0.998*	
fLpb	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*
fRpb	*--*	*1.000*		*--*	*1.000*	*1.000*	*--*	*1.000*		*--*	*1.000*	
Adj. satflow	*1719*	*1767*		*3338*	*1810*	*1538*	*1719*	*3330*		*3338*	*3437*	
Sec. adj. satflow			*--*			*--*			*--*			*--*

CAPACITY AND LOS WORKSHEET

General Information

Project Description *GP Update*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Adj. flow rate	*37*	*206*		*290*	*85*	*605*	*17*	*1168*		*433*	*876*	
Satflow rate	*1719*	*1767*		*3338*	*1810*	*1538*	*1719*	*3330*		*3338*	*3437*	
Lost time	*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Green ratio	*0.11*	*0.22*		*0.11*	*0.22*	*0.82*	*0.15*	*0.39*		*0.15*	*0.39*	
Lane group cap.	*186*	*383*		*362*	*392*	*1269*	*258*	*1304*		*501*	*1346*	
v/c ratio	*0.20*	*0.54*		*0.80*	*0.22*	*0.48*	*0.07*	*0.90*		*0.86*	*0.65*	
Flow ratio	*0.02*	*0.12*		*0.09*	*0.05*	*0.39*	*0.01*	*0.35*		*0.13*	*0.25*	
Crit. lane group	*N*	*Y*		*Y*	*N*	*N*	*N*	*Y*		*Y*	*N*	
Sum flow ratios	*0.68*											
Lost time/cycle	*16.00*											
Critical v/c ratio	*0.79*											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Adj. flow rate	*37*	*206*		*290*	*85*	*605*	*17*	*1168*		*433*	*876*	
Lane group cap.	*186*	*383*		*362*	*392*	*1269*	*258*	*1304*		*501*	*1346*	
v/c ratio	*0.20*	*0.54*		*0.80*	*0.22*	*0.48*	*0.07*	*0.90*		*0.86*	*0.65*	
Green ratio	*0.11*	*0.22*		*0.11*	*0.22*	*0.82*	*0.15*	*0.39*		*0.15*	*0.39*	
Unif. delay d1	*48.8*	*41.7*		*52.2*	*38.6*	*3.0*	*43.8*	*34.2*		*49.8*	*29.8*	
Delay factor k	*0.11*	*0.14*		*0.34*	*0.11*	*0.11*	*0.11*	*0.42*		*0.39*	*0.23*	
Increm. delay d2	*0.5*	*1.5*		*13.3*	*0.3*	*0.3*	*0.1*	*9.5*		*16.9*	*1.1*	
PF factor	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
Control delay	*49.3*	*43.2*		*65.6*	*38.9*	*3.3*	*43.9*	*43.7*		*66.7*	*30.9*	
Lane group LOS	*D*	*D*		*E*	*D*	*A*	*D*	*D*		*E*	*C*	
Apprch. delay	*44.1*			*24.8*			*43.7*			*42.8*		
Approach LOS	*D*			*C*			*D*			*D*		
Intersec. delay	*38.4*			Intersection LOS						*D*		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *GP Update*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*120.0*			
Prot. phase eff. green intvl, g (s)				
Opposed queue eff. green intvl, g_q (s)				
Unopposed green intvl, g_u (s)				
Red time, r(s)				
Arrival rate, q_a (veh/s)				
Prot. phase departure rate, s_p (veh/s)				
Perm. phase departure rate, s_s (veh/s)				
X_{perm}				
X_{prot} (N/A for lagging left-turns)				

Uniform Queue Size and Delay Computations

	EB	WB	NB	SB
Queue at start of green arrow, Q_a				
Queue at start of unsaturated green, Q_u				
Residual queue, Q_r				
Uniform delay, d_1				

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(S_p - q_s)} + g_q Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(s_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(S_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(S_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(S_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(S_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *GP Update*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	*L*	*TR*		*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Init. queue/lane	*0.0*	*0.0*		*0.0*	*0.0*	*0.0*	*0.0*	*0.0*		*0.0*	*0.0*	
Flow rate/lane	*37*	*206*		*290*	*85*	*605*	*17*	*1168*		*433*	*876*	
Satflow per lane	*1719*	*1767*		*1719*	*1810*	*1538*	*1719*	*1748*		*1719*	*1805*	
Capacity/lane	*186*	*383*		*362*	*392*	*1269*	*258*	*1304*		*501*	*1346*	
Flow ratio	*0.02*	*0.12*		*0.09*	*0.05*	*0.39*	*0.01*	*0.35*		*0.13*	0.25	
v/c ratio	*0.20*	*0.54*		*0.80*	*0.22*	*0.48*	*0.07*	*0.90*		*0.86*	*0.65*	
I factor	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
Arrival type	*3*	*3*		*3*	*3*	*3*	*3*	*3*		*3*	*3*	
Platoon ratio	*1.00*	*1.00*		*1.00*	*1.00*	*1.00*	*1.00*	*1.00*		*1.00*	*1.00*	
PF factor	*1.00*	*1.00*		*1.00*	*1.00*	*1.00*	*1.00*	*1.00*		*1.00*	*1.00*	
Q_1	*1.1*	*6.1*		*4.8*	*2.3*	*5.8*	*0.5*	*19.2*		*7.2*	*12.5*	
k_B	*0.3*	*0.5*		*0.3*	*0.5*	*0.9*	*0.4*	*0.7*		*0.4*	*0.7*	
Q_2	*0.1*	*0.5*		*1.1*	*0.1*	*0.9*	*0.0*	*4.9*		*2.1*	*1.2*	
Q avg.	*1.2*	*6.6*		*6.0*	*2.5*	*6.7*	*0.5*	*24.1*		*9.3*	*13.8*	

Percentile Back of Queue (95th percentile)

$f_{B\%}$	*2.1*	*1.9*		*1.9*	*2.0*	*1.9*	*2.1*	*1.7*		*1.9*	*1.8*	
BOQ, $Q_{\%}$	*2.5*	*12.7*		*11.6*	*5.0*	*12.8*	*1.1*	*39.9*		*17.3*	*24.5*	

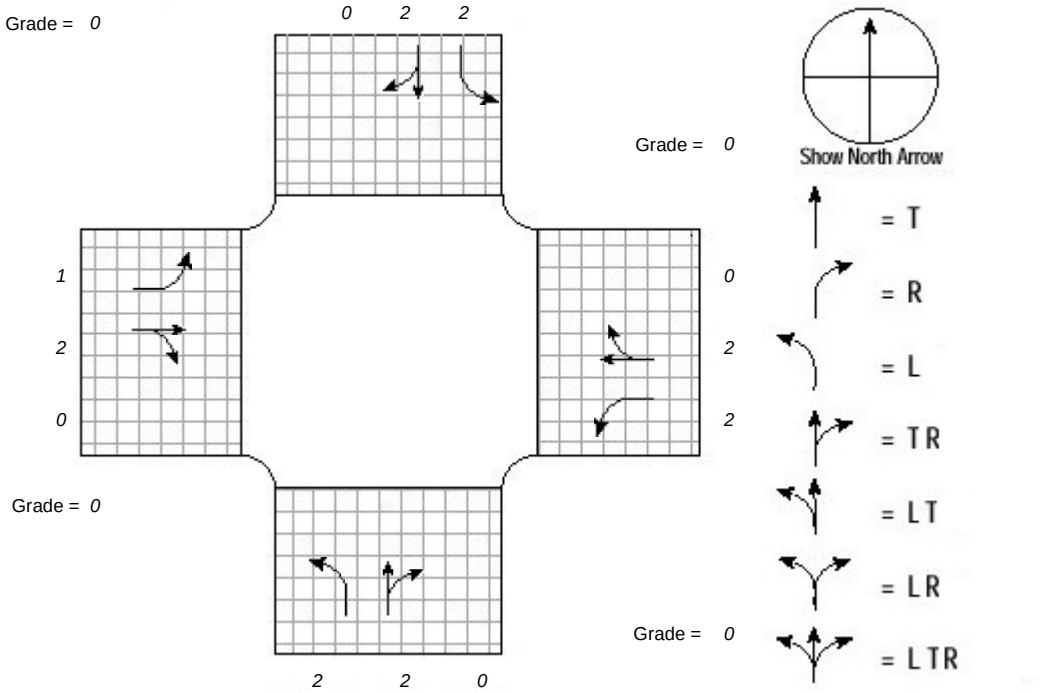
Queue Storage Ratio

Q spacing	*25.0*	*25.0*		*25.0*	*25.0*	*25.0*	*25.0*	*25.0*		*25.0*	*25.0*	
Q storage	*0*	*0*		*0*	*0*	*0*	*0*	*0*		*0*	*0*	
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst		Intersection	*Sunrise Way @ Vista Chino*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*9/11/06*	Jurisdiction	*Palm Springs*
Time Period	*Midday Peak Hour*	Analysis Year	*GP Buildout*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*26*	*600*	*156*	*202*	*510*	*49*	*257*	*363*	*186*	*207*	*286*	*30*
% Heavy veh	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	
Ext. eff. green	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*		*3*	*3*	
Unit Extension	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*		*12.0*	*12.0*		*12.0*	*12.0*		*12.0*	*12.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr	*0*	*0*		*0*	*0*		*0*	*0*		*0*	*0*	
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	Excl. Left	Thru & RT	03	04	Excl. Left	Thru & RT	07	08
Timing	G = *11.0*	G = *44.0*	G =	G =	G = *14.0*	G = *35.0*	G =	G =
	Y = *4*	Y = *4*	Y =	Y =	Y = *4*	Y = *4*	Y =	Y =
Duration of Analysis (hrs) = *1.00*					Cycle Length C = *120.0*			

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *GP Update*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*26*	*600*	*156*	*202*	*510*	*49*	*257*	*363*	*186*	*207*	*286*	*30*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Adj. Flow Rate	*26*	*600*	*156*	*202*	*510*	*49*	*257*	*363*	*186*	*207*	*286*	*30*
Lane Group	*L*	*TR*		*L*	*TR*		*L*	*TR*		*L*	*TR*	
Adj. flow rate	*26*	*756*		*202*	*559*		*257*	*549*		*207*	*316*	
Prop. LT or RT	*0.000*	*--*	*0.206*	*0.000*	*--*	*0.088*	*0.000*	*--*	*0.339*	*0.000*	*--*	*0.095*

Saturation Flow Rate

Base satflow	*1900*	*1900*		*1900*	*1900*		*1900*	*1900*		*1900*	*1900*	
Num. of lanes	*1*	*2*	*0*	*2*	*2*	*0*	*2*	*2*	*0*	*2*	*2*	*0*
fW	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
fHV	*0.952*	*0.952*		*0.952*	*0.952*		*0.952*	*0.952*		*0.952*	*0.952*	
fg	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
fp	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
fbb	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
fa	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
fLU	*1.000*	*0.952*		*0.971*	*0.952*		*0.971*	*0.952*		*0.971*	*0.952*	
fLT	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*
Secondary fLT			*--*			*--*			*--*			*--*
fRT	*--*	*0.969*		*--*	*0.987*		*--*	*0.949*		*--*	*0.986*	
fLpb	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*
fRpb	*--*	*1.000*		*--*	*1.000*		*--*	*1.000*		*--*	*1.000*	
Adj. satflow	*1719*	*3339*		*3338*	*3400*		*3338*	*3270*		*3338*	*3396*	
Sec. adj. satflow			*--*			*--*			*--*			*--*

CAPACITY AND LOS WORKSHEET

General Information

Project Description *GP Update*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*		*L*	*TR*	
Adj. flow rate	*26*	*756*		*202*	*559*		*257*	*549*		*207*	*316*	
Satflow rate	*1719*	*3339*		*3338*	*3400*		*3338*	*3270*		*3338*	*3396*	
Lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	
Green ratio	*0.09*	*0.37*		*0.09*	*0.37*		*0.12*	*0.29*		*0.12*	*0.29*	
Lane group cap.	*158*	*1224*		*306*	*1247*		*389*	*954*		*389*	*990*	
v/c ratio	*0.16*	*0.62*		*0.66*	*0.45*		*0.66*	*0.58*		*0.53*	*0.32*	
Flow ratio	*0.02*	*0.23*		*0.06*	*0.16*		*0.08*	*0.17*		*0.06*	*0.09*	
Crit. lane group	*N*	*Y*		*Y*	*N*		*Y*	*Y*		*N*	*N*	
Sum flow ratios	*0.53*											
Lost time/cycle	*16.00*											
Critical v/c ratio	*0.61*											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*		*L*	*TR*	
Adj. flow rate	*26*	*756*		*202*	*559*		*257*	*549*		*207*	*316*	
Lane group cap.	*158*	*1224*		*306*	*1247*		*389*	*954*		*389*	*990*	
v/c ratio	*0.16*	*0.62*		*0.66*	*0.45*		*0.66*	*0.58*		*0.53*	*0.32*	
Green ratio	*0.09*	*0.37*		*0.09*	*0.37*		*0.12*	*0.29*		*0.12*	*0.29*	
Unif. delay d1	*50.3*	*31.1*		*52.7*	*28.8*		*50.7*	*36.2*		*49.9*	*33.2*	
Delay factor k	*0.11*	*0.20*		*0.23*	*0.11*		*0.24*	*0.17*		*0.14*	*0.11*	
Increm. delay d2	*0.5*	*1.0*		*5.3*	*0.3*		*4.2*	*0.9*		*1.4*	*0.2*	
PF factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
Control delay	*50.8*	*32.1*		*58.0*	*29.1*		*54.9*	*37.0*		*51.3*	*33.4*	
Lane group LOS	*D*	*C*		*E*	*C*		*D*	*D*		*D*	*C*	
Apprch. delay	*32.7*			*36.7*			*42.7*			*40.5*		
Approach LOS	*C*			*D*			*D*			*D*		
Intersec. delay	*38.0*			Intersection LOS						*D*		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *GP Update*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*120.0*			
Prot. phase eff. green intvl, g (s)				
Opposed queue eff. green intvl, g_q (s)				
Unopposed green intvl, g_u (s)				
Red time, r(s)				
Arrival rate, q_a (veh/s)				
Prot. phase departure rate, s_p (veh/s)				
Perm. phase departure rate, s_s (veh/s)				
X_{perm}				
X_{prot} (N/A for lagging left-turns)				

Uniform Queue Size and Delay Computations

	EB	WB	NB	SB
Queue at start of green arrow, Q_a				
Queue at start of unsaturated green, Q_u				
Residual queue, Q_r				
Uniform delay, d_1				

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(S_p - q_s)} + g_q Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(s_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(S_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(S_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(S_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(S_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *GP Update*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*		*L*	*TR*	
Init. queue/lane	*0.0*	*0.0*		*0.0*	*0.0*		*0.0*	*0.0*		*0.0*	*0.0*	
Flow rate/lane	*26*	*756*		*202*	*559*		*257*	*549*		*207*	*316*	
Satflow per lane	*1719*	*1753*		*1719*	*1785*		*1719*	*1717*		*1719*	*1783*	
Capacity/lane	*158*	*1224*		*306*	*1247*		*389*	*954*		*389*	*990*	
Flow ratio	*0.02*	*0.23*		*0.06*	*0.16*		*0.08*	*0.17*		*0.06*	0.09	
v/c ratio	*0.16*	*0.62*		*0.66*	*0.45*		*0.66*	*0.58*		*0.53*	*0.32*	
I factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*		*3*	*3*	
Platoon ratio	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*	
PF factor	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*	
Q_1	*0.8*	*10.8*		*3.4*	*7.4*		*4.2*	*8.2*		*3.3*	*4.3*	
k_B	*0.3*	*0.6*		*0.3*	*0.6*		*0.3*	*0.5*		*0.3*	*0.6*	
Q_2	*0.1*	*1.0*		*0.5*	*0.5*		*0.6*	*0.7*		*0.3*	*0.3*	
Q avg.	*0.9*	*11.8*		*3.9*	*7.9*		*4.8*	*8.9*		*3.7*	*4.6*	

Percentile Back of Queue (95th percentile)

$f_{B\%}$	*2.1*	*1.8*		*2.0*	*1.9*		*2.0*	*1.9*		*2.0*	*2.0*	
BOQ, $Q_{\%}$	*1.8*	*21.5*		*7.7*	*14.9*		*9.4*	*16.6*		*7.3*	*8.9*	

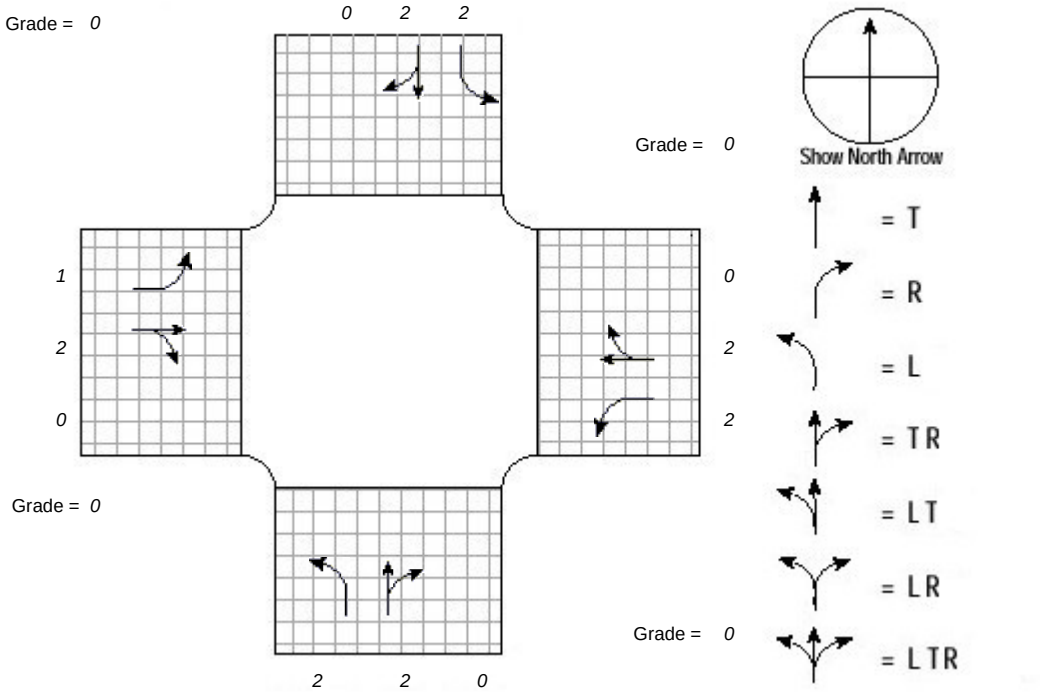
Queue Storage Ratio

Q spacing	*25.0*	*25.0*		*25.0*	*25.0*		*25.0*	*25.0*		*25.0*	*25.0*	
Q storage	*0*	*0*		*0*	*0*		*0*	*0*		*0*	*0*	
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst		Intersection	*Sunrise Way @ Vista Chino*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*9/4/2006*	Jurisdiction	*Palm Springs*
Time Period	*PM Peak Hour*	Analysis Year	*GP Buildout*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*105*	*892*	*114*	*245*	*618*	*107*	*357*	*673*	*284*	*262*	*343*	*73*
% Heavy veh	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	
Ext. eff. green	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*		*3*	*3*	
Unit Extension	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*		*12.0*	*12.0*		*12.0*	*12.0*		*12.0*	*12.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr	*0*	*0*		*0*	*0*		*0*	*0*		*0*	*0*	
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	Excl. Left	Thru & RT	03	04	Excl. Left	Thru & RT	07	08
Timing	G = *10.0*	G = *41.0*	G =	G =	G = *15.0*	G = *38.0*	G =	G =
	Y = *4*	Y = *4*	Y =	Y =	Y = *4*	Y = *4*	Y =	Y =

Duration of Analysis (hrs) = *1.00*

Cycle Length C = *120.0*

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *GP Update*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*105*	*892*	*114*	*245*	*618*	*107*	*357*	*673*	*284*	*262*	*343*	*73*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Adj. Flow Rate	*105*	*892*	*114*	*245*	*618*	*107*	*357*	*673*	*284*	*262*	*343*	*73*
Lane Group	*L*	*TR*		*L*	*TR*		*L*	*TR*		*L*	*TR*	
Adj. flow rate	*105*	*1006*		*245*	*725*		*357*	*957*		*262*	*416*	
Prop. LT or RT	*0.000*	*--*	*0.113*	*0.000*	*--*	*0.148*	*0.000*	*--*	*0.297*	*0.000*	*--*	*0.175*

Saturation Flow Rate

Base satflow	*1900*	*1900*		*1900*	*1900*		*1900*	*1900*		*1900*	*1900*	
Num. of lanes	*1*	*2*	*0*	*2*	*2*	*0*	*2*	*2*	*0*	*2*	*2*	*0*
fW	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
fHV	*0.952*	*0.952*		*0.952*	*0.952*		*0.952*	*0.952*		*0.952*	*0.952*	
fg	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
fp	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
fbb	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
fa	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
fLU	*1.000*	*0.952*		*0.971*	*0.952*		*0.971*	*0.952*		*0.971*	*0.952*	
fLT	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*
Secondary fLT			*--*			*--*			*--*			*--*
fRT	*--*	*0.983*		*--*	*0.978*		*--*	*0.955*		*--*	*0.974*	
fLpb	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*
fRpb	*--*	*1.000*		*--*	*1.000*		*--*	*1.000*		*--*	*1.000*	
Adj. satflow	*1719*	*3387*		*3338*	*3369*		*3338*	*3292*		*3338*	*3355*	
Sec. adj. satflow			*--*			*--*			*--*			*--*

CAPACITY AND LOS WORKSHEET

General Information

Project Description *GP Update*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*		*L*	*TR*	
Adj. flow rate	*105*	*1006*		*245*	*725*		*357*	*957*		*262*	*416*	
Satflow rate	*1719*	*3387*		*3338*	*3369*		*3338*	*3292*		*3338*	*3355*	
Lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	
Green ratio	*0.08*	*0.34*		*0.08*	*0.34*		*0.13*	*0.32*		*0.13*	*0.32*	
Lane group cap.	*143*	*1157*		*278*	*1151*		*417*	*1042*		*417*	*1062*	
v/c ratio	*0.73*	*0.87*		*0.88*	*0.63*		*0.86*	*0.92*		*0.63*	*0.39*	
Flow ratio	*0.06*	*0.30*		*0.07*	*0.22*		*0.11*	*0.29*		*0.08*	*0.12*	
Crit. lane group	*N*	*Y*		*Y*	*N*		*Y*	*Y*		*N*	*N*	
Sum flow ratios	*0.77*											
Lost time/cycle	*16.00*											
Critical v/c ratio	*0.89*											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*		*L*	*TR*	
Adj. flow rate	*105*	*1006*		*245*	*725*		*357*	*957*		*262*	*416*	
Lane group cap.	*143*	*1157*		*278*	*1151*		*417*	*1042*		*417*	*1062*	
v/c ratio	*0.73*	*0.87*		*0.88*	*0.63*		*0.86*	*0.92*		*0.63*	*0.39*	
Green ratio	*0.08*	*0.34*		*0.08*	*0.34*		*0.13*	*0.32*		*0.13*	*0.32*	
Unif. delay d1	*53.7*	*37.0*		*54.4*	*33.1*		*51.4*	*39.5*		*49.9*	*32.0*	
Delay factor k	*0.29*	*0.40*		*0.41*	*0.21*		*0.39*	*0.44*		*0.21*	*0.11*	
Increm. delay d2	*19.6*	*8.0*		*33.8*	*1.1*		*18.6*	*15.4*		*3.1*	*0.2*	
PF factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
Control delay	*73.3*	*45.0*		*88.2*	*34.3*		*70.0*	*54.9*		*52.9*	*32.2*	
Lane group LOS	*E*	*D*		*F*	*C*		*E*	*D*		*D*	*C*	
Apprch. delay	*47.7*			*47.9*			*59.0*			*40.2*		
Approach LOS	*D*			*D*			*E*			*D*		
Intersec. delay	*50.1*			Intersection LOS						*D*		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *GP Update*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*120.0*			
Prot. phase eff. green intvl, g (s)				
Opposed queue eff. green intvl, g_q (s)				
Unopposed green intvl, g_u (s)				
Red time, r(s)				
Arrival rate, q_a (veh/s)				
Prot. phase departure rate, s_p (veh/s)				
Perm. phase departure rate, s_s (veh/s)				
X_{perm}				
X_{prot} (N/A for lagging left-turns)				

Uniform Queue Size and Delay Computations

	EB	WB	NB	SB
Queue at start of green arrow, Q_a				
Queue at start of unsaturated green, Q_u				
Residual queue, Q_r				
Uniform delay, d_1				

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][rQ_a + Q_a^{2/(S_p - q_s)} + g_q Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(s_p - q_a)$	$[0.5/(q_a C)][rQ_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(s_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(S_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(s_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(S_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *GP Update*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	*L*	*TR*		*L*	*TR*		*L*	*TR*		*L*	*TR*	
Init. queue/lane	*0.0*	*0.0*		*0.0*	*0.0*		*0.0*	*0.0*		*0.0*	*0.0*	
Flow rate/lane	*105*	*1006*		*245*	*725*		*357*	*957*		*262*	*416*	
Satflow per lane	*1719*	*1778*		*1719*	*1769*		*1719*	*1728*		*1719*	*1762*	
Capacity/lane	*143*	*1157*		*278*	*1151*		*417*	*1042*		*417*	*1062*	
Flow ratio	*0.06*	*0.30*		*0.07*	*0.21*		*0.11*	*0.29*		*0.08*	0.12	
v/c ratio	*0.73*	*0.87*		*0.88*	*0.63*		*0.86*	*0.92*		*0.63*	*0.39*	
I factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*		*3*	*3*	
Platoon ratio	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*	
PF factor	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*	
Q_1	*3.4*	*16.5*		*4.2*	*10.6*		*6.0*	*16.1*		*4.2*	*5.7*	
k_B	*0.3*	*0.6*		*0.3*	*0.6*		*0.3*	*0.6*		*0.3*	*0.6*	
Q_2	*0.7*	*3.7*		*1.6*	*1.0*		*1.7*	*5.2*		*0.5*	*0.4*	
Q avg.	*4.1*	*20.2*		*5.7*	*11.6*		*7.7*	*21.3*		*4.8*	*6.0*	

Percentile Back of Queue (95th percentile)

$f_{B\%}$	*2.0*	*1.7*		*1.9*	*1.8*		*1.9*	*1.7*		*2.0*	*1.9*	
BOQ, $Q_{\%}$	*8.1*	*34.2*		*11.1*	*21.1*		*14.6*	*35.9*		*9.4*	*11.6*	

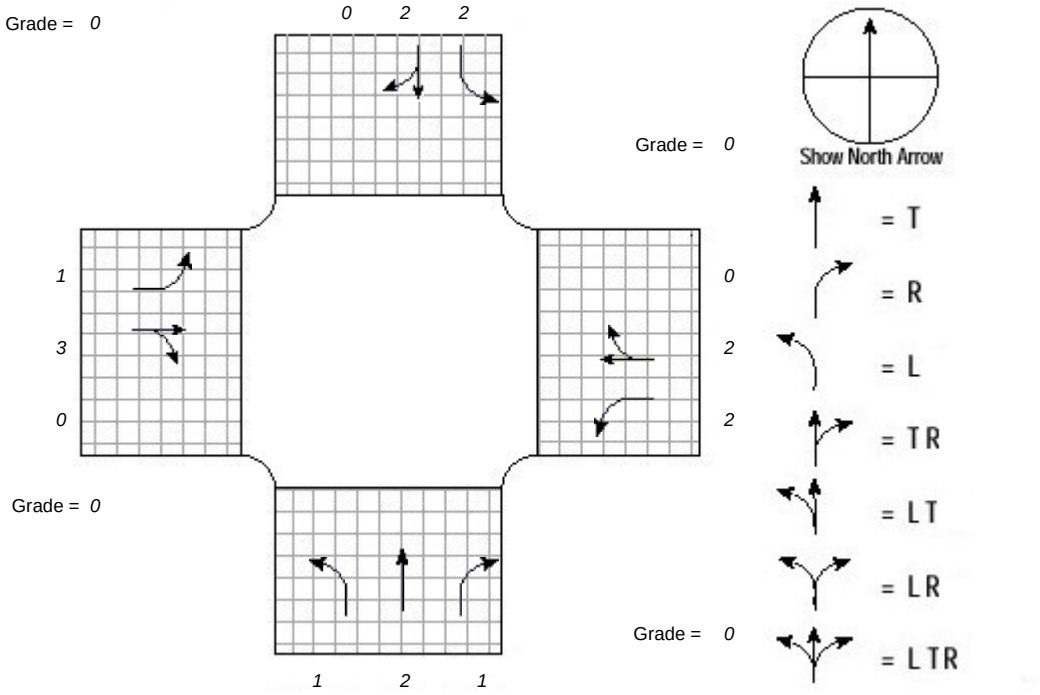
Queue Storage Ratio

Q spacing	*25.0*	*25.0*		*25.0*	*25.0*		*25.0*	*25.0*		*25.0*	*25.0*	
Q storage	*0*	*0*		*0*	*0*							

LONG REPORT

General Information		Site Information	
Analyst		Intersection	*Farrell Drive @ Vista Chino*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*9/11/06*	Jurisdiction	*Palm Springs*
Time Period	*Midday Peak Hour*	Analysis Year	*GP Buildout*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*26*	*1113*	*21*	*382*	*1205*	*212*	*126*	*157*	*388*	*179*	*151*	*30*
% Heavy veh	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	
Ext. eff. green	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*	*3*	*3*	*3*	
Unit Extension	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*		*12.0*	*12.0*		*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr	*0*	*0*		*0*	*0*		*0*	*0*	*0*	*0*	*0*	
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	Excl. Left	Thru & RT	03	04	Excl. Left	Thru & RT	07	08
Timing	G = *17.0*	G = *58.0*	G =	G =	G = *9.0*	G = *20.0*	G =	G =
	Y = *4*	Y = *4*	Y =	Y =	Y = *4*	Y = *4*	Y =	Y =
Duration of Analysis (hrs) = *1.00*					Cycle Length C = *120.0*			

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *GP Update*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*26*	*1113*	*21*	*382*	*1205*	*212*	*126*	*157*	*388*	*179*	*151*	*30*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Adj. Flow Rate	*26*	*1113*	*21*	*382*	*1205*	*212*	*126*	*157*	*388*	*179*	*151*	*30*
Lane Group	*L*	*TR*		*L*	*TR*		*L*	*T*	*R*	*L*	*TR*	
Adj. flow rate	*26*	*1134*		*382*	*1417*		*126*	*157*	*388*	*179*	*181*	
Prop. LT or RT	*0.000*	*--*	*0.019*	*0.000*	*--*	*0.150*	*0.000*	*--*	*0.000*	*0.000*	*--*	*0.166*

Saturation Flow Rate

Base satflow	*1900*	*1900*		*1900*	*1900*		*1900*	*1900*	*1900*	*1900*	*1900*	
Num. of lanes	*1*	*3*	*0*	*2*	*2*	*0*	*1*	*2*	*1*	*2*	*2*	*0*
fW	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fHV	*0.952*	*0.952*		*0.952*	*0.952*		*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	
fg	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fp	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fbb	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fa	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fLU	*1.000*	*0.908*		*0.971*	*0.952*		*1.000*	*0.952*	*1.000*	*0.971*	*0.952*	
fLT	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*
Secondary fLT			*--*			*--*			*--*			*--*
fRT	*--*	*0.997*		*--*	*0.978*		*--*	*1.000*	*0.850*	*--*	*0.975*	
fLpb	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*
fRpb	*--*	*1.000*		*--*	*1.000*		*--*	*1.000*	*1.000*	*--*	*1.000*	
Adj. satflow	*1719*	*4915*		*3338*	*3368*		*1719*	*3445*	*1538*	*3338*	*3360*	
Sec. adj. satflow			*--*			*--*			*--*			*--*

CAPACITY AND LOS WORKSHEET

General Information

Project Description *GP Update*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*TR*		*L*	*T*	*R*	*L*	*TR*	
Adj. flow rate	*26*	*1134*		*382*	*1417*		*126*	*157*	*388*	*179*	*181*	
Satflow rate	*1719*	*4915*		*3338*	*3368*		*1719*	*3445*	*1538*	*3338*	*3360*	
Lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	
Green ratio	*0.14*	*0.48*		*0.14*	*0.48*		*0.08*	*0.17*	*0.86*	*0.08*	*0.17*	
Lane group cap.	*244*	*2376*		*473*	*1628*		*129*	*574*	*1320*	*250*	*560*	
v/c ratio	*0.11*	*0.48*		*0.81*	*0.87*		*0.98*	*0.27*	*0.29*	*0.72*	*0.32*	
Flow ratio	*0.02*	*0.23*		*0.11*	*0.42*		*0.07*	*0.05*	*0.25*	*0.05*	*0.05*	
Crit. lane group	*N*	*N*		*Y*	*Y*		*Y*	*N*	*N*	*N*	*Y*	
Sum flow ratios	*0.66*											
Lost time/cycle	*16.00*											
Critical v/c ratio	*0.76*											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*TR*		*L*	*T*	*R*	*L*	*TR*	
Adj. flow rate	*26*	*1134*		*382*	*1417*		*126*	*157*	*388*	*179*	*181*	
Lane group cap.	*244*	*2376*		*473*	*1628*		*129*	*574*	*1320*	*250*	*560*	
v/c ratio	*0.11*	*0.48*		*0.81*	*0.87*		*0.98*	*0.27*	*0.29*	*0.72*	*0.32*	
Green ratio	*0.14*	*0.48*		*0.14*	*0.48*		*0.08*	*0.17*	*0.86*	*0.08*	*0.17*	
Unif. delay d1	*44.9*	*20.8*		*49.9*	*27.6*		*55.4*	*43.7*	*1.6*	*54.3*	*44.0*	
Delay factor k	*0.11*	*0.11*		*0.35*	*0.40*		*0.48*	*0.11*	*0.11*	*0.28*	*0.11*	
Increm. delay d2	*0.2*	*0.2*		*10.8*	*5.8*		*134.2*	*0.3*	*0.1*	*9.9*	*0.3*	
PF factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
Control delay	*45.1*	*21.0*		*60.8*	*33.4*		*189.6*	*43.9*	*1.7*	*64.2*	*44.4*	
Lane group LOS	*D*	*C*		*E*	*C*		*F*	*D*	*A*	*E*	*D*	
Apprch. delay	*21.5*			*39.2*			*46.9*			*54.2*		
Approach LOS	*C*			*D*			*D*			*D*		
Intersec. delay	*36.7*			Intersection LOS						*D*		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *GP Update*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*120.0*			
Prot. phase eff. green intvl, g (s)				
Opposed queue eff. green intvl, g_q (s)				
Unopposed green intvl, g_u (s)				
Red time, r(s)				
Arrival rate, q_a (veh/s)				
Prot. phase departure rate, s_p (veh/s)				
Perm. phase departure rate, s_s (veh/s)				
X_{perm}				
X_{prot} (N/A for lagging left-turns)				

Uniform Queue Size and Delay Computations

	EB	WB	NB	SB
Queue at start of green arrow, Q_a				
Queue at start of unsaturated green, Q_u				
Residual queue, Q_r				
Uniform delay, d_1				

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(S_p - q_s)} + g_q Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(s_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(S_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(S_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(S_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(S_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *GP Update*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	*L*	*TR*		*L*	*TR*		*L*	*T*	*R*	*L*	*TR*	
Init. queue/lane	*0.0*	*0.0*		*0.0*	*0.0*		*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	
Flow rate/lane	*26*	*1134*		*382*	*1417*		*126*	*157*	*388*	*179*	*181*	
Satflow per lane	*1719*	*1804*		*1719*	*1768*		*1719*	*1809*	*1538*	*1719*	*1764*	
Capacity/lane	*244*	*2376*		*473*	*1628*		*129*	*574*	*1320*	*250*	*560*	
Flow ratio	*0.02*	*0.23*		*0.11*	*0.42*		*0.07*	*0.05*	*0.25*	*0.05*	0.05	
v/c ratio	*0.11*	*0.48*		*0.81*	*0.87*		*0.98*	*0.27*	*0.29*	*0.72*	*0.32*	
I factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*	*3*	*3*	*3*	
Platoon ratio	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	
PF factor	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	
Q_1	*0.8*	*9.3*		*6.3*	*22.1*		*4.2*	*2.4*	*2.5*	*3.0*	*2.8*	
k_B	*0.4*	*0.8*		*0.4*	*0.7*		*0.2*	*0.4*	*1.0*	*0.2*	*0.4*	
Q_2	*0.0*	*0.7*		*1.4*	*4.6*		*3.2*	*0.1*	*0.4*	*0.6*	*0.2*	
Q avg.	*0.8*	*10.0*		*7.7*	*26.7*		*7.4*	*2.5*	*2.9*	*3.6*	*3.0*	

Percentile Back of Queue (95th percentile)

$f_{B\%}$	*2.1*	*1.8*		*1.9*	*1.6*		*1.9*	*2.0*	*2.0*	*2.0*	*2.0*	
BOQ, $Q_{\%}$	*1.7*	*18.4*		*14.6*	*43.7*		*14.0*	*5.1*	*5.7*	*7.2*	*6.0*	

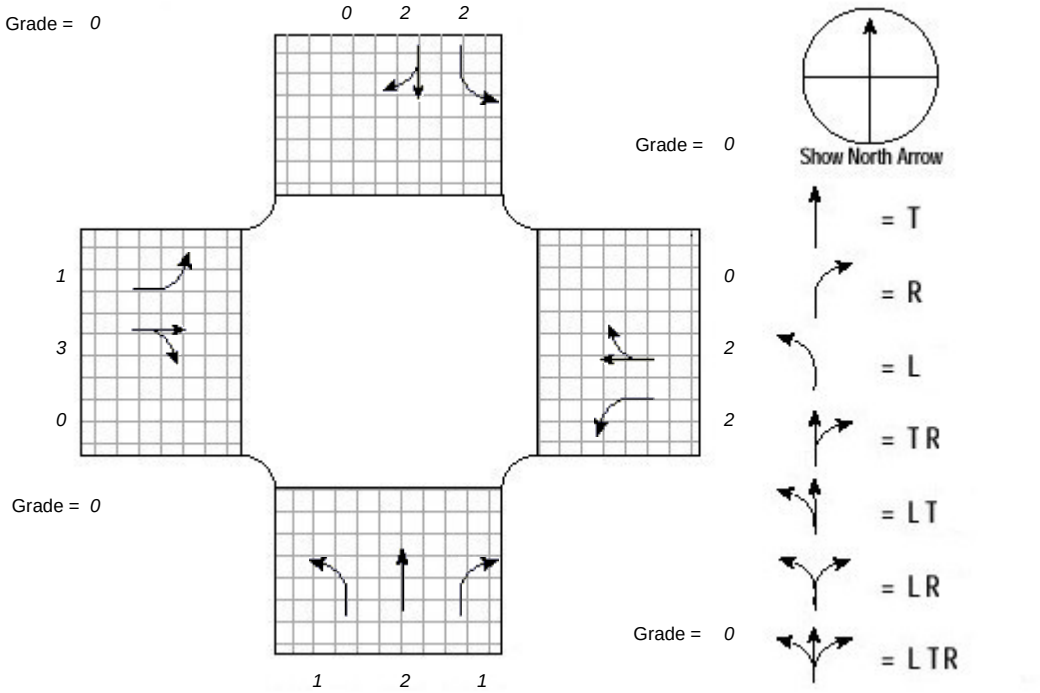
Queue Storage Ratio

Q spacing	*25.0*	*25.0*		*25.0*	*25.0*		*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	
Q storage	*0*	*0*		*0*	*0*		*0*	*0*	*0*	*0*	*0*	
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst		Intersection	*Farrell Drive @ Vista Chino*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*9/11/06*	Jurisdiction	*Palm Springs*
Time Period	*PM Peak Hour*	Analysis Year	*GP Buildout*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*51*	*1650*	*111*	*308*	*1367*	*205*	*171*	*324*	*594*	*246*	*152*	*26*
% Heavy veh	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	
Ext. eff. green	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*	*3*	*3*	*3*	
Unit Extension	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*		*12.0*	*12.0*		*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr	*0*	*0*		*0*	*0*		*0*	*0*	*0*	*0*	*0*	
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	Excl. Left	Thru & RT	03	04	Excl. Left	Thru & RT	07	08
Timing	G = *12.0*	G = *59.0*	G =	G =	G = *13.0*	G = *20.0*	G =	G =
	Y = *4*	Y = *4*	Y =	Y =	Y = *4*	Y = *4*	Y =	Y =
Duration of Analysis (hrs) = *1.00*					Cycle Length C = *120.0*			

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *GP Update*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*51*	*1650*	*111*	*308*	*1367*	*205*	*171*	*324*	*594*	*246*	*152*	*26*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Adj. Flow Rate	*51*	*1650*	*111*	*308*	*1367*	*205*	*171*	*324*	*594*	*246*	*152*	*26*
Lane Group	*L*	*TR*		*L*	*TR*		*L*	*T*	*R*	*L*	*TR*	
Adj. flow rate	*51*	*1761*		*308*	*1572*		*171*	*324*	*594*	*246*	*178*	
Prop. LT or RT	*0.000*	*--*	*0.063*	*0.000*	*--*	*0.130*	*0.000*	*--*	*0.000*	*0.000*	*--*	*0.146*

Saturation Flow Rate

Base satflow	*1900*	*1900*		*1900*	*1900*		*1900*	*1900*	*1900*	*1900*	*1900*	
Num. of lanes	*1*	*3*	*0*	*2*	*2*	*0*	*1*	*2*	*1*	*2*	*2*	*0*
fW	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fHV	*0.952*	*0.952*		*0.952*	*0.952*		*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	
fg	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fp	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fbb	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fa	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fLU	*1.000*	*0.908*		*0.971*	*0.952*		*1.000*	*0.952*	*1.000*	*0.971*	*0.952*	
fLT	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*
Secondary fLT			*--*			*--*			*--*			*--*
fRT	*--*	*0.991*		*--*	*0.980*		*--*	*1.000*	*0.850*	*--*	*0.978*	
fLpb	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*
fRpb	*--*	*1.000*		*--*	*1.000*		*--*	*1.000*	*1.000*	*--*	*1.000*	
Adj. satflow	*1719*	*4883*		*3338*	*3378*		*1719*	*3445*	*1538*	*3338*	*3370*	
Sec. adj. satflow			*--*			*--*			*--*			*--*

CAPACITY AND LOS WORKSHEET

General Information

Project Description *GP Update*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*TR*		*L*	*T*	*R*	*L*	*TR*	
Adj. flow rate	*51*	*1761*		*308*	*1572*		*171*	*324*	*594*	*246*	*178*	
Satflow rate	*1719*	*4883*		*3338*	*3378*		*1719*	*3445*	*1538*	*3338*	*3370*	
Lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	
Green ratio	*0.10*	*0.49*		*0.10*	*0.49*		*0.11*	*0.17*	*0.82*	*0.11*	*0.17*	
Lane group cap.	*172*	*2401*		*334*	*1661*		*186*	*574*	*1269*	*362*	*562*	
v/c ratio	*0.30*	*0.73*		*0.92*	*0.95*		*0.92*	*0.56*	*0.47*	*0.68*	*0.32*	
Flow ratio	*0.03*	*0.36*		*0.09*	*0.47*		*0.10*	*0.09*	*0.39*	*0.07*	*0.05*	
Crit. lane group	*N*	*N*		*Y*	*Y*		*Y*	*Y*	*N*	*N*	*N*	
Sum flow ratios	*0.75*											
Lost time/cycle	*16.00*											
Critical v/c ratio	*0.87*											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*TR*		*L*	*T*	*R*	*L*	*TR*	
Adj. flow rate	*51*	*1761*		*308*	*1572*		*171*	*324*	*594*	*246*	*178*	
Lane group cap.	*172*	*2401*		*334*	*1661*		*186*	*574*	*1269*	*362*	*562*	
v/c ratio	*0.30*	*0.73*		*0.92*	*0.95*		*0.92*	*0.56*	*0.47*	*0.68*	*0.32*	
Green ratio	*0.10*	*0.49*		*0.10*	*0.49*		*0.11*	*0.17*	*0.82*	*0.11*	*0.17*	
Unif. delay d1	*50.1*	*24.2*		*53.5*	*29.0*		*53.0*	*46.0*	*3.0*	*51.5*	*44.0*	
Delay factor k	*0.11*	*0.29*		*0.44*	*0.46*		*0.44*	*0.16*	*0.11*	*0.25*	*0.11*	
Increm. delay d2	*1.0*	*1.2*		*42.9*	*15.2*		*66.2*	*1.3*	*0.3*	*5.2*	*0.3*	
PF factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
Control delay	*51.1*	*25.5*		*96.5*	*44.2*		*119.2*	*47.3*	*3.3*	*56.7*	*44.3*	
Lane group LOS	*D*	*C*		*F*	*D*		*F*	*D*	*A*	*E*	*D*	
Apprch. delay	*26.2*			*52.7*			*34.6*			*51.5*		
Approach LOS	*C*			*D*			*C*			*D*		
Intersec. delay	*39.6*			Intersection LOS						*D*		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *GP Update*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*120.0*			
Prot. phase eff. green intvl, g (s)				
Opposed queue eff. green intvl, g_q (s)				
Unopposed green intvl, g_u (s)				
Red time, r(s)				
Arrival rate, q_a (veh/s)				
Prot. phase departure rate, s_p (veh/s)				
Perm. phase departure rate, s_s (veh/s)				
X_{perm}				
X_{prot} (N/A for lagging left-turns)				

Uniform Queue Size and Delay Computations

	EB	WB	NB	SB
Queue at start of green arrow, Q_a				
Queue at start of unsaturated green, Q_u				
Residual queue, Q_r				
Uniform delay, d_1				

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(S_p - q_s)} + g_q Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(s_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(S_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(S_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(S_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(S_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *GP Update*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	*L*	*TR*		*L*	*TR*		*L*	*T*	*R*	*L*	*TR*	
Init. queue/lane	*0.0*	*0.0*		*0.0*	*0.0*		*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	
Flow rate/lane	*51*	*1761*		*308*	*1572*		*171*	*324*	*594*	*246*	*178*	
Satflow per lane	*1719*	*1792*		*1719*	*1774*		*1719*	*1809*	*1538*	*1719*	*1769*	
Capacity/lane	*172*	*2401*		*334*	*1661*		*186*	*574*	*1269*	*362*	*562*	
Flow ratio	*0.03*	*0.36*		*0.09*	*0.47*		*0.10*	*0.09*	*0.39*	*0.07*	0.05	
v/c ratio	*0.30*	*0.73*		*0.92*	*0.95*		*0.92*	*0.56*	*0.47*	*0.68*	*0.32*	
I factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*	*3*	*3*	*3*	
Platoon ratio	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	
PF factor	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	
Q_1	*1.6*	*17.1*		*5.2*	*26.1*		*5.6*	*5.2*	*5.6*	*4.0*	*2.7*	
k_B	*0.3*	*0.8*		*0.3*	*0.8*		*0.3*	*0.4*	*0.9*	*0.3*	*0.4*	
Q_2	*0.1*	*2.1*		*2.5*	*9.5*		*2.5*	*0.5*	*0.8*	*0.6*	*0.2*	
Q avg.	*1.7*	*19.2*		*7.7*	*35.6*		*8.2*	*5.7*	*6.5*	*4.7*	*2.9*	

Percentile Back of Queue (95th percentile)

$f_{B\%}$	*2.0*	*1.7*		*1.9*	*1.6*		*1.9*	*1.9*	*1.9*	*2.0*	*2.0*	
BOQ, $Q_{\%}$	*3.5*	*32.7*		*14.6*	*56.3*		*15.4*	*11.1*	*12.4*	*9.1*	*5.8*	

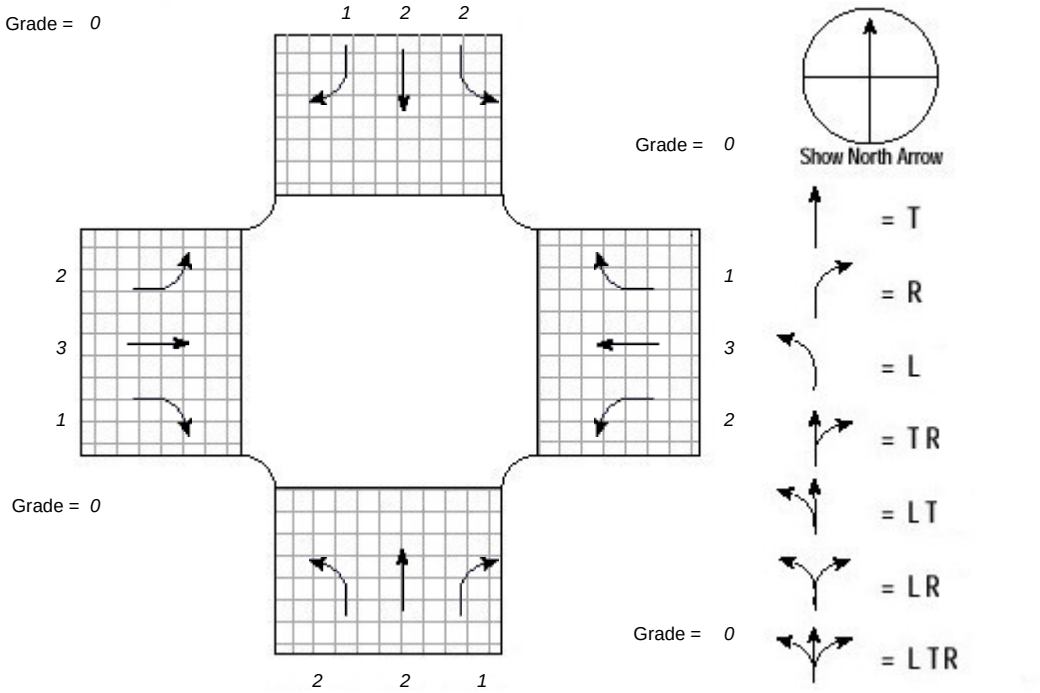
Queue Storage Ratio

Q spacing	*25.0*	*25.0*		*25.0*	*25.0*		*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	
Q storage	*0*	*0*		*0*	*0*		*0*	*0*	*0*	*0*	*0*	
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst		Intersection	*Gene Autry Trail @ Vista Chino*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*9/11/06*	Jurisdiction	*Palm Springs*
Time Period	*Midday Peak Hour*	Analysis Year	*GP Buildout*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*390*	*1113*	*398*	*183*	*883*	*144*	*380*	*524*	*159*	*102*	*595*	*406*
% Heavy veh	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*
Ext. eff. green	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*
Arrival type	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*
Unit Extension	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	Excl. Left	EB Only	Thru & RT	04	Excl. Left	NB Only	Thru & RT	08
Timing	G = *11.0*	G = *3.0*	G = *34.0*	G =	G = *12.0*	G = *2.0*	G = *34.0*	G =
	Y = *4*	Y = *4*	Y = *4*	Y =	Y = *4*	Y = *4*	Y = *4*	Y =
Duration of Analysis (hrs) = *1.00*					Cycle Length C = *120.0*			

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *GP Update*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*390*	*1113*	*398*	*183*	*883*	*144*	*380*	*524*	*159*	*102*	*595*	*406*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Adj. Flow Rate	*390*	*1113*	*398*	*183*	*883*	*144*	*380*	*524*	*159*	*102*	*595*	*406*
Lane Group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*
Adj. flow rate	*390*	*1113*	*398*	*183*	*883*	*144*	*380*	*524*	*159*	*102*	*595*	*406*
Prop. LT or RT	*0.000*	--	*0.000*	*0.000*	--	*0.000*	*0.000*	--	*0.000*	*0.000*	--	*0.000*

Saturation Flow Rate

Base satflow	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*
Num. of lanes	*2*	*3*	*1*	*2*	*3*	*1*	*2*	*2*	*1*	*2*	*2*	*1*
fW	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
fHV	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*
fg	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
fp	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
fbb	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
fa	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
fLU	*0.971*	*0.908*	*1.000*	*0.971*	*0.908*	*1.000*	*0.971*	*0.952*	*1.000*	*0.971*	*0.952*	*1.000*
fLT	*0.950*	*1.000*	--	*0.950*	*1.000*	--	*0.950*	*1.000*	--	*0.950*	*1.000*	--
Secondary fLT			--			--			--			--
fRT	--	*1.000*	*0.850*	--	*1.000*	*0.850*	--	*1.000*	*0.850*	--	*1.000*	*0.850*
fLpb	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--
fRpb	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*
Adj. satflow	*3338*	*4929*	*1538*	*3338*	*4929*	*1538*	*3338*	*3445*	*1538*	*3338*	*3445*	*1538*
Sec. adj. satflow			--			--			--			--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *GP Update*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*
Adj. flow rate	*390*	*1113*	*398*	*183*	*883*	*144*	*380*	*524*	*159*	*102*	*595*	*406*
Satflow rate	*3338*	*4929*	*1538*	*3338*	*4929*	*1538*	*3338*	*3445*	*1538*	*3338*	*3445*	*1538*
Lost time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*
Green ratio	*0.15*	*0.34*	*0.84*	*0.09*	*0.28*	*0.78*	*0.15*	*0.33*	*0.83*	*0.10*	*0.28*	*0.78*
Lane group cap.	*501*	*1684*	*1294*	*306*	*1397*	*1205*	*501*	*1148*	*1282*	*334*	*976*	*1205*
v/c ratio	*0.78*	*0.66*	*0.31*	*0.60*	*0.63*	*0.12*	*0.76*	*0.46*	*0.12*	*0.31*	*0.61*	*0.34*
Flow ratio	*0.12*	*0.23*	*0.26*	*0.05*	*0.18*	*0.09*	*0.11*	*0.15*	*0.10*	*0.03*	*0.17*	*0.26*
Crit. lane group	*Y*	*N*	*N*	*N*	*Y*	*N*	*Y*	*N*	*N*	*N*	*Y*	*N*
Sum flow ratios	*0.58*											
Lost time/cycle	*16.00*											
Critical v/c ratio	*0.67*											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*
Adj. flow rate	*390*	*1113*	*398*	*183*	*883*	*144*	*380*	*524*	*159*	*102*	*595*	*406*
Lane group cap.	*501*	*1684*	*1294*	*306*	*1397*	*1205*	*501*	*1148*	*1282*	*334*	*976*	*1205*
v/c ratio	*0.78*	*0.66*	*0.31*	*0.60*	*0.63*	*0.12*	*0.76*	*0.46*	*0.12*	*0.31*	*0.61*	*0.34*
Green ratio	*0.15*	*0.34*	*0.84*	*0.09*	*0.28*	*0.78*	*0.15*	*0.33*	*0.83*	*0.10*	*0.28*	*0.78*
Unif. delay d1	*49.1*	*33.6*	*2.0*	*52.4*	*37.5*	*3.1*	*48.9*	*31.5*	*1.9*	*50.1*	*37.3*	*3.8*
Delay factor k	*0.33*	*0.24*	*0.11*	*0.19*	*0.21*	*0.11*	*0.31*	*0.11*	*0.11*	*0.11*	*0.20*	*0.11*
Increm. delay d2	*8.1*	*1.0*	*0.1*	*3.2*	*0.9*	*0.0*	*6.9*	*0.3*	*0.0*	*0.5*	*1.1*	*0.2*
PF factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
Control delay	*57.2*	*34.6*	*2.2*	*55.6*	*38.5*	*3.2*	*55.8*	*31.7*	*1.9*	*50.7*	*38.4*	*4.0*
Lane group LOS	*E*	*C*	*A*	*E*	*D*	*A*	*E*	*C*	*A*	*D*	*D*	*A*
Apprch. delay	*32.4*			*36.9*			*35.9*			*26.9*		
Approach LOS	*C*			*D*			*D*			*C*		
Intersec. delay	*33.0*			Intersection LOS						*C*		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *GP Update*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*120.0*			
Prot. phase eff. green intvl, g (s)				
Opposed queue eff. green intvl, g_q (s)				
Unopposed green intvl, g_u (s)				
Red time, r(s)				
Arrival rate, q_a (veh/s)				
Prot. phase departure rate, s_p (veh/s)				
Perm. phase departure rate, s_s (veh/s)				
X_{perm}				
X_{prot} (N/A for lagging left-turns)				

Uniform Queue Size and Delay Computations

	EB	WB	NB	SB
Queue at start of green arrow, Q_a				
Queue at start of unsaturated green, Q_u				
Residual queue, Q_r				
Uniform delay, d_1				

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(S_p - q_s)} + g_q Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(s_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(S_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(S_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(S_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(S_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *GP Update*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*
Init. queue/lane	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Flow rate/lane	*390*	*1113*	*398*	*183*	*883*	*144*	*380*	*524*	*159*	*102*	*595*	*406*
Satflow per lane	*1719*	*1809*	*1538*	*1719*	*1809*	*1538*	*1719*	*1809*	*1538*	*1719*	*1809*	*1538*
Capacity/lane	*501*	*1684*	*1294*	*306*	*1397*	*1205*	*501*	*1148*	*1282*	*334*	*976*	*1205*
Flow ratio	*0.12*	*0.23*	*0.26*	*0.05*	*0.18*	*0.09*	*0.11*	*0.15*	*0.10*	*0.03*	0.17	*0.26*
v/c ratio	*0.78*	*0.66*	*0.31*	*0.60*	*0.63*	*0.12*	*0.76*	*0.46*	*0.12*	*0.31*	*0.61*	*0.34*
I factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
Arrival type	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*
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*
PF 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*
Q_1	*6.4*	*11.6*	*2.8*	*3.0*	*9.4*	*1.1*	*6.2*	*7.2*	*1.0*	*1.6*	*9.0*	*4.0*
k_B	*0.4*	*0.6*	*1.0*	*0.3*	*0.5*	*0.9*	*0.4*	*0.6*	*1.0*	*0.3*	*0.5*	*0.9*
Q_2	*1.2*	*1.2*	*0.4*	*0.4*	*0.9*	*0.1*	*1.1*	*0.5*	*0.1*	*0.1*	*0.8*	*0.5*
Q avg.	*7.6*	*12.7*	*3.3*	*3.4*	*10.4*	*1.3*	*7.3*	*7.7*	*1.1*	*1.7*	*9.9*	*4.4*

Percentile Back of Queue (95th percentile)

$f_{B\%}$	*1.9*	*1.8*	*2.0*	*2.0*	*1.8*	*2.1*	*1.9*	*1.9*	*2.1*	*2.0*	*1.8*	*2.0*
BOQ, $Q_{\%}$	*14.5*	*22.9*	*6.5*	*6.8*	*19.0*	*2.6*	*13.9*	*14.6*	*2.3*	*3.5*	*18.2*	*8.8*

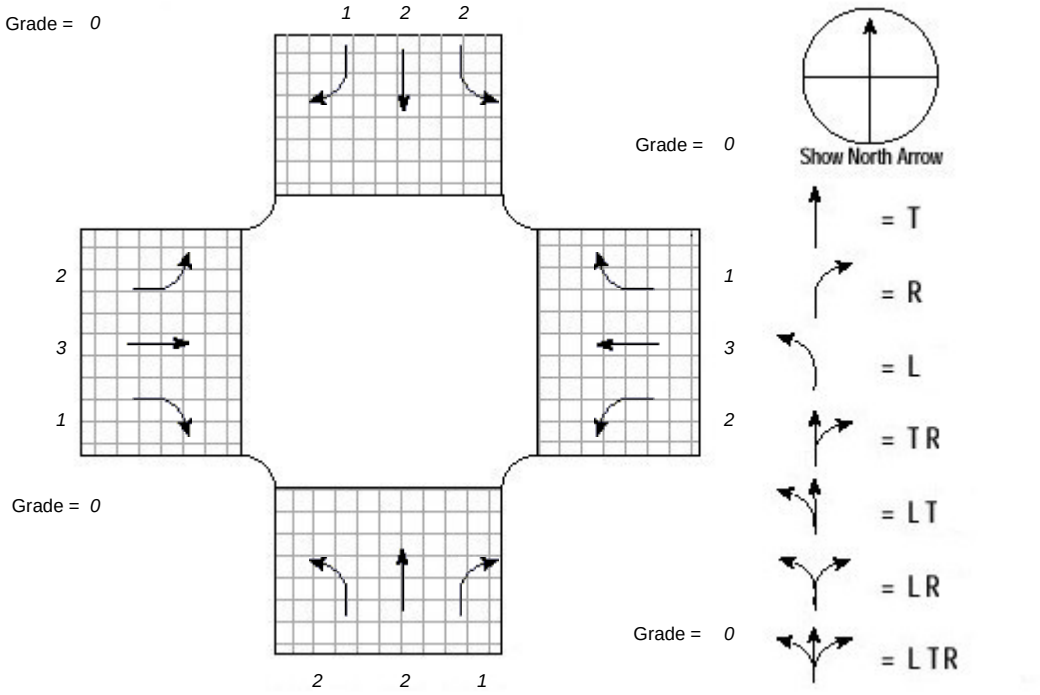
Queue Storage Ratio

Q spacing	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*
Q storage	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst		Intersection	*Gene Autry Trail @ Vista Chino*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*9/11/06*	Jurisdiction	*Palm Springs*
Time Period	*PM Peak Hour*	Analysis Year	*GP Buildout*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*508*	*1830*	*429*	*150*	*1121*	*192*	*555*	*959*	*377*	*278*	*518*	*487*
% Heavy veh	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*
Ext. eff. green	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*
Arrival type	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*
Unit Extension	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	Excl. Left	EB Only	Thru & RT	04	Excl. Left	NB Only	Thru & RT	08
Timing	G = *6.0*	G = *11.0*	G = *33.0*	G =	G = *14.0*	G = *3.0*	G = *29.0*	G =
	Y = *4*	Y = *4*	Y = *4*	Y =	Y = *4*	Y = *4*	Y = *4*	Y =
Duration of Analysis (hrs) = *1.00*					Cycle Length C = *120.0*			

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *GP Update*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*508*	*1830*	*429*	*150*	*1121*	*192*	*555*	*959*	*377*	*278*	*518*	*487*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Adj. Flow Rate	*508*	*1830*	*429*	*150*	*1121*	*192*	*555*	*959*	*377*	*278*	*518*	*487*
Lane Group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*
Adj. flow rate	*508*	*1830*	*429*	*150*	*1121*	*192*	*555*	*959*	*377*	*278*	*518*	*487*
Prop. LT or RT	*0.000*	--	*0.000*	*0.000*	--	*0.000*	*0.000*	--	*0.000*	*0.000*	--	*0.000*

Saturation Flow Rate

Base satflow	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*
Num. of lanes	*2*	*3*	*1*	*2*	*3*	*1*	*2*	*2*	*1*	*2*	*2*	*1*
fW	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
fHV	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*
fg	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
fp	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
fbb	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
fa	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
fLU	*0.971*	*0.908*	*1.000*	*0.971*	*0.908*	*1.000*	*0.971*	*0.952*	*1.000*	*0.971*	*0.952*	*1.000*
fLT	*0.950*	*1.000*	--	*0.950*	*1.000*	--	*0.950*	*1.000*	--	*0.950*	*1.000*	--
Secondary fLT			--			--			--			--
fRT	--	*1.000*	*0.850*	--	*1.000*	*0.850*	--	*1.000*	*0.850*	--	*1.000*	*0.850*
fLpb	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--
fRpb	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*
Adj. satflow	*3338*	*4929*	*1538*	*3338*	*4929*	*1538*	*3338*	*3445*	*1538*	*3338*	*3445*	*1538*
Sec. adj. satflow			--			--			--			--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *GP Update*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*
Adj. flow rate	*508*	*1830*	*429*	*150*	*1121*	*192*	*555*	*959*	*377*	*278*	*518*	*487*
Satflow rate	*3338*	*4929*	*1538*	*3338*	*4929*	*1538*	*3338*	*3445*	*1538*	*3338*	*3445*	*1538*
Lost time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*
Green ratio	*0.17*	*0.40*	*0.88*	*0.05*	*0.28*	*0.76*	*0.17*	*0.30*	*0.82*	*0.12*	*0.24*	*0.76*
Lane group cap.	*584*	*1972*	*1359*	*167*	*1355*	*1166*	*584*	*1034*	*1256*	*389*	*833*	*1166*
v/c ratio	*0.87*	*0.93*	*0.32*	*0.90*	*0.83*	*0.16*	*0.95*	*0.93*	*0.30*	*0.71*	*0.62*	*0.42*
Flow ratio	*0.15*	*0.37*	*0.28*	*0.04*	*0.23*	*0.12*	*0.17*	*0.28*	*0.25*	*0.08*	*0.15*	*0.32*
Crit. lane group	*N*	*Y*	*N*	*Y*	*N*	*N*	*N*	*Y*	*N*	*Y*	*N*	*N*
Sum flow ratios	*0.78*											
Lost time/cycle	*16.00*											
Critical v/c ratio	*0.90*											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*
Adj. flow rate	*508*	*1830*	*429*	*150*	*1121*	*192*	*555*	*959*	*377*	*278*	*518*	*487*
Lane group cap.	*584*	*1972*	*1359*	*167*	*1355*	*1166*	*584*	*1034*	*1256*	*389*	*833*	*1166*
v/c ratio	*0.87*	*0.93*	*0.32*	*0.90*	*0.83*	*0.16*	*0.95*	*0.93*	*0.30*	*0.71*	*0.62*	*0.42*
Green ratio	*0.17*	*0.40*	*0.88*	*0.05*	*0.28*	*0.76*	*0.17*	*0.30*	*0.82*	*0.12*	*0.24*	*0.76*
Unif. delay d1	*48.2*	*34.4*	*1.1*	*56.7*	*40.8*	*4.0*	*49.0*	*40.7*	*2.7*	*51.1*	*40.6*	*5.1*
Delay factor k	*0.40*	*0.44*	*0.11*	*0.42*	*0.37*	*0.11*	*0.46*	*0.44*	*0.11*	*0.28*	*0.21*	*0.11*
Increm. delay d2	*15.4*	*9.7*	*0.1*	*60.2*	*4.6*	*0.1*	*38.1*	*17.4*	*0.1*	*6.4*	*1.5*	*0.2*
PF factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
Control delay	*63.6*	*44.1*	*1.3*	*116.9*	*45.4*	*4.1*	*87.1*	*58.2*	*2.8*	*57.4*	*42.1*	*5.4*
Lane group LOS	*E*	*D*	*A*	*F*	*D*	*A*	*F*	*E*	*A*	*E*	*D*	*A*
Apprch. delay	*41.0*			*47.3*			*55.6*			*31.5*		
Approach LOS	*D*			*D*			*E*			*C*		
Intersec. delay	*44.3*			Intersection LOS						*D*		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *GP Update*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*120.0*			
Prot. phase eff. green intvl, g (s)				
Opposed queue eff. green intvl, g_q (s)				
Unopposed green intvl, g_u (s)				
Red time, r(s)				
Arrival rate, q_a (veh/s)				
Prot. phase departure rate, s_p (veh/s)				
Perm. phase departure rate, s_s (veh/s)				
X_{perm}				
X_{prot} (N/A for lagging left-turns)				
Uniform Queue Size and Delay Computations				
Queue at start of green arrow, Q_a				
Queue at start of unsaturated green, Q_u				
Residual queue, Q_r				
Uniform delay, d_1				

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][rQ_a + Q_a^{2/(s_p - q_s)} + g_q Q_u + Q_u^{2/(s_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(s_p - q_a)$	$[0.5/(q_a C)][rQ_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(s_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(s_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(s_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(s_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(s_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(s_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *GP Update*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*
Init. queue/lane	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Flow rate/lane	*508*	*1830*	*429*	*150*	*1121*	*192*	*555*	*959*	*377*	*278*	*518*	*487*
Satflow per lane	*1719*	*1809*	*1538*	*1719*	*1809*	*1538*	*1719*	*1809*	*1538*	*1719*	*1809*	*1538*
Capacity/lane	*584*	*1972*	*1359*	*167*	*1355*	*1166*	*584*	*1034*	*1256*	*389*	*833*	*1166*
Flow ratio	*0.15*	*0.37*	*0.28*	*0.04*	*0.23*	*0.12*	*0.17*	*0.28*	*0.25*	*0.08*	0.15	*0.32*
v/c ratio	*0.87*	*0.93*	*0.32*	*0.90*	*0.83*	*0.16*	*0.95*	*0.93*	*0.30*	*0.71*	*0.62*	*0.42*
I factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
Arrival type	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*
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*
PF 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*
Q_1	*8.5*	*21.3*	*2.3*	*2.6*	*12.9*	*1.8*	*9.4*	*16.3*	*3.1*	*4.6*	*8.1*	*5.7*
k_B	*0.4*	*0.7*	*1.0*	*0.2*	*0.5*	*0.9*	*0.4*	*0.6*	*0.9*	*0.3*	*0.5*	*0.9*
Q_2	*2.4*	*6.9*	*0.5*	*1.4*	*2.4*	*0.2*	*4.7*	*5.6*	*0.4*	*0.8*	*0.8*	*0.6*
Q avg.	*10.8*	*28.2*	*2.8*	*3.9*	*15.3*	*1.9*	*14.1*	*21.8*	*3.5*	*5.4*	*8.9*	*6.4*

Percentile Back of Queue (95th percentile)

$f_{B\%}$	*1.8*	*1.6*	*2.0*	*2.0*	*1.8*	*2.0*	*1.8*	*1.7*	*2.0*	*1.9*	*1.9*	*1.9*
BOQ, $Q_{\%}$	*19.8*	*45.9*	*5.6*	*7.7*	*26.9*	*4.0*	*25.0*	*36.7*	*6.9*	*10.4*	*16.6*	*12.3*

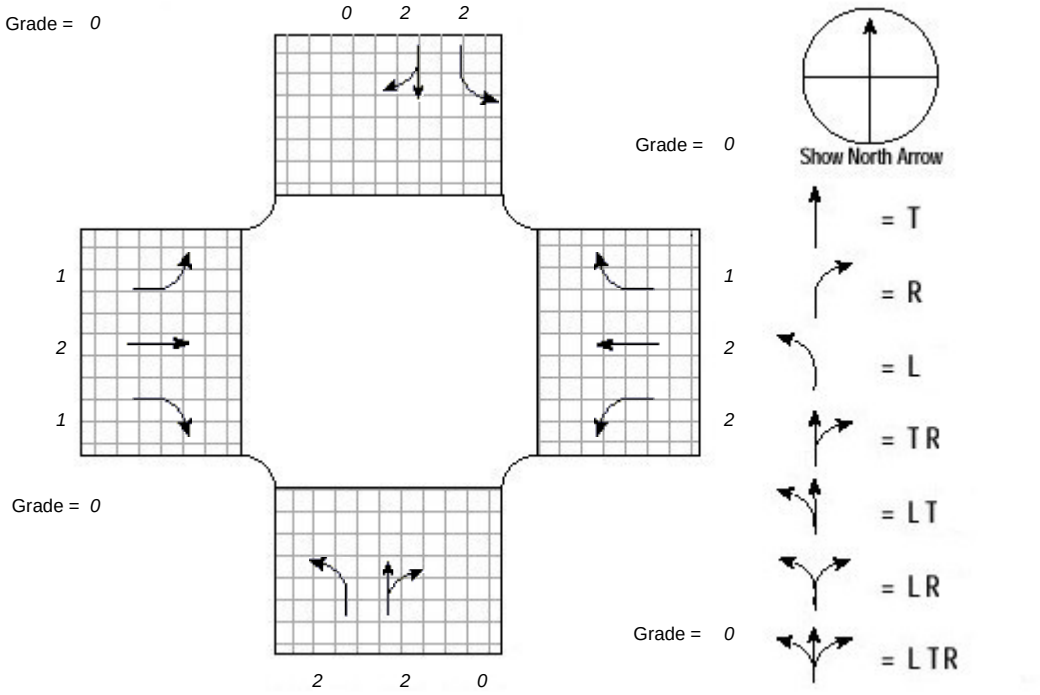
Queue Storage Ratio

Q spacing	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*
Q storage	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst		Intersection	*Sunrise Way @ Ramon Road*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*9/11/06*	Jurisdiction	*Palm Springs*
Time Period	*Midday Peak Hour*	Analysis Year	*GP Buildout*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*172*	*679*	*248*	*305*	*823*	*203*	*231*	*830*	*336*	*273*	*834*	*108*
% Heavy veh	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Ext. eff. green	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Arrival type	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*		*3*	*3*	
Unit Extension	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*		*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*		*12.0*	*12.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*		*0*	*0*	
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	Excl. Left	EB Only	Thru & RT	04	Excl. Left	NB Only	Thru & RT	08
Timing	G = *11.0*	G = *1.0*	G = *32.0*	G =	G = *11.0*	G = *1.0*	G = *40.0*	G =
	Y = *4*	Y = *4*	Y = *4*	Y =	Y = *4*	Y = *4*	Y = *4*	Y =
Duration of Analysis (hrs) = *1.00*					Cycle Length C = *120.0*			

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *GP Update*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*172*	*679*	*248*	*305*	*823*	*203*	*231*	*830*	*336*	*273*	*834*	*108*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Adj. Flow Rate	*172*	*679*	*248*	*305*	*823*	*203*	*231*	*830*	*336*	*273*	*834*	*108*
Lane Group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Adj. flow rate	*172*	*679*	*248*	*305*	*823*	*203*	*231*	*1166*		*273*	*942*	
Prop. LT or RT	*0.000*	--	*0.000*	*0.000*	--	*0.000*	*0.000*	--	*0.288*	*0.000*	--	*0.115*

Saturation Flow Rate

Base satflow	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*		*1900*	*1900*	
Num. of lanes	*1*	*2*	*1*	*2*	*2*	*1*	*2*	*2*	*0*	*2*	*2*	*0*
fW	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fHV	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*		*0.952*	*0.952*	
fg	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fp	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fbb	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fa	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fLU	*1.000*	*0.952*	*1.000*	*0.971*	*0.952*	*1.000*	*0.971*	*0.952*		*0.971*	*0.952*	
fLT	*0.950*	*1.000*	--	*0.950*	*1.000*	--	*0.950*	*1.000*	--	*0.950*	*1.000*	--
Secondary fLT			--			--			--			--
fRT	--	*1.000*	*0.850*	--	*1.000*	*0.850*	--	*0.957*		--	*0.983*	
fLpb	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--
fRpb	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*		--	*1.000*	
Adj. satflow	*1719*	*3445*	*1538*	*3338*	*3445*	*1538*	*3338*	*3296*		*3338*	*3386*	
Sec. adj. satflow			--			--			--			--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *GP Update*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Adj. flow rate	*172*	*679*	*248*	*305*	*823*	*203*	*231*	*1166*		*273*	*942*	
Satflow rate	*1719*	*3445*	*1538*	*3338*	*3445*	*1538*	*3338*	*3296*		*3338*	*3386*	
Lost time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Green ratio	*0.13*	*0.31*	*0.84*	*0.09*	*0.27*	*0.80*	*0.13*	*0.38*		*0.09*	*0.33*	
Lane group cap.	*229*	*1062*	*1294*	*306*	*919*	*1230*	*445*	*1236*		*306*	*1129*	
v/c ratio	*0.75*	*0.64*	*0.19*	*1.00*	*0.90*	*0.17*	*0.52*	*0.94*		*0.89*	*0.83*	
Flow ratio	*0.10*	*0.20*	*0.16*	*0.09*	*0.24*	*0.13*	*0.07*	*0.35*		*0.08*	*0.28*	
Crit. lane group	*Y*	*N*	*N*	*N*	*Y*	*N*	*N*	*Y*		*Y*	*N*	
Sum flow ratios	*0.77*											
Lost time/cycle	*16.00*											
Critical v/c ratio	*0.89*											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Adj. flow rate	*172*	*679*	*248*	*305*	*823*	*203*	*231*	*1166*		*273*	*942*	
Lane group cap.	*229*	*1062*	*1294*	*306*	*919*	*1230*	*445*	*1236*		*306*	*1129*	
v/c ratio	*0.75*	*0.64*	*0.19*	*1.00*	*0.90*	*0.17*	*0.52*	*0.94*		*0.89*	*0.83*	
Green ratio	*0.13*	*0.31*	*0.84*	*0.09*	*0.27*	*0.80*	*0.13*	*0.38*		*0.09*	*0.33*	
Unif. delay d1	*50.1*	*35.8*	*1.8*	*54.5*	*42.4*	*2.8*	*48.4*	*36.3*		*53.9*	*36.9*	
Delay factor k	*0.31*	*0.22*	*0.11*	*0.50*	*0.42*	*0.11*	*0.12*	*0.46*		*0.42*	*0.37*	
Increm. delay d2	*14.1*	*1.3*	*0.1*	*99.6*	*13.1*	*0.1*	*1.1*	*18.7*		*34.4*	*5.8*	
PF factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
Control delay	*64.1*	*37.1*	*1.9*	*154.1*	*55.5*	*2.8*	*49.5*	*55.0*		*88.3*	*42.8*	
Lane group LOS	*E*	*D*	*A*	*F*	*E*	*A*	*D*	*D*		*F*	*D*	
Apprch. delay	*33.4*			*70.1*			*54.1*			*53.0*		
Approach LOS	*C*			*E*			*D*			*D*		
Intersec. delay	*53.5*			Intersection LOS						*D*		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *GP Update*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*120.0*			
Prot. phase eff. green intvl, g (s)				
Opposed queue eff. green intvl, g_q (s)				
Unopposed green intvl, g_u (s)				
Red time, r(s)				
Arrival rate, q_a (veh/s)				
Prot. phase departure rate, s_p (veh/s)				
Perm. phase departure rate, s_s (veh/s)				
X_{perm}				
X_{prot} (N/A for lagging left-turns)				

Uniform Queue Size and Delay Computations

	EB	WB	NB	SB
Queue at start of green arrow, Q_a				
Queue at start of unsaturated green, Q_u				
Residual queue, Q_r				
Uniform delay, d_1				

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(S_p - q_s)} + g_q Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(s_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(S_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(S_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(S_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(S_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *GP Update*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Init. queue/lane	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*		*0.0*	*0.0*	
Flow rate/lane	*172*	*679*	*248*	*305*	*823*	*203*	*231*	*1166*		*273*	*942*	
Satflow per lane	*1719*	*1809*	*1538*	*1719*	*1809*	*1538*	*1719*	*1731*		*1719*	*1778*	
Capacity/lane	*229*	*1062*	*1294*	*306*	*919*	*1230*	*445*	*1236*		*306*	*1129*	
Flow ratio	*0.10*	*0.20*	*0.16*	*0.09*	*0.24*	*0.13*	*0.07*	*0.35*		*0.08*	0.28	
v/c ratio	*0.75*	*0.64*	*0.19*	*1.00*	*0.90*	*0.17*	*0.52*	*0.94*		*0.89*	*0.83*	
I factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
Arrival type	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*		*3*	*3*	
Platoon ratio	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*		*1.00*	*1.00*	
PF factor	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*		*1.00*	*1.00*	
Q_1	*5.5*	*10.2*	*1.6*	*5.2*	*13.9*	*1.6*	*3.7*	*19.7*		*4.6*	*15.2*	
k_B	*0.3*	*0.6*	*1.0*	*0.3*	*0.5*	*0.9*	*0.3*	*0.6*		*0.3*	*0.6*	
Q_2	*1.0*	*1.0*	*0.2*	*4.6*	*3.9*	*0.2*	*0.4*	*7.5*		*1.8*	*2.9*	
Q avg.	*6.5*	*11.2*	*1.8*	*9.8*	*17.8*	*1.7*	*4.0*	*27.2*		*6.4*	*18.1*	

Percentile Back of Queue (95th percentile)

$f_{B\%}$	*1.9*	*1.8*	*2.0*	*1.8*	*1.7*	*2.0*	*2.0*	*1.6*		*1.9*	*1.7*	
BOQ, $Q_{\%}$	*12.5*	*20.5*	*3.7*	*18.2*	*30.7*	*3.6*	*8.0*	*44.4*		*12.4*	*31.1*	

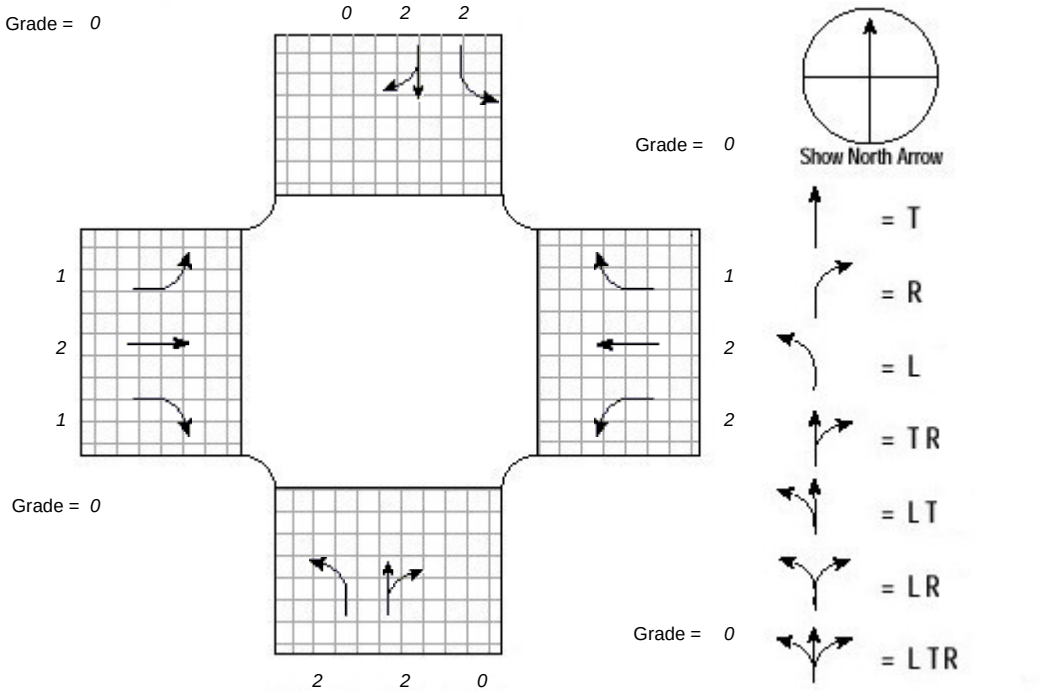
Queue Storage Ratio

Q spacing	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*		*25.0*	*25.0*	
Q storage	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*		*0*	*0*	
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst		Intersection	*Sunrise Way @ Ramon Road*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*9/11/06*	Jurisdiction	*Palm Springs*
Time Period	*PM Peak Hour*	Analysis Year	*GP Buildout*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*160*	*854*	*193*	*169*	*776*	*282*	*178*	*662*	*180*	*401*	*776*	*101*
% Heavy veh	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Ext. eff. green	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Arrival type	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*		*3*	*3*	
Unit Extension	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*		*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*		*12.0*	*12.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*		*0*	*0*	
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	Excl. Left	Thru & RT	03	04	Excl. Left	SB Only	Thru & RT	08
Timing	G = *14.0*	G = *38.0*	G =	G =	G = *10.0*	G = *3.0*	G = *35.0*	G =
	Y = *4*	Y = *4*	Y =	Y =	Y = *4*	Y = *4*	Y = *4*	Y =
Duration of Analysis (hrs) = *1.00*						Cycle Length C = *120.0*		

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *GP Update*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*160*	*854*	*193*	*169*	*776*	*282*	*178*	*662*	*180*	*401*	*776*	*101*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Adj. Flow Rate	*160*	*854*	*193*	*169*	*776*	*282*	*178*	*662*	*180*	*401*	*776*	*101*
Lane Group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Adj. flow rate	*160*	*854*	*193*	*169*	*776*	*282*	*178*	*842*		*401*	*877*	
Prop. LT or RT	*0.000*	--	*0.000*	*0.000*	--	*0.000*	*0.000*	--	*0.214*	*0.000*	--	*0.115*

Saturation Flow Rate

Base satflow	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*		*1900*	*1900*	
Num. of lanes	*1*	*2*	*1*	*2*	*2*	*1*	*2*	*2*	*0*	*2*	*2*	*0*
fW	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fHV	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*		*0.952*	*0.952*	
fg	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fp	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fbb	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fa	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fLU	*1.000*	*0.952*	*1.000*	*0.971*	*0.952*	*1.000*	*0.971*	*0.952*		*0.971*	*0.952*	
fLT	*0.950*	*1.000*	--	*0.950*	*1.000*	--	*0.950*	*1.000*	--	*0.950*	*1.000*	--
Secondary fLT			--			--			--			--
fRT	--	*1.000*	*0.850*	--	*1.000*	*0.850*	--	*0.968*		--	*0.983*	
fLpb	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--
fRpb	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*		--	*1.000*	
Adj. satflow	*1719*	*3445*	*1538*	*3338*	*3445*	*1538*	*3338*	*3335*		*3338*	*3386*	
Sec. adj. satflow			--			--			--			--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *GP Update*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Adj. flow rate	*160*	*854*	*193*	*169*	*776*	*282*	*178*	*842*		*401*	*877*	
Satflow rate	*1719*	*3445*	*1538*	*3338*	*3445*	*1538*	*3338*	*3335*		*3338*	*3386*	
Lost time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Green ratio	*0.12*	*0.32*	*0.82*	*0.12*	*0.32*	*0.82*	*0.08*	*0.29*		*0.14*	*0.35*	
Lane group cap.	*201*	*1091*	*1256*	*389*	*1091*	*1256*	*278*	*973*		*473*	*1185*	
v/c ratio	*0.80*	*0.78*	*0.15*	*0.43*	*0.71*	*0.22*	*0.64*	*0.87*		*0.85*	*0.74*	
Flow ratio	*0.09*	*0.25*	*0.13*	*0.05*	*0.23*	*0.18*	*0.05*	*0.25*		*0.12*	*0.26*	
Crit. lane group	*Y*	*Y*	*N*	*N*	*N*	*N*	*N*	*Y*		*Y*	*N*	
Sum flow ratios	*0.71*											
Lost time/cycle	*16.00*											
Critical v/c ratio	*0.82*											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Adj. flow rate	*160*	*854*	*193*	*169*	*776*	*282*	*178*	*842*		*401*	*877*	
Lane group cap.	*201*	*1091*	*1256*	*389*	*1091*	*1256*	*278*	*973*		*473*	*1185*	
v/c ratio	*0.80*	*0.78*	*0.15*	*0.43*	*0.71*	*0.22*	*0.64*	*0.87*		*0.85*	*0.74*	
Green ratio	*0.12*	*0.32*	*0.82*	*0.12*	*0.32*	*0.82*	*0.08*	*0.29*		*0.14*	*0.35*	
Unif. delay d1	*51.6*	*37.3*	*2.3*	*49.3*	*36.2*	*2.5*	*53.3*	*40.3*		*50.2*	*34.2*	
Delay factor k	*0.34*	*0.33*	*0.11*	*0.11*	*0.27*	*0.11*	*0.22*	*0.39*		*0.38*	*0.30*	
Increm. delay d2	*22.5*	*3.9*	*0.1*	*0.8*	*2.2*	*0.1*	*5.0*	*9.1*		*15.3*	*2.6*	
PF factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
Control delay	*74.1*	*41.1*	*2.4*	*50.1*	*38.4*	*2.6*	*58.3*	*49.3*		*65.5*	*36.8*	
Lane group LOS	*E*	*D*	*A*	*D*	*D*	*A*	*E*	*D*		*E*	*D*	
Apprch. delay	*39.3*			*31.8*			*50.9*			*45.8*		
Approach LOS	*D*			*C*			*D*			*D*		
Intersec. delay	*41.6*			Intersection LOS						*D*		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *GP Update*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*120.0*			
Prot. phase eff. green intvl, g (s)				
Opposed queue eff. green intvl, g_q (s)				
Unopposed green intvl, g_u (s)				
Red time, r(s)				
Arrival rate, q_a (veh/s)				
Prot. phase departure rate, s_p (veh/s)				
Perm. phase departure rate, s_s (veh/s)				
X_{perm}				
X_{prot} (N/A for lagging left-turns)				

Uniform Queue Size and Delay Computations

	EB	WB	NB	SB
Queue at start of green arrow, Q_a				
Queue at start of unsaturated green, Q_u				
Residual queue, Q_r				
Uniform delay, d_1				

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(S_p - q_s)} + g_q Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(s_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(S_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(S_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(S_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(S_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *GP Update*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Init. queue/lane	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*		*0.0*	*0.0*	
Flow rate/lane	*160*	*854*	*193*	*169*	*776*	*282*	*178*	*842*		*401*	*877*	
Satflow per lane	*1719*	*1809*	*1538*	*1719*	*1809*	*1538*	*1719*	*1751*		*1719*	*1778*	
Capacity/lane	*201*	*1091*	*1256*	*389*	*1091*	*1256*	*278*	*973*		*473*	*1185*	
Flow ratio	*0.09*	*0.25*	*0.13*	*0.05*	*0.22*	*0.18*	*0.05*	*0.25*		*0.12*	0.26	
v/c ratio	*0.80*	*0.78*	*0.15*	*0.43*	*0.71*	*0.22*	*0.64*	*0.87*		*0.85*	*0.74*	
I factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
Arrival type	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*		*3*	*3*	
Platoon ratio	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*		*1.00*	*1.00*	
PF factor	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*		*1.00*	*1.00*	
Q_1	*5.2*	*13.6*	*1.3*	*2.7*	*12.0*	*2.1*	*2.9*	*14.0*		*6.7*	*13.4*	
k_B	*0.3*	*0.6*	*0.9*	*0.3*	*0.6*	*0.9*	*0.3*	*0.5*		*0.4*	*0.6*	
Q_2	*1.2*	*2.0*	*0.2*	*0.2*	*1.4*	*0.3*	*0.4*	*3.2*		*1.8*	*1.7*	
Q avg.	*6.3*	*15.6*	*1.5*	*2.9*	*13.4*	*2.4*	*3.4*	*17.2*		*8.5*	*15.2*	

Percentile Back of Queue (95th percentile)

$f_{B\%}$	*1.9*	*1.8*	*2.1*	*2.0*	*1.8*	*2.0*	*2.0*	*1.7*		*1.9*	*1.8*	
BOQ, $Q_{\%}$	*12.2*	*27.3*	*3.1*	*5.9*	*23.9*	*4.8*	*6.7*	*29.7*		*15.9*	*26.7*	

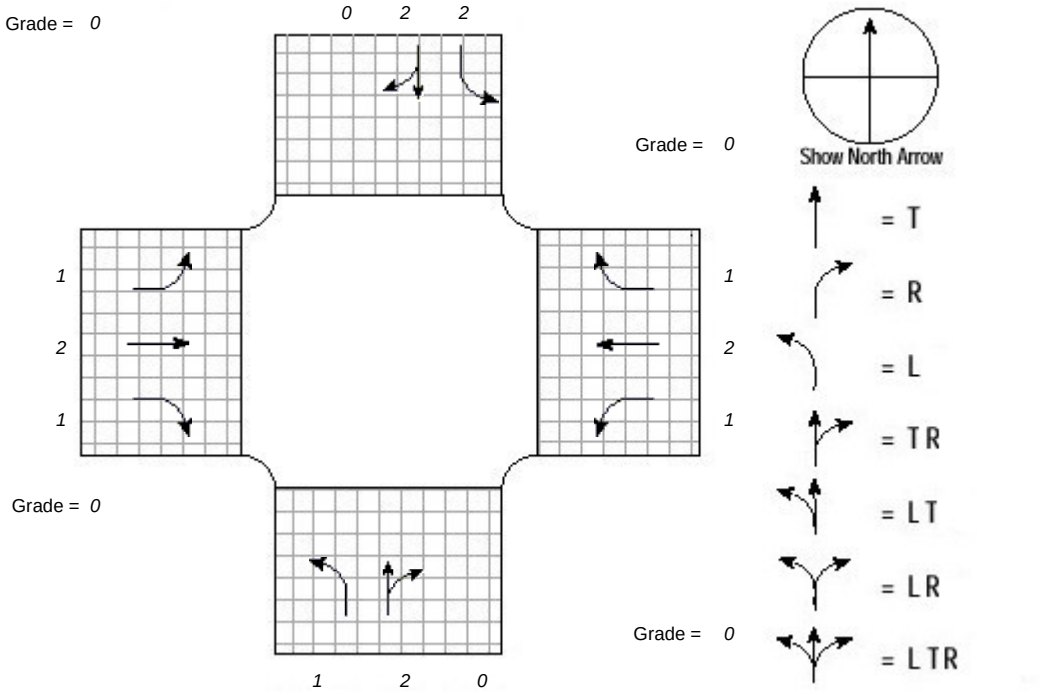
Queue Storage Ratio

Q spacing	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*		*25.0*	*25.0*	
Q storage	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*		*0*	*0*	
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst		Intersection	*Farrell Drive @ Ramon Road*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*9/11/06*	Jurisdiction	*Palm Springs*
Time Period	*Midday Peak Hour*	Analysis Year	*GP Buildout*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*116*	*966*	*51*	*105*	*1062*	*348*	*45*	*245*	*102*	*382*	*353*	*84*
% Heavy veh	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Ext. eff. green	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Arrival type	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*		*3*	*3*	
Unit Extension	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*		*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*		*12.0*	*12.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*		*0*	*0*	
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	Excl. Left	Thru & RT	03	04	Excl. Left	SB Only	Thru & RT	08
Timing	G = *12.0*	G = *54.0*	G =	G =	G = *10.0*	G = *5.0*	G = *19.0*	G =
	Y = *4*	Y = *4*	Y =	Y =	Y = *4*	Y = *4*	Y = *4*	Y =
Duration of Analysis (hrs) = *1.00*						Cycle Length C = *120.0*		

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *GP Update*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*116*	*966*	*51*	*105*	*1062*	*348*	*45*	*245*	*102*	*382*	*353*	*84*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Adj. Flow Rate	*116*	*966*	*51*	*105*	*1062*	*348*	*45*	*245*	*102*	*382*	*353*	*84*
Lane Group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Adj. flow rate	*116*	*966*	*51*	*105*	*1062*	*348*	*45*	*347*		*382*	*437*	
Prop. LT or RT	*0.000*	--	*0.000*	*0.000*	--	*0.000*	*0.000*	--	*0.294*	*0.000*	--	*0.192*

Saturation Flow Rate

Base satflow	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*		*1900*	*1900*	
Num. of lanes	*1*	*2*	*1*	*1*	*2*	*1*	*1*	*2*	*0*	*2*	*2*	*0*
fW	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fHV	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*		*0.952*	*0.952*	
fg	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fp	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fbb	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fa	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fLU	*1.000*	*0.952*	*1.000*	*1.000*	*0.952*	*1.000*	*1.000*	*0.952*		*0.971*	*0.952*	
fLT	*0.950*	*1.000*	--	*0.950*	*1.000*	--	*0.950*	*1.000*	--	*0.950*	*1.000*	--
Secondary fLT			--			--			--			--
fRT	--	*1.000*	*0.850*	--	*1.000*	*0.850*	--	*0.956*		--	*0.971*	
fLpb	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--
fRpb	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*		--	*1.000*	
Adj. satflow	*1719*	*3445*	*1538*	*1719*	*3445*	*1538*	*1719*	*3293*		*3338*	*3346*	
Sec. adj. satflow			--			--			--			--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *GP Update*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Adj. flow rate	*116*	*966*	*51*	*105*	*1062*	*348*	*45*	*347*		*382*	*437*	
Satflow rate	*1719*	*3445*	*1538*	*1719*	*3445*	*1538*	*1719*	*3293*		*3338*	*3346*	
Lost time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Green ratio	*0.10*	*0.45*	*0.83*	*0.10*	*0.45*	*0.83*	*0.08*	*0.16*		*0.16*	*0.23*	
Lane group cap.	*172*	*1550*	*1282*	*172*	*1550*	*1282*	*143*	*521*		*529*	*781*	
v/c ratio	*0.67*	*0.62*	*0.04*	*0.61*	*0.69*	*0.27*	*0.31*	*0.67*		*0.72*	*0.56*	
Flow ratio	*0.07*	*0.28*	*0.03*	*0.06*	*0.31*	*0.23*	*0.03*	*0.11*		*0.11*	*0.13*	
Crit. lane group	*Y*	*N*	*N*	*N*	*Y*	*N*	*N*	*Y*		*Y*	*N*	
Sum flow ratios	*0.60*											
Lost time/cycle	*16.00*											
Critical v/c ratio	*0.69*											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Adj. flow rate	*116*	*966*	*51*	*105*	*1062*	*348*	*45*	*347*		*382*	*437*	
Lane group cap.	*172*	*1550*	*1282*	*172*	*1550*	*1282*	*143*	*521*		*529*	*781*	
v/c ratio	*0.67*	*0.62*	*0.04*	*0.61*	*0.69*	*0.27*	*0.31*	*0.67*		*0.72*	*0.56*	
Green ratio	*0.10*	*0.45*	*0.83*	*0.10*	*0.45*	*0.83*	*0.08*	*0.16*		*0.16*	*0.23*	
Unif. delay d1	*52.1*	*25.2*	*1.7*	*51.8*	*26.2*	*2.2*	*51.8*	*47.5*		*48.0*	*40.6*	
Delay factor k	*0.25*	*0.21*	*0.11*	*0.20*	*0.25*	*0.11*	*0.11*	*0.24*		*0.28*	*0.16*	
Increm. delay d2	*10.5*	*0.8*	*0.0*	*6.4*	*1.3*	*0.1*	*1.3*	*3.3*		*5.0*	*0.9*	
PF factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
Control delay	*62.6*	*26.0*	*1.7*	*58.1*	*27.5*	*2.3*	*53.0*	*50.8*		*53.0*	*41.5*	
Lane group LOS	*E*	*C*	*A*	*E*	*C*	*A*	*D*	*D*		*D*	*D*	
Apprch. delay	*28.7*			*23.8*			*51.1*			*46.8*		
Approach LOS	*C*			*C*			*D*			*D*		
Intersec. delay	*32.9*			Intersection LOS						*C*		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *GP Update*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*120.0*			
Prot. phase eff. green intvl, g (s)				
Opposed queue eff. green intvl, g_q (s)				
Unopposed green intvl, g_u (s)				
Red time, r(s)				
Arrival rate, q_a (veh/s)				
Prot. phase departure rate, s_p (veh/s)				
Perm. phase departure rate, s_s (veh/s)				
X_{perm}				
X_{prot} (N/A for lagging left-turns)				

Uniform Queue Size and Delay Computations

	EB	WB	NB	SB
Queue at start of green arrow, Q_a				
Queue at start of unsaturated green, Q_u				
Residual queue, Q_r				
Uniform delay, d_1				

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(S_p - q_s)} + g_q Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(s_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(S_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(S_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(S_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(S_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *GP Update*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Init. queue/lane	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*		*0.0*	*0.0*	
Flow rate/lane	*116*	*966*	*51*	*105*	*1062*	*348*	*45*	*347*		*382*	*437*	
Satflow per lane	*1719*	*1809*	*1538*	*1719*	*1809*	*1538*	*1719*	*1729*		*1719*	*1757*	
Capacity/lane	*172*	*1550*	*1282*	*172*	*1550*	*1282*	*143*	*521*		*529*	*781*	
Flow ratio	*0.07*	*0.28*	*0.03*	*0.06*	*0.31*	*0.23*	*0.03*	*0.11*		*0.11*	0.13	
v/c ratio	*0.67*	*0.62*	*0.04*	*0.61*	*0.69*	*0.27*	*0.31*	*0.67*		*0.72*	*0.56*	
I factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
Arrival type	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*		*3*	*3*	
Platoon ratio	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*		*1.00*	*1.00*	
PF factor	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*		*1.00*	*1.00*	
Q_1	*3.7*	*12.9*	*0.3*	*3.4*	*14.8*	*2.5*	*1.4*	*5.7*		*6.2*	*6.7*	
k_B	*0.3*	*0.7*	*1.0*	*0.3*	*0.7*	*1.0*	*0.3*	*0.4*		*0.4*	*0.5*	
Q_2	*0.6*	*1.2*	*0.0*	*0.4*	*1.6*	*0.4*	*0.1*	*0.7*		*0.9*	*0.6*	
Q avg.	*4.3*	*14.1*	*0.3*	*3.8*	*16.3*	*2.9*	*1.5*	*6.5*		*7.2*	*7.3*	

Percentile Back of Queue (95th percentile)

$f_{B\%}$	*2.0*	*1.8*	*2.1*	*2.0*	*1.7*	*2.0*	*2.1*	*1.9*		*1.9*	*1.9*	
BOQ, $Q_{\%}$	*8.5*	*25.0*	*0.7*	*7.5*	*28.4*	*5.7*	*3.1*	*12.4*		*13.6*	*13.9*	

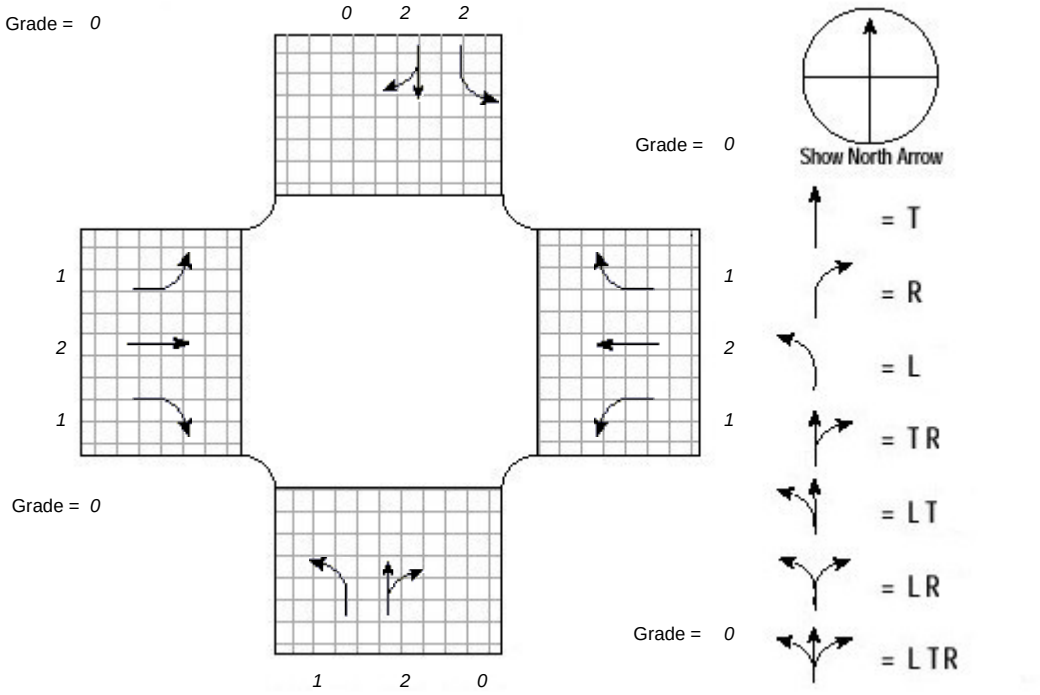
Queue Storage Ratio

Q spacing	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*		*25.0*	*25.0*	
Q storage	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*		*0*	*0*	
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst		Intersection	*Farrell Drive @ Ramon Road*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*9/11/06*	Jurisdiction	*Palm Springs*
Time Period	*PM Peak Hour*	Analysis Year	*GP Buildout*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*81*	*1246*	*46*	*121*	*1237*	*402*	*59*	*352*	*97*	*415*	*372*	*55*
% Heavy veh	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Ext. eff. green	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Arrival type	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*		*3*	*3*	
Unit Extension	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*		*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*		*12.0*	*12.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*		*0*	*0*	
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	Excl. Left	Thru & RT	03	04	Excl. Left	SB Only	Thru & RT	08
Timing	G = *11.0*	G = *54.0*	G =	G =	G = *11.0*	G = *4.0*	G = *20.0*	G =
	Y = *4*	Y = *4*	Y =	Y =	Y = *4*	Y = *4*	Y = *4*	Y =
Duration of Analysis (hrs) = *1.00*						Cycle Length C = *120.0*		

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *GP Update*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*81*	*1246*	*46*	*121*	*1237*	*402*	*59*	*352*	*97*	*415*	*372*	*55*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Adj. Flow Rate	*81*	*1246*	*46*	*121*	*1237*	*402*	*59*	*352*	*97*	*415*	*372*	*55*
Lane Group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Adj. flow rate	*81*	*1246*	*46*	*121*	*1237*	*402*	*59*	*449*		*415*	*427*	
Prop. LT or RT	*0.000*	--	*0.000*	*0.000*	--	*0.000*	*0.000*	--	*0.216*	*0.000*	--	*0.129*

Saturation Flow Rate

Base satflow	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*		*1900*	*1900*	
Num. of lanes	*1*	*2*	*1*	*1*	*2*	*1*	*1*	*2*	*0*	*2*	*2*	*0*
fW	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fHV	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*		*0.952*	*0.952*	
fg	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fp	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fbb	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fa	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fLU	*1.000*	*0.952*	*1.000*	*1.000*	*0.952*	*1.000*	*1.000*	*0.952*		*0.971*	*0.952*	
fLT	*0.950*	*1.000*	--	*0.950*	*1.000*	--	*0.950*	*1.000*	--	*0.950*	*1.000*	--
Secondary fLT			--			--			--			--
fRT	--	*1.000*	*0.850*	--	*1.000*	*0.850*	--	*0.968*		--	*0.981*	
fLpb	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--
fRpb	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*		--	*1.000*	
Adj. satflow	*1719*	*3445*	*1538*	*1719*	*3445*	*1538*	*1719*	*3334*		*3338*	*3379*	
Sec. adj. satflow			--			--			--			--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *GP Update*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Adj. flow rate	*81*	*1246*	*46*	*121*	*1237*	*402*	*59*	*449*		*415*	*427*	
Satflow rate	*1719*	*3445*	*1538*	*1719*	*3445*	*1538*	*1719*	*3334*		*3338*	*3379*	
Lost time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Green ratio	*0.09*	*0.45*	*0.84*	*0.09*	*0.45*	*0.84*	*0.09*	*0.17*		*0.16*	*0.23*	
Lane group cap.	*158*	*1550*	*1294*	*158*	*1550*	*1294*	*158*	*556*		*529*	*788*	
v/c ratio	*0.51*	*0.80*	*0.04*	*0.77*	*0.80*	*0.31*	*0.37*	*0.81*		*0.78*	*0.54*	
Flow ratio	*0.05*	*0.36*	*0.03*	*0.07*	*0.36*	*0.26*	*0.03*	*0.13*		*0.12*	*0.13*	
Crit. lane group	*N*	*Y*	*N*	*Y*	*N*	*N*	*N*	*Y*		*Y*	*N*	
Sum flow ratios	*0.69*											
Lost time/cycle	*16.00*											
Critical v/c ratio	*0.80*											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Adj. flow rate	*81*	*1246*	*46*	*121*	*1237*	*402*	*59*	*449*		*415*	*427*	
Lane group cap.	*158*	*1550*	*1294*	*158*	*1550*	*1294*	*158*	*556*		*529*	*788*	
v/c ratio	*0.51*	*0.80*	*0.04*	*0.77*	*0.80*	*0.31*	*0.37*	*0.81*		*0.78*	*0.54*	
Green ratio	*0.09*	*0.45*	*0.84*	*0.09*	*0.45*	*0.84*	*0.09*	*0.17*		*0.16*	*0.23*	
Unif. delay d1	*51.9*	*28.4*	*1.6*	*53.2*	*28.3*	*2.0*	*51.3*	*48.1*		*48.5*	*40.4*	
Delay factor k	*0.12*	*0.35*	*0.11*	*0.32*	*0.34*	*0.11*	*0.11*	*0.35*		*0.33*	*0.14*	
Increm. delay d2	*2.9*	*3.3*	*0.0*	*22.5*	*3.1*	*0.1*	*1.5*	*9.3*		*8.1*	*0.8*	
PF factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
Control delay	*54.8*	*31.7*	*1.6*	*75.7*	*31.4*	*2.2*	*52.8*	*57.4*		*56.6*	*41.1*	
Lane group LOS	*D*	*C*	*A*	*E*	*C*	*A*	*D*	*E*		*E*	*D*	
Apprch. delay	*32.1*			*27.8*			*56.9*			*48.8*		
Approach LOS	*C*			*C*			*E*			*D*		
Intersec. delay	*36.3*			Intersection LOS						*D*		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *GP Update*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*120.0*			
Prot. phase eff. green intvl, g (s)				
Opposed queue eff. green intvl, g_q (s)				
Unopposed green intvl, g_u (s)				
Red time, r(s)				
Arrival rate, q_a (veh/s)				
Prot. phase departure rate, s_p (veh/s)				
Perm. phase departure rate, s_s (veh/s)				
X_{perm}				
X_{prot} (N/A for lagging left-turns)				

Uniform Queue Size and Delay Computations

	EB	WB	NB	SB
Queue at start of green arrow, Q_a				
Queue at start of unsaturated green, Q_u				
Residual queue, Q_r				
Uniform delay, d_1				

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(S_p - q_s)} + g_q Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(s_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(S_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(S_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(S_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(S_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *GP Update*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Init. queue/lane	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*		*0.0*	*0.0*	
Flow rate/lane	*81*	*1246*	*46*	*121*	*1237*	*402*	*59*	*449*		*415*	*427*	
Satflow per lane	*1719*	*1809*	*1538*	*1719*	*1809*	*1538*	*1719*	*1751*		*1719*	*1774*	
Capacity/lane	*158*	*1550*	*1294*	*158*	*1550*	*1294*	*158*	*556*		*529*	*788*	
Flow ratio	*0.05*	*0.36*	*0.03*	*0.07*	*0.36*	*0.26*	*0.03*	*0.13*		*0.12*	0.13	
v/c ratio	*0.51*	*0.80*	*0.04*	*0.77*	*0.80*	*0.31*	*0.37*	*0.81*		*0.78*	*0.54*	
I factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
Arrival type	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*		*3*	*3*	
Platoon ratio	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*		*1.00*	*1.00*	
PF factor	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*		*1.00*	*1.00*	
Q_1	*2.6*	*18.8*	*0.3*	*3.9*	*18.6*	*2.9*	*1.8*	*7.5*		*6.8*	*6.6*	
k_B	*0.3*	*0.7*	*1.0*	*0.3*	*0.7*	*1.0*	*0.3*	*0.4*		*0.4*	*0.5*	
Q_2	*0.3*	*2.9*	*0.0*	*0.8*	*2.8*	*0.4*	*0.2*	*1.5*		*1.3*	*0.6*	
Q avg.	*2.9*	*21.6*	*0.3*	*4.8*	*21.3*	*3.3*	*2.0*	*9.1*		*8.1*	*7.1*	

Percentile Back of Queue (95th percentile)

$f_{B\%}$	*2.0*	*1.7*	*2.1*	*2.0*	*1.7*	*2.0*	*2.0*	*1.9*		*1.9*	*1.9*	
BOQ, $Q_{\%}$	*5.7*	*36.4*	*0.6*	*9.4*	*35.9*	*6.6*	*4.1*	*16.9*		*15.3*	*13.6*	

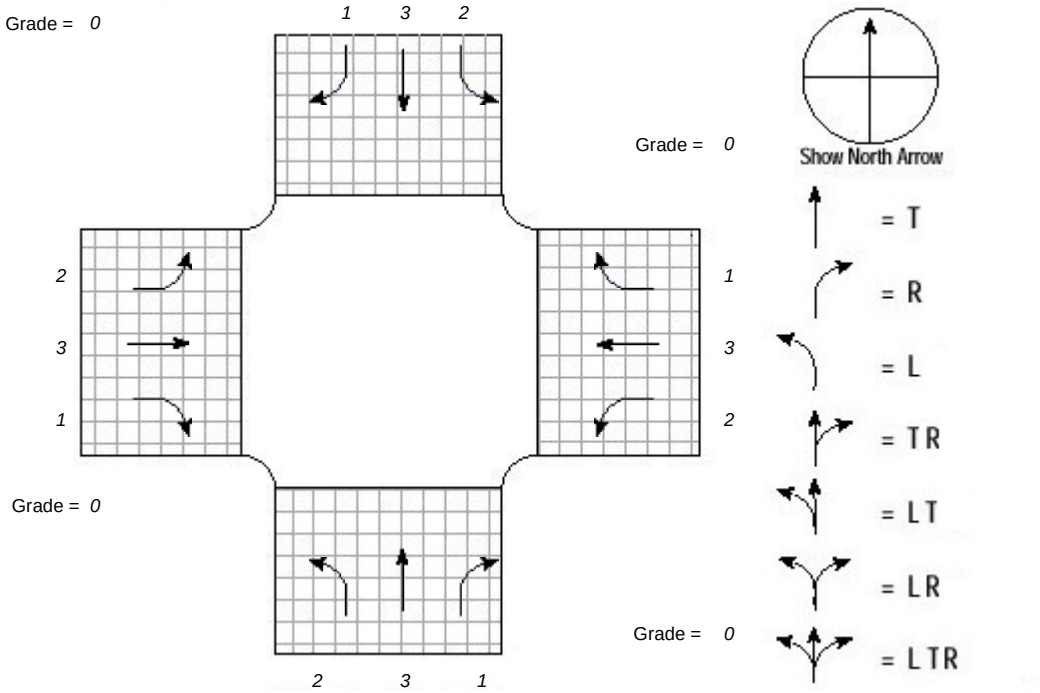
Queue Storage Ratio

Q spacing	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*		*25.0*	*25.0*	
Q storage	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*		*0*	*0*	
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst		Intersection	*Gene Autry Trail @ Ramon Road*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*9/10/06*	Jurisdiction	*Palm Springs*
Time Period	*Midday Peak Hour*	Analysis Year	*GP Buildout*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*350*	*2295*	*509*	*166*	*1591*	*186*	*512*	*570*	*116*	*270*	*620*	*376*
% Heavy veh	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*
Ext. eff. green	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*
Arrival type	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*
Unit Extension	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	Excl. Left	EB Only	Thru & RT	04	Excl. Left	NB Only	Thru & RT	08
Timing	G = *6.0*	G = *5.0*	G = *48.0*	G =	G = *11.0*	G = *5.0*	G = *21.0*	G =
	Y = *4*	Y = *4*	Y = *4*	Y =	Y = *4*	Y = *4*	Y = *4*	Y =
Duration of Analysis (hrs) = *1.00*					Cycle Length C = *120.0*			

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *GP Update*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*350*	*2295*	*509*	*166*	*1591*	*186*	*512*	*570*	*116*	*270*	*620*	*376*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Adj. Flow Rate	*350*	*2295*	*509*	*166*	*1591*	*186*	*512*	*570*	*116*	*270*	*620*	*376*
Lane Group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*
Adj. flow rate	*350*	*2295*	*509*	*166*	*1591*	*186*	*512*	*570*	*116*	*270*	*620*	*376*
Prop. LT or RT	*0.000*	*--*	*0.000*	*0.000*	*--*	*0.000*	*0.000*	*--*	*0.000*	*0.000*	*--*	*0.000*

Saturation Flow Rate

Base satflow	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*
Num. of lanes	*2*	*3*	*1*	*2*	*3*	*1*	*2*	*3*	*1*	*2*	*3*	*1*
fW	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
fHV	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*
fg	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
fp	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
fbb	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
fa	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
fLU	*0.971*	*0.908*	*1.000*	*0.971*	*0.908*	*1.000*	*0.971*	*0.908*	*1.000*	*0.971*	*0.908*	*1.000*
fLT	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*
Secondary fLT			*--*			*--*			*--*			*--*
fRT	*--*	*1.000*	*0.850*	*--*	*1.000*	*0.850*	*--*	*1.000*	*0.850*	*--*	*1.000*	*0.850*
fLpb	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*
fRpb	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*
Adj. satflow	*3338*	*4929*	*1538*	*3338*	*4929*	*1538*	*3338*	*4929*	*1538*	*3338*	*4929*	*1538*
Sec. adj. satflow			*--*			*--*			*--*			*--*

CAPACITY AND LOS WORKSHEET

General Information

Project Description *GP Update*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*
Adj. flow rate	*350*	*2295*	*509*	*166*	*1591*	*186*	*512*	*570*	*116*	*270*	*620*	*376*
Satflow rate	*3338*	*4929*	*1538*	*3338*	*4929*	*1538*	*3338*	*4929*	*1538*	*3338*	*4929*	*1538*
Lost time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*
Green ratio	*0.13*	*0.47*	*0.88*	*0.05*	*0.40*	*0.81*	*0.17*	*0.25*	*0.84*	*0.09*	*0.17*	*0.77*
Lane group cap.	*417*	*2341*	*1359*	*167*	*1972*	*1243*	*556*	*1232*	*1294*	*306*	*863*	*1179*
v/c ratio	*0.84*	*0.98*	*0.37*	*0.99*	*0.81*	*0.15*	*0.92*	*0.46*	*0.09*	*0.88*	*0.72*	*0.32*
Flow ratio	*0.10*	*0.47*	*0.33*	*0.05*	*0.32*	*0.12*	*0.15*	*0.12*	*0.08*	*0.08*	*0.13*	*0.24*
Crit. lane group	*N*	*Y*	*N*	*Y*	*N*	*N*	*Y*	*N*	*N*	*N*	*Y*	*N*
Sum flow ratios	*0.79*											
Lost time/cycle	*16.00*											
Critical v/c ratio	*0.92*											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*
Adj. flow rate	*350*	*2295*	*509*	*166*	*1591*	*186*	*512*	*570*	*116*	*270*	*620*	*376*
Lane group cap.	*417*	*2341*	*1359*	*167*	*1972*	*1243*	*556*	*1232*	*1294*	*306*	*863*	*1179*
v/c ratio	*0.84*	*0.98*	*0.37*	*0.99*	*0.81*	*0.15*	*0.92*	*0.46*	*0.09*	*0.88*	*0.72*	*0.32*
Green ratio	*0.13*	*0.47*	*0.88*	*0.05*	*0.40*	*0.81*	*0.17*	*0.25*	*0.84*	*0.09*	*0.17*	*0.77*
Unif. delay d1	*51.3*	*30.9*	*1.2*	*57.0*	*31.9*	*2.5*	*49.2*	*38.2*	*1.6*	*53.9*	*46.7*	*4.3*
Delay factor k	*0.37*	*0.48*	*0.11*	*0.50*	*0.35*	*0.11*	*0.44*	*0.11*	*0.11*	*0.41*	*0.28*	*0.11*
Increm. delay d2	*16.0*	*22.7*	*0.2*	*132.9*	*2.6*	*0.1*	*27.7*	*0.3*	*0.0*	*31.4*	*3.0*	*0.2*
PF factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
Control delay	*67.3*	*53.6*	*1.4*	*189.9*	*34.5*	*2.6*	*76.9*	*38.4*	*1.7*	*85.2*	*49.7*	*4.5*
Lane group LOS	*E*	*D*	*A*	*F*	*C*	*A*	*E*	*D*	*A*	*F*	*D*	*A*
Apprch. delay	*46.7*			*44.7*			*51.3*			*43.8*		
Approach LOS	*D*			*D*			*D*			*D*		
Intersec. delay	*46.5*			Intersection LOS						*D*		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *GP Update*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*120.0*			
Prot. phase eff. green intvl, g (s)				
Opposed queue eff. green intvl, g_q (s)				
Unopposed green intvl, g_u (s)				
Red time, r(s)				
Arrival rate, q_a (veh/s)				
Prot. phase departure rate, s_p (veh/s)				
Perm. phase departure rate, s_s (veh/s)				
X_{perm}				
X_{prot} (N/A for lagging left-turns)				

Uniform Queue Size and Delay Computations

	EB	WB	NB	SB
Queue at start of green arrow, Q_a				
Queue at start of unsaturated green, Q_u				
Residual queue, Q_r				
Uniform delay, d_1				

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(S_p - q_s)} + g_q Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(s_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(S_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(S_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(S_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(S_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *GP Update*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*
Init. queue/lane	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Flow rate/lane	*350*	*2295*	*509*	*166*	*1591*	*186*	*512*	*570*	*116*	*270*	*620*	*376*
Satflow per lane	*1719*	*1809*	*1538*	*1719*	*1809*	*1538*	*1719*	*1809*	*1538*	*1719*	*1809*	*1538*
Capacity/lane	*417*	*2341*	*1359*	*167*	*1972*	*1243*	*556*	*1232*	*1294*	*306*	*863*	*1179*
Flow ratio	*0.10*	*0.47*	*0.33*	*0.05*	*0.32*	*0.12*	*0.15*	*0.12*	*0.08*	*0.08*	0.13	*0.24*
v/c ratio	*0.84*	*0.98*	*0.37*	*0.99*	*0.81*	*0.15*	*0.92*	*0.46*	*0.09*	*0.88*	*0.72*	*0.32*
I factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
Arrival type	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*
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*
PF 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*
Q_1	*5.9*	*27.6*	*3.0*	*2.8*	*17.3*	*1.4*	*8.6*	*5.9*	*0.7*	*4.6*	*7.1*	*3.9*
k_B	*0.3*	*0.7*	*1.0*	*0.2*	*0.7*	*0.9*	*0.4*	*0.5*	*1.0*	*0.3*	*0.4*	*0.9*
Q_2	*1.6*	*14.0*	*0.6*	*2.8*	*2.7*	*0.2*	*3.4*	*0.4*	*0.1*	*1.7*	*1.0*	*0.4*
Q avg.	*7.4*	*41.6*	*3.5*	*5.7*	*20.0*	*1.5*	*12.0*	*6.3*	*0.8*	*6.3*	*8.2*	*4.3*

Percentile Back of Queue (95th percentile)

$f_{B\%}$	*1.9*	*1.6*	*2.0*	*1.9*	*1.7*	*2.1*	*1.8*	*1.9*	*2.1*	*1.9*	*1.9*	*2.0*
BOQ, $Q_{\%}$	*14.1*	*64.8*	*7.1*	*11.0*	*33.9*	*3.1*	*21.8*	*12.2*	*1.6*	*12.2*	*15.4*	*8.5*

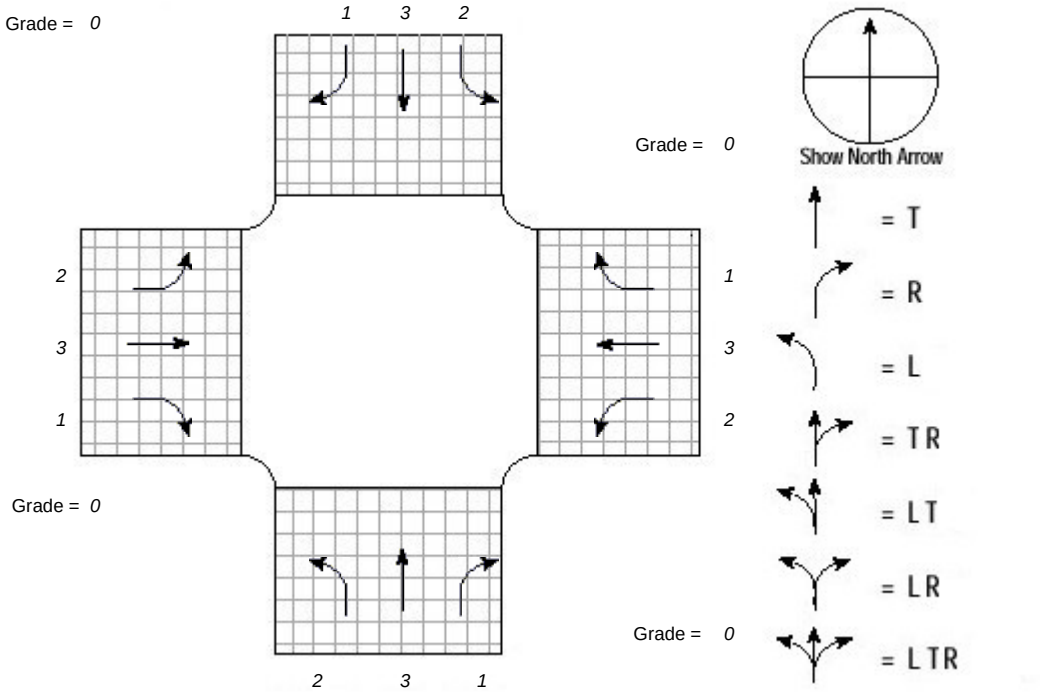
Queue Storage Ratio

Q spacing	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*
Q storage	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst		Intersection	*Gene Autry Trail @ Ramon Road*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*9/14/06*	Jurisdiction	*Palm Springs*
Time Period	*PM Peak Hour*	Analysis Year	*GP Buildout*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*381*	*2314*	*532*	*154*	*1541*	*160*	*473*	*801*	*111*	*275*	*582*	*394*
% Heavy veh	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*
Ext. eff. green	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*
Arrival type	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*
Unit Extension	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*		*0*
Lane Width	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	Excl. Left	EB Only	Thru & RT	04	Excl. Left	NB Only	Thru & RT	08
Timing	G = *6.0*	G = *10.0*	G = *44.0*	G =	G = *10.0*	G = *5.0*	G = *21.0*	G =
	Y = *4*	Y = *4*	Y = *4*	Y =	Y = *4*	Y = *4*	Y = *4*	Y =
Duration of Analysis (hrs) = *1.00*					Cycle Length C = *120.0*			

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *GP Update*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*381*	*2314*	*532*	*154*	*1541*	*160*	*473*	*801*	*111*	*275*	*582*	*394*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Adj. Flow Rate	*381*	*2314*	*532*	*154*	*1541*	*160*	*473*	*801*	*111*	*275*	*582*	*394*
Lane Group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*
Adj. flow rate	*381*	*2314*	*532*	*154*	*1541*	*160*	*473*	*801*	*111*	*275*	*582*	*394*
Prop. LT or RT	*0.000*	--	*0.000*	*0.000*	--	*0.000*	*0.000*	--	*0.000*	*0.000*	--	*0.000*

Saturation Flow Rate

Base satflow	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*
Num. of lanes	*2*	*3*	*1*	*2*	*3*	*1*	*2*	*3*	*1*	*2*	*3*	*1*
fW	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
fHV	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*
fg	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
fp	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
fbb	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
fa	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
fLU	*0.971*	*0.908*	*1.000*	*0.971*	*0.908*	*1.000*	*0.971*	*0.908*	*1.000*	*0.971*	*0.908*	*1.000*
fLT	*0.950*	*1.000*	--	*0.950*	*1.000*	--	*0.950*	*1.000*	--	*0.950*	*1.000*	--
Secondary fLT			--			--			--			--
fRT	--	*1.000*	*0.850*	--	*1.000*	*0.850*	--	*1.000*	*0.850*	--	*1.000*	*0.850*
fLpb	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--
fRpb	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*
Adj. satflow	*3338*	*4929*	*1538*	*3338*	*4929*	*1538*	*3338*	*4929*	*1538*	*3338*	*4929*	*1538*
Sec. adj. satflow			--			--			--			--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *GP Update*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*
Adj. flow rate	*381*	*2314*	*532*	*154*	*1541*	*160*	*473*	*801*	*111*	*275*	*582*	*394*
Satflow rate	*3338*	*4929*	*1538*	*3338*	*4929*	*1538*	*3338*	*4929*	*1538*	*3338*	*4929*	*1538*
Lost time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*
Green ratio	*0.17*	*0.48*	*0.88*	*0.05*	*0.37*	*0.77*	*0.16*	*0.25*	*0.85*	*0.08*	*0.17*	*0.77*
Lane group cap.	*556*	*2382*	*1359*	*167*	*1807*	*1179*	*529*	*1232*	*1307*	*278*	*863*	*1192*
v/c ratio	*0.69*	*0.97*	*0.39*	*0.92*	*0.85*	*0.14*	*0.89*	*0.65*	*0.08*	*0.99*	*0.67*	*0.33*
Flow ratio	*0.11*	*0.47*	*0.35*	*0.05*	*0.31*	*0.10*	*0.14*	*0.16*	*0.07*	*0.08*	*0.12*	*0.26*
Crit. lane group	*N*	*Y*	*N*	*Y*	*N*	*N*	*Y*	*N*	*N*	*N*	*Y*	*N*
Sum flow ratios	*0.78*											
Lost time/cycle	*16.00*											
Critical v/c ratio	*0.89*											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*
Adj. flow rate	*381*	*2314*	*532*	*154*	*1541*	*160*	*473*	*801*	*111*	*275*	*582*	*394*
Lane group cap.	*556*	*2382*	*1359*	*167*	*1807*	*1179*	*529*	*1232*	*1307*	*278*	*863*	*1192*
v/c ratio	*0.69*	*0.97*	*0.39*	*0.92*	*0.85*	*0.14*	*0.89*	*0.65*	*0.08*	*0.99*	*0.67*	*0.33*
Green ratio	*0.17*	*0.48*	*0.88*	*0.05*	*0.37*	*0.77*	*0.16*	*0.25*	*0.85*	*0.08*	*0.17*	*0.77*
Unif. delay d1	*47.0*	*30.2*	*1.2*	*56.8*	*35.0*	*3.6*	*49.5*	*40.3*	*1.5*	*54.9*	*46.3*	*4.1*
Delay factor k	*0.25*	*0.48*	*0.11*	*0.44*	*0.39*	*0.11*	*0.42*	*0.23*	*0.11*	*0.49*	*0.25*	*0.11*
Increm. delay d2	*3.6*	*18.2*	*0.2*	*73.6*	*4.4*	*0.1*	*21.6*	*1.2*	*0.0*	*97.2*	*2.1*	*0.2*
PF factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
Control delay	*50.6*	*48.3*	*1.4*	*130.3*	*39.4*	*3.7*	*71.1*	*41.5*	*1.5*	*152.1*	*48.4*	*4.2*
Lane group LOS	*D*	*D*	*A*	*F*	*D*	*A*	*E*	*D*	*A*	*F*	*D*	*A*
Apprch. delay	*40.9*			*43.9*			*48.4*			*57.3*		
Approach LOS	*D*			*D*			*D*			*E*		
Intersec. delay	*45.6*			Intersection LOS						*D*		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *GP Update*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*120.0*			
Prot. phase eff. green intvl, g (s)				
Opposed queue eff. green intvl, g_q (s)				
Unopposed green intvl, g_u (s)				
Red time, r(s)				
Arrival rate, q_a (veh/s)				
Prot. phase departure rate, s_p (veh/s)				
Perm. phase departure rate, s_s (veh/s)				
X_{perm}				
X_{prot} (N/A for lagging left-turns)				

Uniform Queue Size and Delay Computations

	EB	WB	NB	SB
Queue at start of green arrow, Q_a				
Queue at start of unsaturated green, Q_u				
Residual queue, Q_r				
Uniform delay, d_1				

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(S_p - q_s)} + g_q Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(s_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(S_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(S_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(S_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(S_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *GP Update*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*T*	*R*
Init. queue/lane	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Flow rate/lane	*381*	*2314*	*532*	*154*	*1541*	*160*	*473*	*801*	*111*	*275*	*582*	*394*
Satflow per lane	*1719*	*1809*	*1538*	*1719*	*1809*	*1538*	*1719*	*1809*	*1538*	*1719*	*1809*	*1538*
Capacity/lane	*556*	*2382*	*1359*	*167*	*1807*	*1179*	*529*	*1232*	*1307*	*278*	*863*	*1192*
Flow ratio	*0.11*	*0.47*	*0.35*	*0.05*	*0.31*	*0.10*	*0.14*	*0.16*	*0.07*	*0.08*	0.12	*0.26*
v/c ratio	*0.69*	*0.97*	*0.39*	*0.92*	*0.85*	*0.14*	*0.89*	*0.65*	*0.08*	*0.99*	*0.67*	*0.33*
I factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
Arrival type	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*
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*
PF 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*
Q_1	*6.1*	*27.6*	*3.2*	*2.6*	*17.3*	*1.4*	*7.9*	*8.8*	*0.6*	*4.7*	*6.6*	*4.0*
k_B	*0.4*	*0.8*	*1.0*	*0.2*	*0.6*	*0.9*	*0.4*	*0.5*	*1.0*	*0.3*	*0.4*	*0.9*
Q_2	*0.8*	*12.7*	*0.6*	*1.6*	*3.5*	*0.1*	*2.7*	*0.9*	*0.1*	*3.8*	*0.8*	*0.4*
Q avg.	*7.0*	*40.3*	*3.8*	*4.2*	*20.8*	*1.5*	*10.6*	*9.7*	*0.7*	*8.5*	*7.5*	*4.4*

Percentile Back of Queue (95th percentile)

$f_{B\%}$	*1.9*	*1.6*	*2.0*	*2.0*	*1.7*	*2.1*	*1.8*	*1.8*	*2.1*	*1.9*	*1.9*	*2.0*
BOQ, $Q_{\%}$	*13.3*	*63.0*	*7.5*	*8.4*	*35.1*	*3.1*	*19.4*	*18.0*	*1.4*	*15.9*	*14.2*	*8.7*

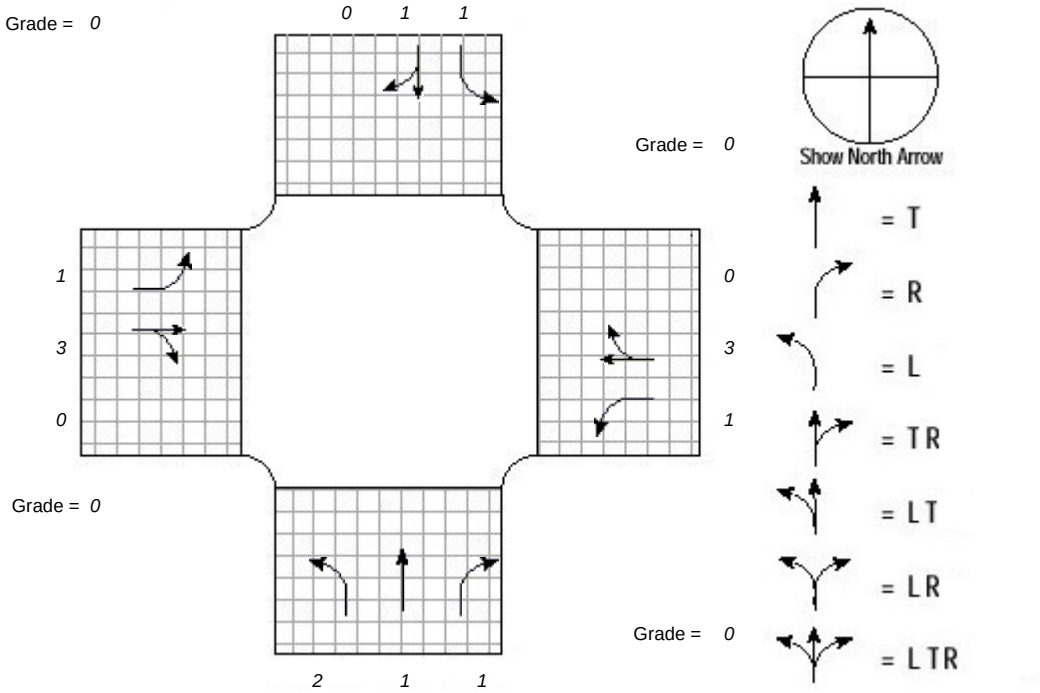
Queue Storage Ratio

Q spacing	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*
Q storage	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst		Intersection	*Crossley Road @ Ramon Road*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*9/11/2006*	Jurisdiction	*Palm Springs*
Time Period	*Midday Peak Hour*	Analysis Year	*GP Buildout*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*29*	*1977*	*215*	*147*	*1767*	*27*	*120*	*20*	*233*	*37*	*30*	*30*
% Heavy veh	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	
Ext. eff. green	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*	*3*	*3*	*3*	
Unit Extension	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*		*12.0*	*12.0*		*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr	*0*	*0*		*0*	*0*		*0*	*0*	*0*	*0*	*0*	
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	Excl. Left	WB Only	Thru & RT	04	Excl. Left	Thru & RT	07	08
Timing	G = *8.0*	G = *2.0*	G = *64.0*	G =	G = *6.0*	G = *20.0*	G =	G =
	Y = *4*	Y = *4*	Y = *4*	Y =	Y = *4*	Y = *4*	Y =	Y =
Duration of Analysis (hrs) = *1.00*						Cycle Length C = *120.0*		

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *GP Update*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*29*	*1977*	*215*	*147*	*1767*	*27*	*120*	*20*	*233*	*37*	*30*	*30*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Adj. Flow Rate	*29*	*1977*	*215*	*147*	*1767*	*27*	*120*	*20*	*233*	*37*	*30*	*30*
Lane Group	*L*	*TR*		*L*	*TR*		*L*	*T*	*R*	*L*	*TR*	
Adj. flow rate	*29*	*2192*		*147*	*1794*		*120*	*20*	*233*	*37*	*60*	
Prop. LT or RT	*0.000*	*--*	*0.098*	*0.000*	*--*	*0.015*	*0.000*	*--*	*0.000*	*0.000*	*--*	*0.500*

Saturation Flow Rate

Base satflow	*1900*	*1900*		*1900*	*1900*		*1900*	*1900*	*1900*	*1900*	*1900*	
Num. of lanes	*1*	*3*	*0*	*1*	*3*	*0*	*2*	*1*	*1*	*1*	*1*	*0*
fW	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fHV	*0.952*	*0.952*		*0.952*	*0.952*		*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	
fg	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fp	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fbb	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fa	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fLU	*1.000*	*0.908*		*1.000*	*0.908*		*0.971*	*1.000*	*1.000*	*1.000*	*1.000*	
fLT	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*
Secondary fLT			*--*			*--*			*--*			*--*
fRT	*--*	*0.985*		*--*	*0.998*		*--*	*1.000*	*0.850*	*--*	*0.925*	
fLpb	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*
fRpb	*--*	*1.000*		*--*	*1.000*		*--*	*1.000*	*1.000*	*--*	*1.000*	
Adj. satflow	*1719*	*4857*		*1719*	*4918*		*3338*	*1810*	*1538*	*1719*	*1674*	
Sec. adj. satflow			*--*			*--*			*--*			*--*

CAPACITY AND LOS WORKSHEET

General Information

Project Description *GP Update*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*TR*		*L*	*T*	*R*	*L*	*TR*	
Adj. flow rate	*29*	*2192*		*147*	*1794*		*120*	*20*	*233*	*37*	*60*	
Satflow rate	*1719*	*4857*		*1719*	*4918*		*3338*	*1810*	*1538*	*1719*	*1674*	
Lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	
Green ratio	*0.07*	*0.53*		*0.12*	*0.58*		*0.05*	*0.17*	*0.88*	*0.05*	*0.17*	
Lane group cap.	*115*	*2590*		*201*	*2869*		*167*	*302*	*1359*	*86*	*279*	
v/c ratio	*0.25*	*0.85*		*0.73*	*0.63*		*0.72*	*0.07*	*0.17*	*0.43*	*0.22*	
Flow ratio	*0.02*	*0.45*		*0.09*	*0.36*		*0.04*	*0.01*	*0.15*	*0.02*	*0.04*	
Crit. lane group	*N*	*Y*		*Y*	*N*		*Y*	*N*	*N*	*N*	*Y*	
Sum flow ratios	*0.61*											
Lost time/cycle	*16.00*											
Critical v/c ratio	*0.70*											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*TR*		*L*	*T*	*R*	*L*	*TR*	
Adj. flow rate	*29*	*2192*		*147*	*1794*		*120*	*20*	*233*	*37*	*60*	
Lane group cap.	*115*	*2590*		*201*	*2869*		*167*	*302*	*1359*	*86*	*279*	
v/c ratio	*0.25*	*0.85*		*0.73*	*0.63*		*0.72*	*0.07*	*0.17*	*0.43*	*0.22*	
Green ratio	*0.07*	*0.53*		*0.12*	*0.58*		*0.05*	*0.17*	*0.88*	*0.05*	*0.17*	
Unif. delay d1	*53.2*	*23.8*		*51.2*	*16.4*		*56.2*	*42.1*	*1.0*	*55.3*	*43.2*	
Delay factor k	*0.11*	*0.38*		*0.29*	*0.21*		*0.28*	*0.11*	*0.11*	*0.11*	*0.11*	
Increm. delay d2	*1.2*	*2.9*		*13.8*	*0.4*		*15.0*	*0.1*	*0.1*	*3.5*	*0.4*	
PF factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
Control delay	*54.3*	*26.7*		*65.0*	*16.8*		*71.2*	*42.2*	*1.0*	*58.8*	*43.6*	
Lane group LOS	*D*	*C*		*E*	*B*		*E*	*D*	*A*	*E*	*D*	
Apprch. delay	*27.1*			*20.5*			*25.8*			*49.4*		
Approach LOS	*C*			*C*			*C*			*D*		
Intersec. delay	*24.7*			Intersection LOS						*C*		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *GP Update*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*120.0*			
Prot. phase eff. green intvl, g (s)				
Opposed queue eff. green intvl, g_q (s)				
Unopposed green intvl, g_u (s)				
Red time, r(s)				
Arrival rate, q_a (veh/s)				
Prot. phase departure rate, s_p (veh/s)				
Perm. phase departure rate, s_s (veh/s)				
X_{perm}				
X_{prot} (N/A for lagging left-turns)				

Uniform Queue Size and Delay Computations

	EB	WB	NB	SB
Queue at start of green arrow, Q_a				
Queue at start of unsaturated green, Q_u				
Residual queue, Q_r				
Uniform delay, d_1				

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(S_p - q_s)} + g_q Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(s_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(S_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(S_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(S_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(S_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *GP Update*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	*L*	*TR*		*L*	*TR*		*L*	*T*	*R*	*L*	*TR*	
Init. queue/lane	*0.0*	*0.0*		*0.0*	*0.0*		*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	
Flow rate/lane	*29*	*2192*		*147*	*1794*		*120*	*20*	*233*	*37*	*60*	
Satflow per lane	*1719*	*1783*		*1719*	*1805*		*1719*	*1810*	*1538*	*1719*	*1674*	
Capacity/lane	*115*	*2590*		*201*	*2869*		*167*	*302*	*1359*	*86*	*279*	
Flow ratio	*0.02*	*0.45*		*0.09*	*0.36*		*0.04*	*0.01*	*0.15*	*0.02*	0.04	
v/c ratio	*0.25*	*0.85*		*0.73*	*0.63*		*0.72*	*0.07*	*0.17*	*0.43*	*0.22*	
I factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*	*3*	*3*	*3*	
Platoon ratio	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	
PF factor	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	
Q_1	*0.9*	*22.8*		*4.7*	*14.4*		*2.0*	*0.6*	*1.1*	*1.2*	*1.7*	
k_B	*0.2*	*0.8*		*0.3*	*0.8*		*0.2*	*0.4*	*1.0*	*0.2*	*0.4*	
Q_2	*0.1*	*4.1*		*0.8*	*1.4*		*0.5*	*0.0*	*0.2*	*0.1*	*0.1*	
Q avg.	*1.0*	*26.9*		*5.6*	*15.8*		*2.5*	*0.6*	*1.3*	*1.3*	*1.8*	

Percentile Back of Queue (95th percentile)

$f_{B\%}$	*2.1*	*1.6*		*1.9*	*1.7*		*2.0*	*2.1*	*2.1*	*2.1*	*2.0*	
BOQ, $Q_{\%}$	*2.1*	*44.0*		*10.8*	*27.6*		*5.0*	*1.2*	*2.6*	*2.8*	*3.7*	

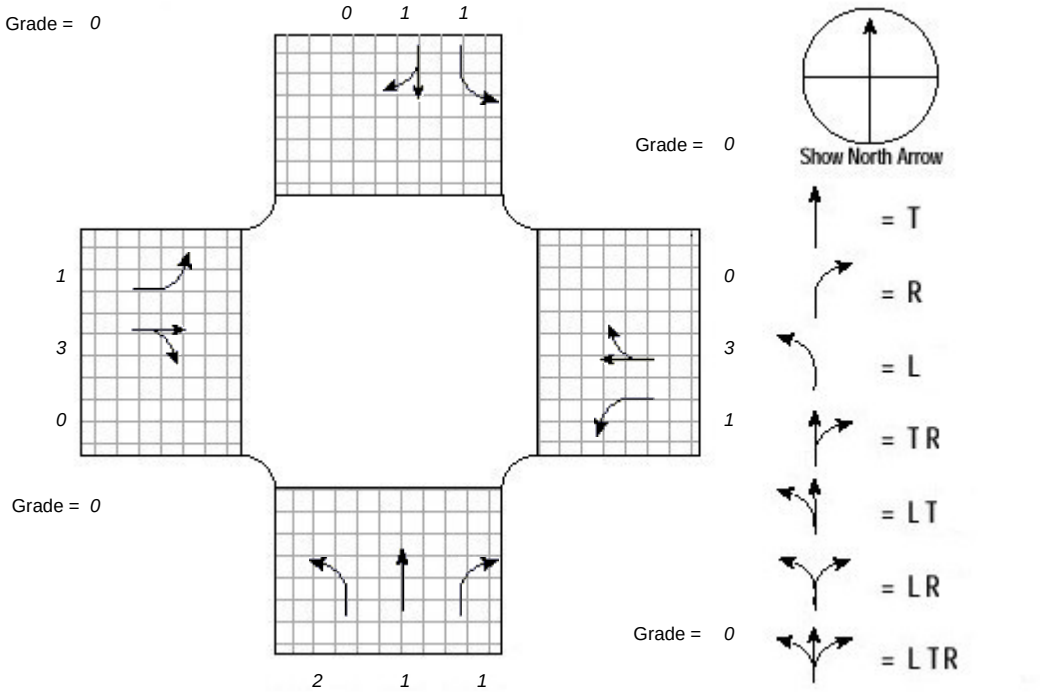
Queue Storage Ratio

Q spacing	*25.0*	*25.0*		*25.0*	*25.0*		*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	
Q storage	*0*	*0*		*0*	*0*		*0*	*0*	*0*	*0*	*0*	
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst		Intersection	*Crossley Road @ Ramon Road*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*9/11/2006*	Jurisdiction	*Palm Springs*
Time Period	*PM Peak Hour*	Analysis Year	*GP Buildout*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*25*	*2330*	*253*	*170*	*1903*	*33*	*223*	*11*	*390*	*46*	*28*	*30*
% Heavy veh	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	
Ext. eff. green	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*	*3*	*3*	*3*	
Unit Extension	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*		*12.0*	*12.0*		*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr	*0*	*0*		*0*	*0*		*0*	*0*	*0*	*0*	*0*	
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	Excl. Left	WB Only	Thru & RT	04	Excl. Left	Thru & RT	07	08
Timing	G = *5.0*	G = *2.0*	G = *65.0*	G =	G = *8.0*	G = *20.0*	G =	G =
	Y = *4*	Y = *4*	Y = *4*	Y =	Y = *4*	Y = *4*	Y =	Y =
Duration of Analysis (hrs) = *1.00*						Cycle Length C = *120.0*		

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *GP Update*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*25*	*2330*	*253*	*170*	*1903*	*33*	*223*	*11*	*390*	*46*	*28*	*30*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Adj. Flow Rate	*25*	*2330*	*253*	*170*	*1903*	*33*	*223*	*11*	*390*	*46*	*28*	*30*
Lane Group	*L*	*TR*		*L*	*TR*		*L*	*T*	*R*	*L*	*TR*	
Adj. flow rate	*25*	*2583*		*170*	*1936*		*223*	*11*	*390*	*46*	*58*	
Prop. LT or RT	*0.000*	*--*	*0.098*	*0.000*	*--*	*0.017*	*0.000*	*--*	*0.000*	*0.000*	*--*	*0.517*

Saturation Flow Rate

Base satflow	*1900*	*1900*		*1900*	*1900*		*1900*	*1900*	*1900*	*1900*	*1900*	
Num. of lanes	*1*	*3*	*0*	*1*	*3*	*0*	*2*	*1*	*1*	*1*	*1*	*0*
fW	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fHV	*0.952*	*0.952*		*0.952*	*0.952*		*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	
fg	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fp	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fbb	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fa	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fLU	*1.000*	*0.908*		*1.000*	*0.908*		*0.971*	*1.000*	*1.000*	*1.000*	*1.000*	
fLT	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*
Secondary fLT			*--*			*--*			*--*			*--*
fRT	*--*	*0.985*		*--*	*0.997*		*--*	*1.000*	*0.850*	*--*	*0.922*	
fLpb	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*
fRpb	*--*	*1.000*		*--*	*1.000*		*--*	*1.000*	*1.000*	*--*	*1.000*	
Adj. satflow	*1719*	*4857*		*1719*	*4917*		*3338*	*1810*	*1538*	*1719*	*1669*	
Sec. adj. satflow			*--*			*--*			*--*			*--*

CAPACITY AND LOS WORKSHEET

General Information

Project Description *GP Update*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*TR*		*L*	*T*	*R*	*L*	*TR*	
Adj. flow rate	*25*	*2583*		*170*	*1936*		*223*	*11*	*390*	*46*	*58*	
Satflow rate	*1719*	*4857*		*1719*	*4917*		*3338*	*1810*	*1538*	*1719*	*1669*	
Lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	
Green ratio	*0.04*	*0.54*		*0.09*	*0.59*		*0.07*	*0.17*	*0.87*	*0.07*	*0.17*	
Lane group cap.	*72*	*2631*		*158*	*2909*		*223*	*302*	*1333*	*115*	*278*	
v/c ratio	*0.35*	*0.98*		*1.08*	*0.67*		*1.00*	*0.04*	*0.29*	*0.40*	*0.21*	
Flow ratio	*0.01*	*0.53*		*0.10*	*0.39*		*0.07*	*0.01*	*0.25*	*0.03*	*0.03*	
Crit. lane group	*N*	*Y*		*Y*	*N*		*Y*	*N*	*N*	*N*	*Y*	
Sum flow ratios	*0.73*											
Lost time/cycle	*16.00*											
Critical v/c ratio	*0.84*											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*TR*		*L*	*T*	*R*	*L*	*TR*	
Adj. flow rate	*25*	*2583*		*170*	*1936*		*223*	*11*	*390*	*46*	*58*	
Lane group cap.	*72*	*2631*		*158*	*2909*		*223*	*302*	*1333*	*115*	*278*	
v/c ratio	*0.35*	*0.98*		*1.08*	*0.67*		*1.00*	*0.04*	*0.29*	*0.40*	*0.21*	
Green ratio	*0.04*	*0.54*		*0.09*	*0.59*		*0.07*	*0.17*	*0.87*	*0.07*	*0.17*	
Unif. delay d1	*55.9*	*26.9*		*54.5*	*16.5*		*56.0*	*41.9*	*1.4*	*53.7*	*43.2*	
Delay factor k	*0.11*	*0.49*		*0.50*	*0.24*		*0.50*	*0.11*	*0.11*	*0.11*	*0.11*	
Increm. delay d2	*2.9*	*21.6*		*231.9*	*0.6*		*120.5*	*0.0*	*0.1*	*2.3*	*0.4*	
PF factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
Control delay	*58.8*	*48.5*		*286.4*	*17.1*		*176.5*	*42.0*	*1.6*	*56.0*	*43.5*	
Lane group LOS	*E*	*D*		*F*	*B*		*F*	*D*	*A*	*E*	*D*	
Apprch. delay	*48.6*			*38.8*			*64.8*			*49.0*		
Approach LOS	*D*			*D*			*E*			*D*		
Intersec. delay	*46.7*			Intersection LOS						*D*		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *GP Update*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*120.0*			
Prot. phase eff. green intvl, g (s)				
Opposed queue eff. green intvl, g_q (s)				
Unopposed green intvl, g_u (s)				
Red time, r(s)				
Arrival rate, q_a (veh/s)				
Prot. phase departure rate, s_p (veh/s)				
Perm. phase departure rate, s_s (veh/s)				
X_{perm}				
X_{prot} (N/A for lagging left-turns)				

Uniform Queue Size and Delay Computations

	EB	WB	NB	SB
Queue at start of green arrow, Q_a				
Queue at start of unsaturated green, Q_u				
Residual queue, Q_r				
Uniform delay, d_1				

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(S_p - q_s)} + g_q Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(s_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(S_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(S_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(S_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(S_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *GP Update*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	*L*	*TR*		*L*	*TR*		*L*	*T*	*R*	*L*	*TR*	
Init. queue/lane	*0.0*	*0.0*		*0.0*	*0.0*		*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	
Flow rate/lane	*25*	*2583*		*170*	*1936*		*223*	*11*	*390*	*46*	*58*	
Satflow per lane	*1719*	*1783*		*1719*	*1805*		*1719*	*1810*	*1538*	*1719*	*1669*	
Capacity/lane	*72*	*2631*		*158*	*2909*		*223*	*302*	*1333*	*115*	*278*	
Flow ratio	*0.01*	*0.53*		*0.10*	*0.39*		*0.07*	*0.01*	*0.25*	*0.03*	0.03	
v/c ratio	*0.35*	*0.98*		*1.08*	*0.67*		*1.00*	*0.04*	*0.29*	*0.40*	*0.21*	
I factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*	*3*	*3*	*3*	
Platoon ratio	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	
PF factor	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	
Q_1	*0.8*	*31.0*		*5.7*	*15.9*		*3.8*	*0.3*	*2.3*	*1.5*	*1.7*	
k_B	*0.2*	*0.8*		*0.3*	*0.9*		*0.2*	*0.4*	*1.0*	*0.2*	*0.4*	
Q_2	*0.1*	*15.7*		*8.7*	*1.7*		*3.6*	*0.0*	*0.4*	*0.1*	*0.1*	
Q avg.	*0.9*	*46.7*		*14.3*	*17.6*		*7.4*	*0.3*	*2.7*	*1.6*	*1.8*	

Percentile Back of Queue (95th percentile)

$f_{B\%}$	*2.1*	*1.5*		*1.8*	*1.7*		*1.9*	*2.1*	*2.0*	*2.0*	*2.0*	
BOQ, $Q_{\%}$	*1.9*	*72.1*		*25.4*	*30.4*		*14.0*	*0.7*	*5.5*	*3.3*	*3.6*	

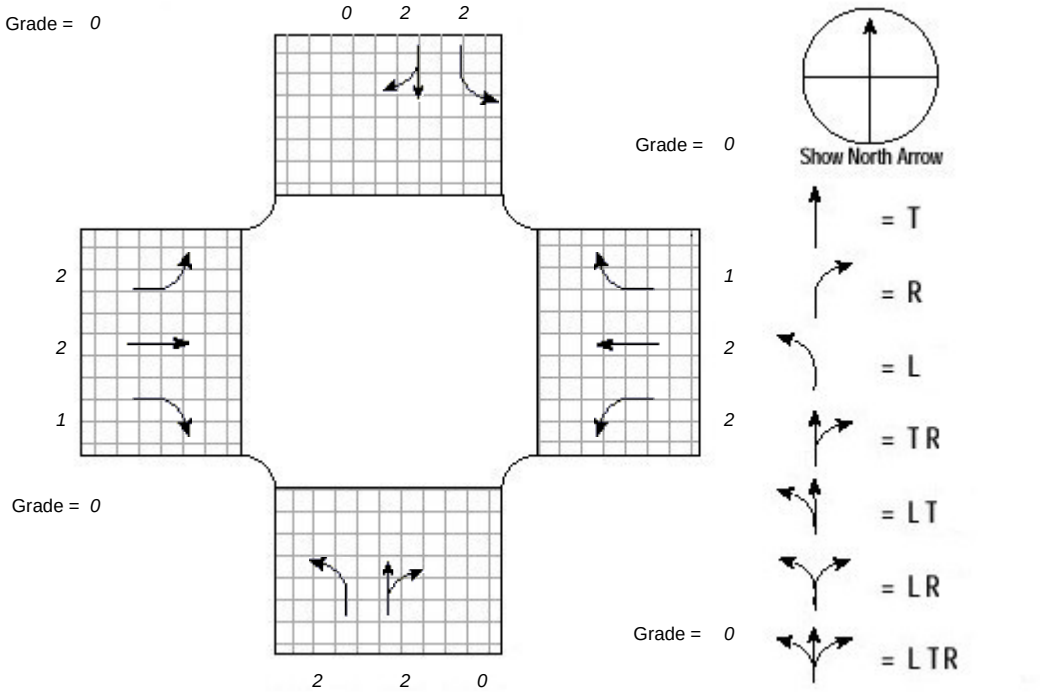
Queue Storage Ratio

Q spacing	*25.0*	*25.0*		*25.0*	*25.0*		*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	
Q storage	*0*	*0*		*0*	*0*		*0*	*0*	*0*	*0*	*0*	
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst		Intersection	*Sunrise Way @ E Palm Cyn*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*9/11/06*	Jurisdiction	*Palm Springs*
Time Period	*Midday Peak Hour*	Analysis Year	*GP Buildout*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*92*	*947*	*173*	*333*	*940*	*562*	*163*	*409*	*341*	*614*	*422*	*130*
% Heavy veh	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Ext. eff. green	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Arrival type	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*		*3*	*3*	
Unit Extension	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*		*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*		*12.0*	*12.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*		*0*	*0*	
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	Excl. Left	Thru & RT	03	04	Excl. Left	SB Only	Thru & RT	08
Timing	G = *13.0*	G = *38.0*	G =	G =	G = *11.0*	G = *8.0*	G = *30.0*	G =
	Y = *4*	Y = *4*	Y =	Y =	Y = *4*	Y = *4*	Y = *4*	Y =
Duration of Analysis (hrs) = *1.00*						Cycle Length C = *120.0*		

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *GP Update*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*92*	*947*	*173*	*333*	*940*	*562*	*163*	*409*	*341*	*614*	*422*	*130*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Adj. Flow Rate	*92*	*947*	*173*	*333*	*940*	*562*	*163*	*409*	*341*	*614*	*422*	*130*
Lane Group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Adj. flow rate	*92*	*947*	*173*	*333*	*940*	*562*	*163*	*750*		*614*	*552*	
Prop. LT or RT	*0.000*	--	*0.000*	*0.000*	--	*0.000*	*0.000*	--	*0.455*	*0.000*	--	*0.236*

Saturation Flow Rate

Base satflow	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*		*1900*	*1900*	
Num. of lanes	*2*	*2*	*1*	*2*	*2*	*1*	*2*	*2*	*0*	*2*	*2*	*0*
fW	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fHV	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*		*0.952*	*0.952*	
fg	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fp	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fbb	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fa	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fLU	*0.971*	*0.952*	*1.000*	*0.971*	*0.952*	*1.000*	*0.971*	*0.952*		*0.971*	*0.952*	
fLT	*0.950*	*1.000*	--	*0.950*	*1.000*	--	*0.950*	*1.000*	--	*0.950*	*1.000*	--
Secondary fLT			--			--			--			--
fRT	--	*1.000*	*0.850*	--	*1.000*	*0.850*	--	*0.932*		--	*0.965*	
fLpb	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--
fRpb	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*		--	*1.000*	
Adj. satflow	*3338*	*3445*	*1538*	*3338*	*3445*	*1538*	*3338*	*3210*		*3338*	*3324*	
Sec. adj. satflow			--			--			--			--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *GP Update*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Adj. flow rate	*92*	*947*	*173*	*333*	*940*	*562*	*163*	*750*		*614*	*552*	
Satflow rate	*3338*	*3445*	*1538*	*3338*	*3445*	*1538*	*3338*	*3210*		*3338*	*3324*	
Lost time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Green ratio	*0.11*	*0.32*	*0.82*	*0.11*	*0.32*	*0.82*	*0.09*	*0.25*		*0.19*	*0.35*	
Lane group cap.	*362*	*1091*	*1269*	*362*	*1091*	*1269*	*306*	*803*		*640*	*1163*	
v/c ratio	*0.25*	*0.87*	*0.14*	*0.92*	*0.86*	*0.44*	*0.53*	*0.93*		*0.96*	*0.47*	
Flow ratio	*0.03*	*0.27*	*0.11*	*0.10*	*0.27*	*0.37*	*0.05*	*0.23*		*0.18*	*0.17*	
Crit. lane group	*N*	*Y*	*N*	*Y*	*N*	*N*	*N*	*Y*		*Y*	*N*	
Sum flow ratios	*0.79*											
Lost time/cycle	*16.00*											
Critical v/c ratio	*0.91*											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Adj. flow rate	*92*	*947*	*173*	*333*	*940*	*562*	*163*	*750*		*614*	*552*	
Lane group cap.	*362*	*1091*	*1269*	*362*	*1091*	*1269*	*306*	*803*		*640*	*1163*	
v/c ratio	*0.25*	*0.87*	*0.14*	*0.92*	*0.86*	*0.44*	*0.53*	*0.93*		*0.96*	*0.47*	
Green ratio	*0.11*	*0.32*	*0.82*	*0.11*	*0.32*	*0.82*	*0.09*	*0.25*		*0.19*	*0.35*	
Unif. delay d1	*49.1*	*38.6*	*2.1*	*53.0*	*38.5*	*2.9*	*52.0*	*44.0*		*48.0*	*30.4*	
Delay factor k	*0.11*	*0.40*	*0.11*	*0.44*	*0.39*	*0.11*	*0.14*	*0.45*		*0.47*	*0.11*	
Increm. delay d2	*0.4*	*8.3*	*0.0*	*39.3*	*7.8*	*0.2*	*1.8*	*23.7*		*40.2*	*0.3*	
PF factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
Control delay	*49.4*	*47.0*	*2.1*	*92.3*	*46.3*	*3.1*	*53.9*	*67.8*		*88.2*	*30.7*	
Lane group LOS	*D*	*D*	*A*	*F*	*D*	*A*	*D*	*E*		*F*	*C*	
Apprch. delay	*40.7*			*41.4*			*65.3*			*61.0*		
Approach LOS	*D*			*D*			*E*			*E*		
Intersec. delay	*50.0*			Intersection LOS						*D*		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *GP Update*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*120.0*			
Prot. phase eff. green intvl, g (s)				
Opposed queue eff. green intvl, g_q (s)				
Unopposed green intvl, g_u (s)				
Red time, r(s)				
Arrival rate, q_a (veh/s)				
Prot. phase departure rate, s_p (veh/s)				
Perm. phase departure rate, s_s (veh/s)				
X_{perm}				
X_{prot} (N/A for lagging left-turns)				

Uniform Queue Size and Delay Computations

	EB	WB	NB	SB
Queue at start of green arrow, Q_a				
Queue at start of unsaturated green, Q_u				
Residual queue, Q_r				
Uniform delay, d_1				

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(S_p - q_s)} + g_q Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(s_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(S_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(S_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(S_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(S_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *GP Update*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Init. queue/lane	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*		*0.0*	*0.0*	
Flow rate/lane	*92*	*947*	*173*	*333*	*940*	*562*	*163*	*750*		*614*	*552*	
Satflow per lane	*1719*	*1809*	*1538*	*1719*	*1809*	*1538*	*1719*	*1685*		*1719*	*1745*	
Capacity/lane	*362*	*1091*	*1269*	*362*	*1091*	*1269*	*306*	*803*		*640*	*1163*	
Flow ratio	*0.03*	*0.27*	*0.11*	*0.10*	*0.27*	*0.37*	*0.05*	*0.23*		*0.18*	0.17	
v/c ratio	*0.25*	*0.87*	*0.14*	*0.92*	*0.86*	*0.44*	*0.53*	*0.93*		*0.96*	*0.47*	
I factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
Arrival type	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*		*3*	*3*	
Platoon ratio	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*		*1.00*	*1.00*	
PF factor	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*		*1.00*	*1.00*	
Q_1	*1.4*	*15.6*	*1.1*	*5.6*	*15.4*	*5.2*	*2.6*	*12.8*		*10.4*	*7.5*	
k_B	*0.3*	*0.6*	*0.9*	*0.3*	*0.6*	*0.9*	*0.3*	*0.5*		*0.4*	*0.6*	
Q_2	*0.1*	*3.5*	*0.1*	*2.5*	*3.3*	*0.8*	*0.3*	*5.0*		*5.5*	*0.5*	
Q avg.	*1.5*	*19.1*	*1.3*	*8.2*	*18.8*	*5.9*	*2.9*	*17.9*		*16.0*	*8.1*	

Percentile Back of Queue (95th percentile)

$f_{B\%}$	*2.1*	*1.7*	*2.1*	*1.9*	*1.7*	*1.9*	*2.0*	*1.7*		*1.7*	*1.9*	
BOQ, $Q_{\%}$	*3.2*	*32.6*	*2.6*	*15.4*	*32.1*	*11.4*	*5.9*	*30.8*		*27.9*	*15.2*	

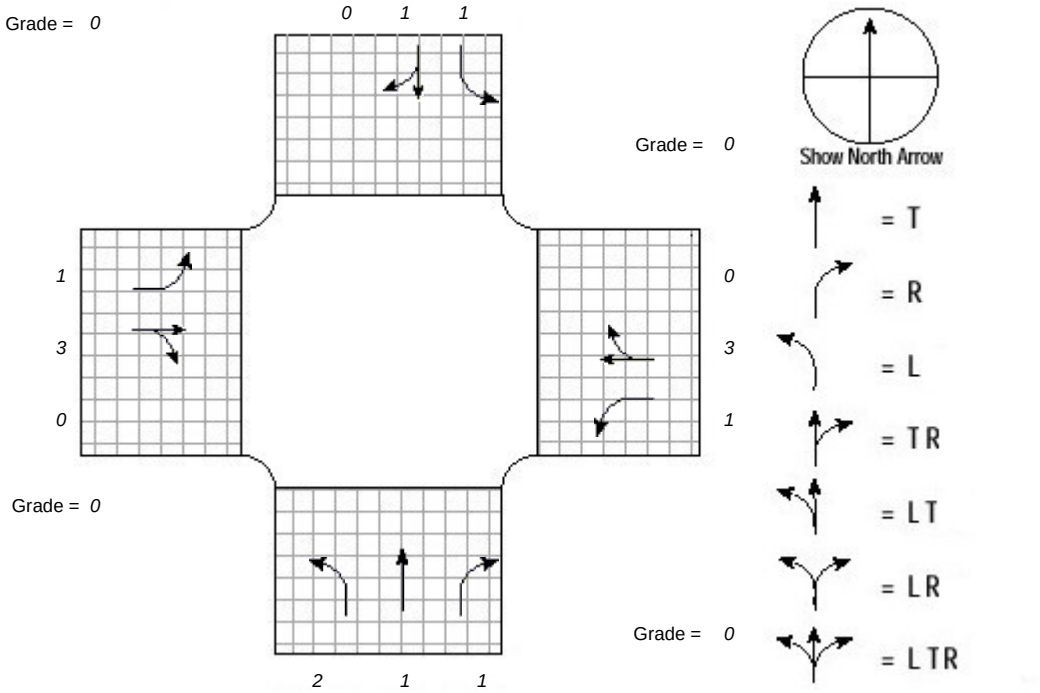
Queue Storage Ratio

Q spacing	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*		*25.0*	*25.0*	
Q storage	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*		*0*	*0*	
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst		Intersection	*Crossley Road @ Ramon Road*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*9/11/2006*	Jurisdiction	*Palm Springs*
Time Period	*PM Peak Hour*	Analysis Year	*GP Buildout*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*25*	*2330*	*253*	*170*	*1903*	*33*	*223*	*11*	*390*	*46*	*28*	*30*
% Heavy veh	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	
Ext. eff. green	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*	*3*	*3*	*3*	
Unit Extension	*3.0*	*3.0*		*3.0*	*3.0*		*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*		*12.0*	*12.0*		*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr	*0*	*0*		*0*	*0*		*0*	*0*	*0*	*0*	*0*	
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	Excl. Left	WB Only	Thru & RT	04	Excl. Left	Thru & RT	07	08
Timing	G = *5.0*	G = *2.0*	G = *65.0*	G =	G = *8.0*	G = *20.0*	G =	G =
	Y = *4*	Y = *4*	Y = *4*	Y =	Y = *4*	Y = *4*	Y =	Y =
Duration of Analysis (hrs) = *1.00*						Cycle Length C = *120.0*		

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *GP Update*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*25*	*2330*	*253*	*170*	*1903*	*33*	*223*	*11*	*390*	*46*	*28*	*30*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Adj. Flow Rate	*25*	*2330*	*253*	*170*	*1903*	*33*	*223*	*11*	*390*	*46*	*28*	*30*
Lane Group	*L*	*TR*		*L*	*TR*		*L*	*T*	*R*	*L*	*TR*	
Adj. flow rate	*25*	*2583*		*170*	*1936*		*223*	*11*	*390*	*46*	*58*	
Prop. LT or RT	*0.000*	*--*	*0.098*	*0.000*	*--*	*0.017*	*0.000*	*--*	*0.000*	*0.000*	*--*	*0.517*

Saturation Flow Rate

Base satflow	*1900*	*1900*		*1900*	*1900*		*1900*	*1900*	*1900*	*1900*	*1900*	
Num. of lanes	*1*	*3*	*0*	*1*	*3*	*0*	*2*	*1*	*1*	*1*	*1*	*0*
fW	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fHV	*0.952*	*0.952*		*0.952*	*0.952*		*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	
fg	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fp	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fbb	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fa	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fLU	*1.000*	*0.908*		*1.000*	*0.908*		*0.971*	*1.000*	*1.000*	*1.000*	*1.000*	
fLT	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*
Secondary fLT			*--*			*--*			*--*			*--*
fRT	*--*	*0.985*		*--*	*0.997*		*--*	*1.000*	*0.850*	*--*	*0.922*	
fLpb	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*
fRpb	*--*	*1.000*		*--*	*1.000*		*--*	*1.000*	*1.000*	*--*	*1.000*	
Adj. satflow	*1719*	*4857*		*1719*	*4917*		*3338*	*1810*	*1538*	*1719*	*1669*	
Sec. adj. satflow			*--*			*--*			*--*			*--*

CAPACITY AND LOS WORKSHEET

General Information

Project Description *GP Update*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*TR*		*L*	*T*	*R*	*L*	*TR*	
Adj. flow rate	*25*	*2583*		*170*	*1936*		*223*	*11*	*390*	*46*	*58*	
Satflow rate	*1719*	*4857*		*1719*	*4917*		*3338*	*1810*	*1538*	*1719*	*1669*	
Lost time	*2.0*	*2.0*		*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	
Green ratio	*0.04*	*0.54*		*0.09*	*0.59*		*0.07*	*0.17*	*0.87*	*0.07*	*0.17*	
Lane group cap.	*72*	*2631*		*158*	*2909*		*223*	*302*	*1333*	*115*	*278*	
v/c ratio	*0.35*	*0.98*		*1.08*	*0.67*		*1.00*	*0.04*	*0.29*	*0.40*	*0.21*	
Flow ratio	*0.01*	*0.53*		*0.10*	*0.39*		*0.07*	*0.01*	*0.25*	*0.03*	*0.03*	
Crit. lane group	*N*	*Y*		*Y*	*N*		*Y*	*N*	*N*	*N*	*Y*	
Sum flow ratios	*0.73*											
Lost time/cycle	*16.00*											
Critical v/c ratio	*0.84*											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*TR*		*L*	*T*	*R*	*L*	*TR*	
Adj. flow rate	*25*	*2583*		*170*	*1936*		*223*	*11*	*390*	*46*	*58*	
Lane group cap.	*72*	*2631*		*158*	*2909*		*223*	*302*	*1333*	*115*	*278*	
v/c ratio	*0.35*	*0.98*		*1.08*	*0.67*		*1.00*	*0.04*	*0.29*	*0.40*	*0.21*	
Green ratio	*0.04*	*0.54*		*0.09*	*0.59*		*0.07*	*0.17*	*0.87*	*0.07*	*0.17*	
Unif. delay d1	*55.9*	*26.9*		*54.5*	*16.5*		*56.0*	*41.9*	*1.4*	*53.7*	*43.2*	
Delay factor k	*0.11*	*0.49*		*0.50*	*0.24*		*0.50*	*0.11*	*0.11*	*0.11*	*0.11*	
Increm. delay d2	*2.9*	*21.6*		*231.9*	*0.6*		*120.5*	*0.0*	*0.1*	*2.3*	*0.4*	
PF factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
Control delay	*58.8*	*48.5*		*286.4*	*17.1*		*176.5*	*42.0*	*1.6*	*56.0*	*43.5*	
Lane group LOS	*E*	*D*		*F*	*B*		*F*	*D*	*A*	*E*	*D*	
Apprch. delay	*48.6*			*38.8*			*64.8*			*49.0*		
Approach LOS	*D*			*D*			*E*			*D*		
Intersec. delay	*46.7*			Intersection LOS						*D*		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *GP Update*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*120.0*			
Prot. phase eff. green intvl, g (s)				
Opposed queue eff. green intvl, g_q (s)				
Unopposed green intvl, g_u (s)				
Red time, r(s)				
Arrival rate, q_a (veh/s)				
Prot. phase departure rate, s_p (veh/s)				
Perm. phase departure rate, s_s (veh/s)				
X_{perm}				
X_{prot} (N/A for lagging left-turns)				

Uniform Queue Size and Delay Computations

	EB	WB	NB	SB
Queue at start of green arrow, Q_a				
Queue at start of unsaturated green, Q_u				
Residual queue, Q_r				
Uniform delay, d_1				

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(S_p - q_s)} + g_q Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(s_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(S_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(S_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(S_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(S_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *GP Update*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	*L*	*TR*		*L*	*TR*		*L*	*T*	*R*	*L*	*TR*	
Init. queue/lane	*0.0*	*0.0*		*0.0*	*0.0*		*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	
Flow rate/lane	*25*	*2583*		*170*	*1936*		*223*	*11*	*390*	*46*	*58*	
Satflow per lane	*1719*	*1783*		*1719*	*1805*		*1719*	*1810*	*1538*	*1719*	*1669*	
Capacity/lane	*72*	*2631*		*158*	*2909*		*223*	*302*	*1333*	*115*	*278*	
Flow ratio	*0.01*	*0.53*		*0.10*	*0.39*		*0.07*	*0.01*	*0.25*	*0.03*	0.03	
v/c ratio	*0.35*	*0.98*		*1.08*	*0.67*		*1.00*	*0.04*	*0.29*	*0.40*	*0.21*	
I factor	*1.000*	*1.000*		*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
Arrival type	*3*	*3*		*3*	*3*		*3*	*3*	*3*	*3*	*3*	
Platoon ratio	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	
PF factor	*1.00*	*1.00*		*1.00*	*1.00*		*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	
Q_1	*0.8*	*31.0*		*5.7*	*15.9*		*3.8*	*0.3*	*2.3*	*1.5*	*1.7*	
k_B	*0.2*	*0.8*		*0.3*	*0.9*		*0.2*	*0.4*	*1.0*	*0.2*	*0.4*	
Q_2	*0.1*	*15.7*		*8.7*	*1.7*		*3.6*	*0.0*	*0.4*	*0.1*	*0.1*	
Q avg.	*0.9*	*46.7*		*14.3*	*17.6*		*7.4*	*0.3*	*2.7*	*1.6*	*1.8*	

Percentile Back of Queue (95th percentile)

$f_{B\%}$	*2.1*	*1.5*		*1.8*	*1.7*		*1.9*	*2.1*	*2.0*	*2.0*	*2.0*	
BOQ, $Q_{\%}$	*1.9*	*72.1*		*25.4*	*30.4*		*14.0*	*0.7*	*5.5*	*3.3*	*3.6*	

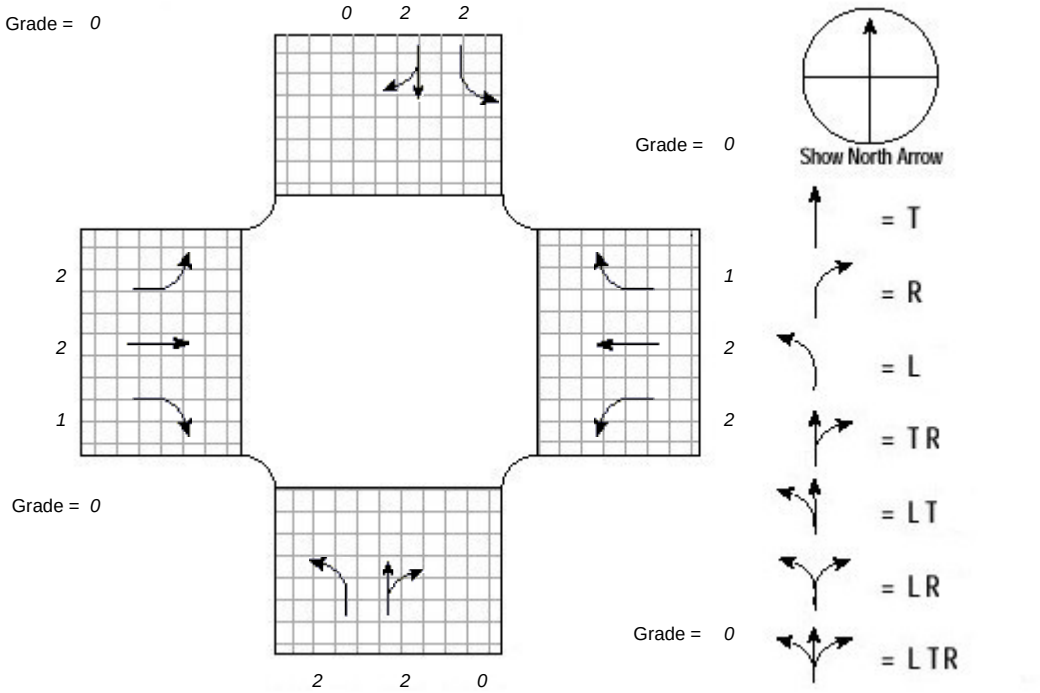
Queue Storage Ratio

Q spacing	*25.0*	*25.0*		*25.0*	*25.0*		*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	
Q storage	*0*	*0*		*0*	*0*		*0*	*0*	*0*	*0*	*0*	
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst		Intersection	*Sunrise Way @ E Palm Cyn*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*9/11/06*	Jurisdiction	*Palm Springs*
Time Period	*Midday Peak Hour*	Analysis Year	*GP Buildout*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*92*	*947*	*173*	*333*	*940*	*562*	*163*	*409*	*341*	*614*	*422*	*130*
% Heavy veh	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Ext. eff. green	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Arrival type	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*		*3*	*3*	
Unit Extension	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*		*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*		*12.0*	*12.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*		*0*	*0*	
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	Excl. Left	Thru & RT	03	04	Excl. Left	SB Only	Thru & RT	08
Timing	G = *13.0*	G = *38.0*	G =	G =	G = *11.0*	G = *8.0*	G = *30.0*	G =
	Y = *4*	Y = *4*	Y =	Y =	Y = *4*	Y = *4*	Y = *4*	Y =
Duration of Analysis (hrs) = *1.00*						Cycle Length C = *120.0*		

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *GP Update*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*92*	*947*	*173*	*333*	*940*	*562*	*163*	*409*	*341*	*614*	*422*	*130*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Adj. Flow Rate	*92*	*947*	*173*	*333*	*940*	*562*	*163*	*409*	*341*	*614*	*422*	*130*
Lane Group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Adj. flow rate	*92*	*947*	*173*	*333*	*940*	*562*	*163*	*750*		*614*	*552*	
Prop. LT or RT	*0.000*	--	*0.000*	*0.000*	--	*0.000*	*0.000*	--	*0.455*	*0.000*	--	*0.236*

Saturation Flow Rate

Base satflow	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*		*1900*	*1900*	
Num. of lanes	*2*	*2*	*1*	*2*	*2*	*1*	*2*	*2*	*0*	*2*	*2*	*0*
fW	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fHV	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*		*0.952*	*0.952*	
fg	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fp	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fbb	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fa	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fLU	*0.971*	*0.952*	*1.000*	*0.971*	*0.952*	*1.000*	*0.971*	*0.952*		*0.971*	*0.952*	
fLT	*0.950*	*1.000*	--	*0.950*	*1.000*	--	*0.950*	*1.000*	--	*0.950*	*1.000*	--
Secondary fLT			--			--			--			--
fRT	--	*1.000*	*0.850*	--	*1.000*	*0.850*	--	*0.932*		--	*0.965*	
fLpb	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--
fRpb	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*		--	*1.000*	
Adj. satflow	*3338*	*3445*	*1538*	*3338*	*3445*	*1538*	*3338*	*3210*		*3338*	*3324*	
Sec. adj. satflow			--			--			--			--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *GP Update*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Adj. flow rate	*92*	*947*	*173*	*333*	*940*	*562*	*163*	*750*		*614*	*552*	
Satflow rate	*3338*	*3445*	*1538*	*3338*	*3445*	*1538*	*3338*	*3210*		*3338*	*3324*	
Lost time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Green ratio	*0.11*	*0.32*	*0.82*	*0.11*	*0.32*	*0.82*	*0.09*	*0.25*		*0.19*	*0.35*	
Lane group cap.	*362*	*1091*	*1269*	*362*	*1091*	*1269*	*306*	*803*		*640*	*1163*	
v/c ratio	*0.25*	*0.87*	*0.14*	*0.92*	*0.86*	*0.44*	*0.53*	*0.93*		*0.96*	*0.47*	
Flow ratio	*0.03*	*0.27*	*0.11*	*0.10*	*0.27*	*0.37*	*0.05*	*0.23*		*0.18*	*0.17*	
Crit. lane group	*N*	*Y*	*N*	*Y*	*N*	*N*	*N*	*Y*		*Y*	*N*	
Sum flow ratios	*0.79*											
Lost time/cycle	*16.00*											
Critical v/c ratio	*0.91*											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Adj. flow rate	*92*	*947*	*173*	*333*	*940*	*562*	*163*	*750*		*614*	*552*	
Lane group cap.	*362*	*1091*	*1269*	*362*	*1091*	*1269*	*306*	*803*		*640*	*1163*	
v/c ratio	*0.25*	*0.87*	*0.14*	*0.92*	*0.86*	*0.44*	*0.53*	*0.93*		*0.96*	*0.47*	
Green ratio	*0.11*	*0.32*	*0.82*	*0.11*	*0.32*	*0.82*	*0.09*	*0.25*		*0.19*	*0.35*	
Unif. delay d1	*49.1*	*38.6*	*2.1*	*53.0*	*38.5*	*2.9*	*52.0*	*44.0*		*48.0*	*30.4*	
Delay factor k	*0.11*	*0.40*	*0.11*	*0.44*	*0.39*	*0.11*	*0.14*	*0.45*		*0.47*	*0.11*	
Increm. delay d2	*0.4*	*8.3*	*0.0*	*39.3*	*7.8*	*0.2*	*1.8*	*23.7*		*40.2*	*0.3*	
PF factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
Control delay	*49.4*	*47.0*	*2.1*	*92.3*	*46.3*	*3.1*	*53.9*	*67.8*		*88.2*	*30.7*	
Lane group LOS	*D*	*D*	*A*	*F*	*D*	*A*	*D*	*E*		*F*	*C*	
Apprch. delay	*40.7*			*41.4*			*65.3*			*61.0*		
Approach LOS	*D*			*D*			*E*			*E*		
Intersec. delay	*50.0*			Intersection LOS						*D*		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *GP Update*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*120.0*			
Prot. phase eff. green intvl, g (s)				
Opposed queue eff. green intvl, g_q (s)				
Unopposed green intvl, g_u (s)				
Red time, r(s)				
Arrival rate, q_a (veh/s)				
Prot. phase departure rate, s_p (veh/s)				
Perm. phase departure rate, s_s (veh/s)				
X_{perm}				
X_{prot} (N/A for lagging left-turns)				

Uniform Queue Size and Delay Computations

	EB	WB	NB	SB
Queue at start of green arrow, Q_a				
Queue at start of unsaturated green, Q_u				
Residual queue, Q_r				
Uniform delay, d_1				

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(S_p - q_s)} + g_q Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(s_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(S_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(S_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(S_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(S_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *GP Update*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Init. queue/lane	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*		*0.0*	*0.0*	
Flow rate/lane	*92*	*947*	*173*	*333*	*940*	*562*	*163*	*750*		*614*	*552*	
Satflow per lane	*1719*	*1809*	*1538*	*1719*	*1809*	*1538*	*1719*	*1685*		*1719*	*1745*	
Capacity/lane	*362*	*1091*	*1269*	*362*	*1091*	*1269*	*306*	*803*		*640*	*1163*	
Flow ratio	*0.03*	*0.27*	*0.11*	*0.10*	*0.27*	*0.37*	*0.05*	*0.23*		*0.18*	0.17	
v/c ratio	*0.25*	*0.87*	*0.14*	*0.92*	*0.86*	*0.44*	*0.53*	*0.93*		*0.96*	*0.47*	
I factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
Arrival type	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*		*3*	*3*	
Platoon ratio	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*		*1.00*	*1.00*	
PF factor	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*		*1.00*	*1.00*	
Q_1	*1.4*	*15.6*	*1.1*	*5.6*	*15.4*	*5.2*	*2.6*	*12.8*		*10.4*	*7.5*	
k_B	*0.3*	*0.6*	*0.9*	*0.3*	*0.6*	*0.9*	*0.3*	*0.5*		*0.4*	*0.6*	
Q_2	*0.1*	*3.5*	*0.1*	*2.5*	*3.3*	*0.8*	*0.3*	*5.0*		*5.5*	*0.5*	
Q avg.	*1.5*	*19.1*	*1.3*	*8.2*	*18.8*	*5.9*	*2.9*	*17.9*		*16.0*	*8.1*	

Percentile Back of Queue (95th percentile)

$f_{B\%}$	*2.1*	*1.7*	*2.1*	*1.9*	*1.7*	*1.9*	*2.0*	*1.7*		*1.7*	*1.9*	
BOQ, $Q_{\%}$	*3.2*	*32.6*	*2.6*	*15.4*	*32.1*	*11.4*	*5.9*	*30.8*		*27.9*	*15.2*	

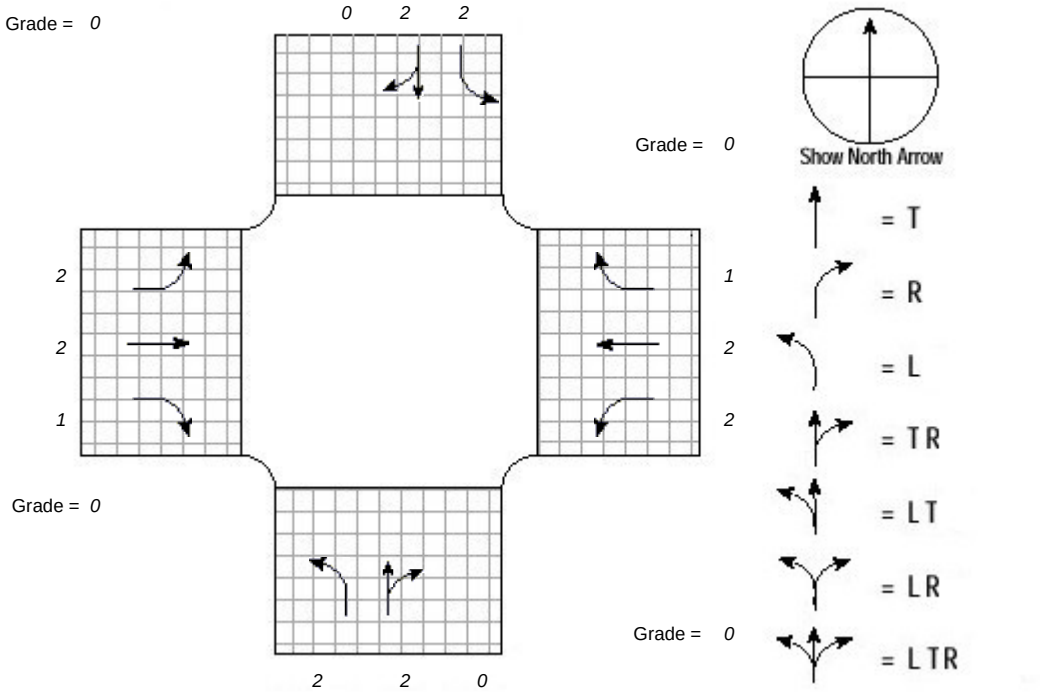
Queue Storage Ratio

Q spacing	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*		*25.0*	*25.0*	
Q storage	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*		*0*	*0*	
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst		Intersection	*Sunrise Way @ E Palm Cyn*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*9/11/06*	Jurisdiction	*Palm Springs*
Time Period	*PM Peak Hour*	Analysis Year	*GP Buildout*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*47*	*851*	*133*	*252*	*862*	*479*	*135*	*364*	*258*	*568*	*322*	*121*
% Heavy veh	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Ext. eff. green	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Arrival type	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*		*3*	*3*	
Unit Extension	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*		*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*		*12.0*	*12.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*		*0*	*0*	
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	Excl. Left	Thru & RT	03	04	Excl. Left	SB Only	Thru & RT	08
Timing	G = *12.0*	G = *39.0*	G =	G =	G = *11.0*	G = *10.0*	G = *28.0*	G =
	Y = *4*	Y = *4*	Y =	Y =	Y = *4*	Y = *4*	Y = *4*	Y =
Duration of Analysis (hrs) = *1.00*						Cycle Length C = *120.0*		

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *GP Update*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*47*	*851*	*133*	*252*	*862*	*479*	*135*	*364*	*258*	*568*	*322*	*121*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Adj. Flow Rate	*47*	*851*	*133*	*252*	*862*	*479*	*135*	*364*	*258*	*568*	*322*	*121*
Lane Group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Adj. flow rate	*47*	*851*	*133*	*252*	*862*	*479*	*135*	*622*		*568*	*443*	
Prop. LT or RT	*0.000*	--	*0.000*	*0.000*	--	*0.000*	*0.000*	--	*0.415*	*0.000*	--	*0.273*

Saturation Flow Rate

Base satflow	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*		*1900*	*1900*	
Num. of lanes	*2*	*2*	*1*	*2*	*2*	*1*	*2*	*2*	*0*	*2*	*2*	*0*
fW	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fHV	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*		*0.952*	*0.952*	
fg	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fp	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fbb	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fa	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fLU	*0.971*	*0.952*	*1.000*	*0.971*	*0.952*	*1.000*	*0.971*	*0.952*		*0.971*	*0.952*	
fLT	*0.950*	*1.000*	--	*0.950*	*1.000*	--	*0.950*	*1.000*	--	*0.950*	*1.000*	--
Secondary fLT			--			--			--			--
fRT	--	*1.000*	*0.850*	--	*1.000*	*0.850*	--	*0.938*		--	*0.959*	
fLpb	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--
fRpb	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*		--	*1.000*	
Adj. satflow	*3338*	*3445*	*1538*	*3338*	*3445*	*1538*	*3338*	*3231*		*3338*	*3304*	
Sec. adj. satflow			--			--			--			--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *GP Update*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Adj. flow rate	*47*	*851*	*133*	*252*	*862*	*479*	*135*	*622*		*568*	*443*	
Satflow rate	*3338*	*3445*	*1538*	*3338*	*3445*	*1538*	*3338*	*3231*		*3338*	*3304*	
Lost time	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Green ratio	*0.10*	*0.32*	*0.83*	*0.10*	*0.32*	*0.83*	*0.09*	*0.23*		*0.21*	*0.35*	
Lane group cap.	*334*	*1120*	*1282*	*334*	*1120*	*1282*	*306*	*754*		*695*	*1156*	
v/c ratio	*0.14*	*0.76*	*0.10*	*0.75*	*0.77*	*0.37*	*0.44*	*0.82*		*0.82*	*0.38*	
Flow ratio	*0.01*	*0.25*	*0.09*	*0.08*	*0.25*	*0.31*	*0.04*	*0.19*		*0.17*	*0.13*	
Crit. lane group	*N*	*N*	*N*	*Y*	*Y*	*N*	*N*	*Y*		*Y*	*N*	
Sum flow ratios	*0.69*											
Lost time/cycle	*16.00*											
Critical v/c ratio	*0.79*											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Adj. flow rate	*47*	*851*	*133*	*252*	*862*	*479*	*135*	*622*		*568*	*443*	
Lane group cap.	*334*	*1120*	*1282*	*334*	*1120*	*1282*	*306*	*754*		*695*	*1156*	
v/c ratio	*0.14*	*0.76*	*0.10*	*0.75*	*0.77*	*0.37*	*0.44*	*0.82*		*0.82*	*0.38*	
Green ratio	*0.10*	*0.32*	*0.83*	*0.10*	*0.32*	*0.83*	*0.09*	*0.23*		*0.21*	*0.35*	
Unif. delay d1	*49.3*	*36.3*	*1.8*	*52.6*	*36.5*	*2.4*	*51.6*	*43.7*		*45.3*	*29.3*	
Delay factor k	*0.11*	*0.31*	*0.11*	*0.31*	*0.32*	*0.11*	*0.11*	*0.36*		*0.36*	*0.11*	
Increm. delay d2	*0.2*	*3.2*	*0.0*	*10.0*	*3.4*	*0.2*	*1.0*	*8.0*		*8.1*	*0.2*	
PF factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
Control delay	*49.5*	*39.5*	*1.9*	*62.6*	*39.9*	*2.6*	*52.6*	*51.6*		*53.4*	*29.5*	
Lane group LOS	*D*	*D*	*A*	*E*	*D*	*A*	*D*	*D*		*D*	*C*	
Apprch. delay	*35.1*			*32.3*			*51.8*			*42.9*		
Approach LOS	*D*			*C*			*D*			*D*		
Intersec. delay	*38.7*			Intersection LOS						*D*		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *GP Update*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*120.0*			
Prot. phase eff. green intvl, g (s)				
Opposed queue eff. green intvl, g_q (s)				
Unopposed green intvl, g_u (s)				
Red time, r(s)				
Arrival rate, q_a (veh/s)				
Prot. phase departure rate, s_p (veh/s)				
Perm. phase departure rate, s_s (veh/s)				
X_{perm}				
X_{prot} (N/A for lagging left-turns)				

Uniform Queue Size and Delay Computations

	EB	WB	NB	SB
Queue at start of green arrow, Q_a				
Queue at start of unsaturated green, Q_u				
Residual queue, Q_r				
Uniform delay, d_1				

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(S_p - q_s)} + g_q Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(s_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(S_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(S_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(S_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(S_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *GP Update*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Init. queue/lane	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*		*0.0*	*0.0*	
Flow rate/lane	*47*	*851*	*133*	*252*	*862*	*479*	*135*	*622*		*568*	*443*	
Satflow per lane	*1719*	*1809*	*1538*	*1719*	*1809*	*1538*	*1719*	*1696*		*1719*	*1735*	
Capacity/lane	*334*	*1120*	*1282*	*334*	*1120*	*1282*	*306*	*754*		*695*	*1156*	
Flow ratio	*0.01*	*0.25*	*0.09*	*0.08*	*0.25*	*0.31*	*0.04*	*0.19*		*0.17*	0.13	
v/c ratio	*0.14*	*0.76*	*0.10*	*0.75*	*0.77*	*0.37*	*0.44*	*0.82*		*0.82*	*0.38*	
I factor	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
Arrival type	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*		*3*	*3*	
Platoon ratio	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*		*1.00*	*1.00*	
PF factor	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*		*1.00*	*1.00*	
Q_1	*0.7*	*13.3*	*0.8*	*4.2*	*13.6*	*3.9*	*2.2*	*10.3*		*9.3*	*5.8*	
k_B	*0.3*	*0.6*	*1.0*	*0.3*	*0.6*	*1.0*	*0.3*	*0.5*		*0.4*	*0.6*	
Q_2	*0.0*	*1.8*	*0.1*	*0.8*	*1.9*	*0.6*	*0.2*	*2.1*		*1.9*	*0.4*	
Q avg.	*0.8*	*15.1*	*0.9*	*5.0*	*15.5*	*4.4*	*2.4*	*12.4*		*11.2*	*6.2*	

Percentile Back of Queue (95th percentile)

$f_{B\%}$	*2.1*	*1.8*	*2.1*	*2.0*	*1.8*	*2.0*	*2.0*	*1.8*		*1.8*	*1.9*	
BOQ, $Q_{\%}$	*1.6*	*26.6*	*1.9*	*9.8*	*27.2*	*8.7*	*4.8*	*22.3*		*20.4*	*11.9*	

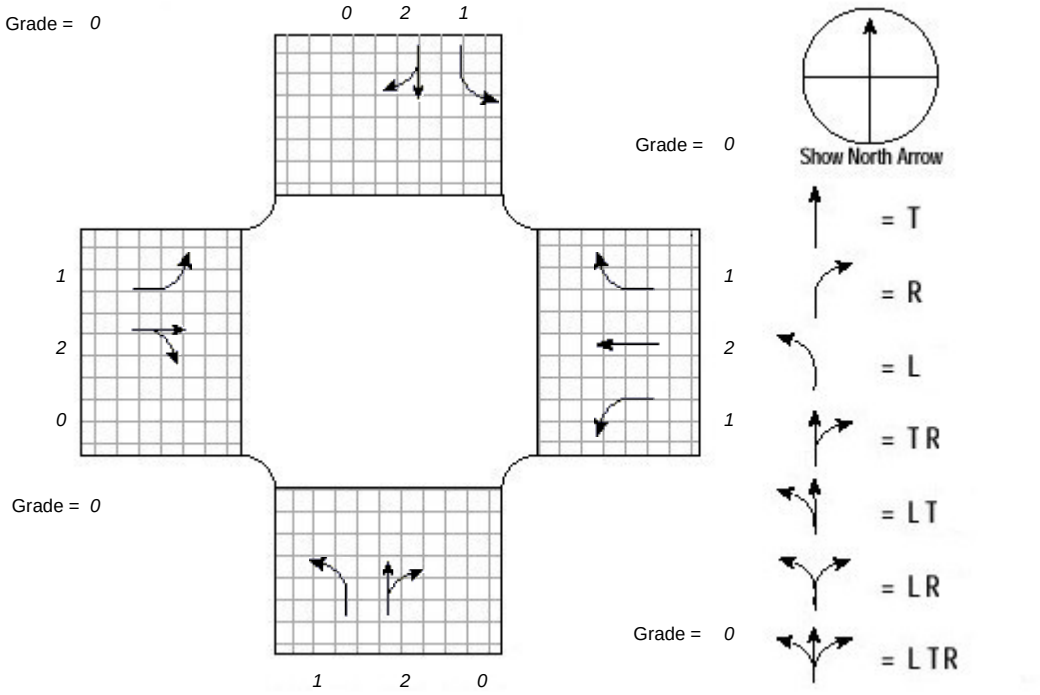
Queue Storage Ratio

Q spacing	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*		*25.0*	*25.0*	
Q storage	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*		*0*	*0*	
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst		Intersection	*Farrell Drive @ E Palm Canyon*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*9/11/06*	Jurisdiction	*Palm Springs*
Time Period	*Midday Peak Hour*	Analysis Year	*GP Buildout*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*64*	*1185*	*17*	*19*	*1245*	*162*	*32*	*34*	*24*	*170*	*23*	*78*
% Heavy veh	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Ext. eff. green	*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Arrival type	*3*	*3*		*3*	*3*	*3*	*3*	*3*		*3*	*3*	
Unit Extension	*3.0*	*3.0*		*3.0*	*3.0*	*3.0*	*3.0*	*3.0*		*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*		*12.0*	*12.0*	*12.0*	*12.0*	*12.0*		*12.0*	*12.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr	*0*	*0*		*0*	*0*	*0*	*0*	*0*		*0*	*0*	
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	Excl. Left	Thru & RT	03	04	Excl. Left	Thru & RT	07	08
Timing	G = *6.0*	G = *63.0*	G =	G =	G = *15.0*	G = *20.0*	G =	G =
	Y = *4*	Y = *4*	Y =	Y =	Y = *4*	Y = *4*	Y =	Y =

Duration of Analysis (hrs) = *1.00*

Cycle Length C = *120.0*

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *GP Update*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*64*	*1185*	*17*	*19*	*1245*	*162*	*32*	*34*	*24*	*170*	*23*	*78*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Adj. Flow Rate	*64*	*1185*	*17*	*19*	*1245*	*162*	*32*	*34*	*24*	*170*	*23*	*78*
Lane Group	*L*	*TR*		*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Adj. flow rate	*64*	*1202*		*19*	*1245*	*162*	*32*	*58*		*170*	*101*	
Prop. LT or RT	*0.000*	--	*0.014*	*0.000*	--	*0.000*	*0.000*	--	*0.414*	*0.000*	--	*0.772*

Saturation Flow Rate

Base satflow	*1900*	*1900*		*1900*	*1900*	*1900*	*1900*	*1900*		*1900*	*1900*	
Num. of lanes	*1*	*2*	*0*	*1*	*2*	*1*	*1*	*2*	*0*	*1*	*2*	*0*
fW	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fHV	*0.952*	*0.952*		*0.952*	*0.952*	*0.952*	*0.952*	*0.952*		*0.952*	*0.952*	
fg	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fp	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fbb	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fa	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fLU	*1.000*	*0.952*		*1.000*	*0.952*	*1.000*	*1.000*	*0.952*		*1.000*	*0.952*	
fLT	*0.950*	*1.000*	--	*0.950*	*1.000*	--	*0.950*	*1.000*	--	*0.950*	*1.000*	--
Secondary fLT			--			--			--			--
fRT	--	*0.998*		--	*1.000*	*0.850*	--	*0.938*		--	*0.884*	
fLpb	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--	*1.000*	*1.000*	--
fRpb	--	*1.000*		--	*1.000*	*1.000*	--	*1.000*		--	*1.000*	
Adj. satflow	*1719*	*3438*		*1719*	*3445*	*1538*	*1719*	*3231*		*1719*	*3046*	
Sec. adj. satflow			--			--			--			--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *GP Update*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Adj. flow rate	*64*	*1202*		*19*	*1245*	*162*	*32*	*58*		*170*	*101*	
Satflow rate	*1719*	*3438*		*1719*	*3445*	*1538*	*1719*	*3231*		*1719*	*3046*	
Lost time	*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Green ratio	*0.05*	*0.52*		*0.05*	*0.52*	*0.88*	*0.13*	*0.17*		*0.13*	*0.17*	
Lane group cap.	*86*	*1805*		*86*	*1809*	*1359*	*215*	*539*		*215*	*508*	
v/c ratio	*0.74*	*0.67*		*0.22*	*0.69*	*0.12*	*0.15*	*0.11*		*0.79*	*0.20*	
Flow ratio	*0.04*	*0.35*		*0.01*	*0.36*	*0.11*	*0.02*	*0.02*		*0.10*	*0.03*	
Crit. lane group	*Y*	*N*		*N*	*Y*	*N*	*N*	*N*		*Y*	*Y*	
Sum flow ratios	*0.53*											
Lost time/cycle	*16.00*											
Critical v/c ratio	*0.61*											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Adj. flow rate	*64*	*1202*		*19*	*1245*	*162*	*32*	*58*		*170*	*101*	
Lane group cap.	*86*	*1805*		*86*	*1809*	*1359*	*215*	*539*		*215*	*508*	
v/c ratio	*0.74*	*0.67*		*0.22*	*0.69*	*0.12*	*0.15*	*0.11*		*0.79*	*0.20*	
Green ratio	*0.05*	*0.52*		*0.05*	*0.52*	*0.88*	*0.13*	*0.17*		*0.13*	*0.17*	
Unif. delay d1	*56.2*	*20.8*		*54.8*	*21.2*	*0.9*	*46.8*	*42.4*		*51.0*	*43.1*	
Delay factor k	*0.30*	*0.24*		*0.11*	*0.26*	*0.11*	*0.11*	*0.11*		*0.34*	*0.11*	
Increm. delay d2	*34.1*	*1.0*		*1.3*	*1.1*	*0.0*	*0.3*	*0.1*		*20.2*	*0.2*	
PF factor	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
Control delay	*90.3*	*21.8*		*56.1*	*22.3*	*1.0*	*47.1*	*42.5*		*71.2*	*43.3*	
Lane group LOS	*F*	*C*		*E*	*C*	*A*	*D*	*D*		*E*	*D*	
Apprch. delay	*25.2*			*20.3*			*44.2*			*60.8*		
Approach LOS	*C*			*C*			*D*			*E*		
Intersec. delay	*26.7*			Intersection LOS						*C*		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *GP Update*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*120.0*			
Prot. phase eff. green intvl, g (s)				
Opposed queue eff. green intvl, g_q (s)				
Unopposed green intvl, g_u (s)				
Red time, r(s)				
Arrival rate, q_a (veh/s)				
Prot. phase departure rate, s_p (veh/s)				
Perm. phase departure rate, s_s (veh/s)				
X_{perm}				
X_{prot} (N/A for lagging left-turns)				

Uniform Queue Size and Delay Computations

	EB	WB	NB	SB
Queue at start of green arrow, Q_a				
Queue at start of unsaturated green, Q_u				
Residual queue, Q_r				
Uniform delay, d_1				

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(S_p - q_s)} + g_q Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(s_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(S_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(S_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(S_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(S_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *GP Update*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	*L*	*TR*		*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Init. queue/lane	*0.0*	*0.0*		*0.0*	*0.0*	*0.0*	*0.0*	*0.0*		*0.0*	*0.0*	
Flow rate/lane	*64*	*1202*		*19*	*1245*	*162*	*32*	*58*		*170*	*101*	
Satflow per lane	*1719*	*1805*		*1719*	*1809*	*1538*	*1719*	*1696*		*1719*	*1599*	
Capacity/lane	*86*	*1805*		*86*	*1809*	*1359*	*215*	*539*		*215*	*508*	
Flow ratio	*0.04*	*0.35*		*0.01*	*0.36*	*0.11*	*0.02*	*0.02*		*0.10*	0.03	
v/c ratio	*0.74*	*0.67*		*0.22*	*0.69*	*0.12*	*0.15*	*0.11*		*0.79*	*0.20*	
I factor	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
Arrival type	*3*	*3*		*3*	*3*	*3*	*3*	*3*		*3*	*3*	
Platoon ratio	*1.00*	*1.00*		*1.00*	*1.00*	*1.00*	*1.00*	*1.00*		*1.00*	*1.00*	
PF factor	*1.00*	*1.00*		*1.00*	*1.00*	*1.00*	*1.00*	*1.00*		*1.00*	*1.00*	
Q_1	*2.1*	*15.4*		*0.6*	*16.2*	*0.7*	*1.0*	*0.8*		*5.5*	*1.5*	
k_B	*0.2*	*0.8*		*0.2*	*0.8*	*1.0*	*0.3*	*0.4*		*0.3*	*0.4*	
Q_2	*0.5*	*1.6*		*0.1*	*1.7*	*0.1*	*0.1*	*0.0*		*1.2*	*0.1*	
Q avg.	*2.6*	*16.9*		*0.7*	*17.9*	*0.8*	*1.0*	*0.9*		*6.7*	*1.6*	

Percentile Back of Queue (95th percentile)

$f_{B\%}$	*2.0*	*1.7*		*2.1*	*1.7*	*2.1*	*2.1*	*2.1*		*1.9*	*2.0*	
BOQ, $Q_{\%}$	*5.3*	*29.3*		*1.4*	*30.8*	*1.7*	*2.1*	*1.9*		*12.8*	*3.3*	

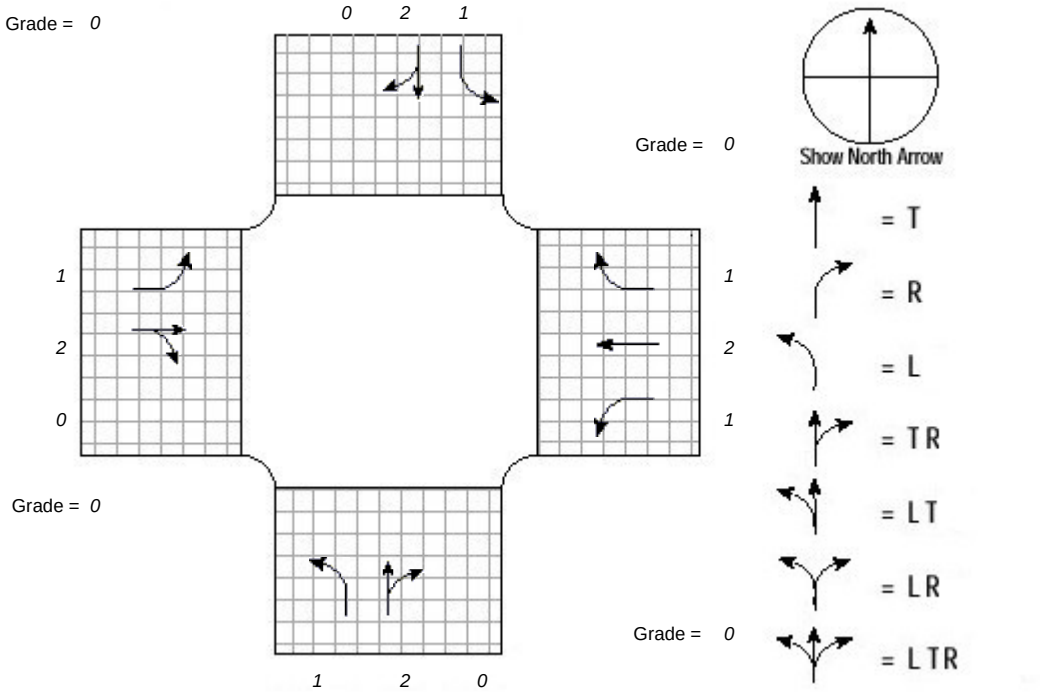
Queue Storage Ratio

Q spacing	*25.0*	*25.0*		*25.0*	*25.0*	*25.0*	*25.0*	*25.0*		*25.0*	*25.0*	
Q storage	*0*	*0*		*0*	*0*	*0*	*0*	*0*		*0*	*0*	
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst		Intersection	*Farrell Drive @ E Palm Canyon*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*9/11/06*	Jurisdiction	*Palm Springs*
Time Period	*PM Peak Hour*	Analysis Year	*GP Buildout*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*41*	*1310*	*26*	*5*	*1312*	*219*	*17*	*14*	*23*	*197*	*23*	*64*
% Heavy veh	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Ext. eff. green	*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Arrival type	*3*	*3*		*3*	*3*	*3*	*3*	*3*		*3*	*3*	
Unit Extension	*3.0*	*3.0*		*3.0*	*3.0*	*3.0*	*3.0*	*3.0*		*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*		*12.0*	*12.0*	*12.0*	*12.0*	*12.0*		*12.0*	*12.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr	*0*	*0*		*0*	*0*	*0*	*0*	*0*		*0*	*0*	
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	Excl. Left	Thru & RT	03	04	Excl. Left	Thru & RT	07	08
Timing	G = *5.0*	G = *62.0*	G =	G =	G = *17.0*	G = *20.0*	G =	G =
	Y = *4*	Y = *4*	Y =	Y =	Y = *4*	Y = *4*	Y =	Y =
Duration of Analysis (hrs) = *1.00*					Cycle Length C = *120.0*			

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *GP Update*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*41*	*1310*	*26*	*5*	*1312*	*219*	*17*	*14*	*23*	*197*	*23*	*64*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Adj. Flow Rate	*41*	*1310*	*26*	*5*	*1312*	*219*	*17*	*14*	*23*	*197*	*23*	*64*
Lane Group	*L*	*TR*		*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Adj. flow rate	*41*	*1336*		*5*	*1312*	*219*	*17*	*37*		*197*	*87*	
Prop. LT or RT	*0.000*	*--*	*0.019*	*0.000*	*--*	*0.000*	*0.000*	*--*	*0.622*	*0.000*	*--*	*0.736*

Saturation Flow Rate

Base satflow	*1900*	*1900*		*1900*	*1900*	*1900*	*1900*	*1900*		*1900*	*1900*	
Num. of lanes	*1*	*2*	*0*	*1*	*2*	*1*	*1*	*2*	*0*	*1*	*2*	*0*
fW	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fHV	*0.952*	*0.952*		*0.952*	*0.952*	*0.952*	*0.952*	*0.952*		*0.952*	*0.952*	
fg	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fp	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fbb	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fa	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
fLU	*1.000*	*0.952*		*1.000*	*0.952*	*1.000*	*1.000*	*0.952*		*1.000*	*0.952*	
fLT	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*
Secondary fLT			*--*			*--*			*--*			*--*
fRT	*--*	*0.997*		*--*	*1.000*	*0.850*	*--*	*0.907*		*--*	*0.890*	
fLpb	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*
fRpb	*--*	*1.000*		*--*	*1.000*	*1.000*	*--*	*1.000*		*--*	*1.000*	
Adj. satflow	*1719*	*3435*		*1719*	*3445*	*1538*	*1719*	*3124*		*1719*	*3065*	
Sec. adj. satflow			*--*			*--*			*--*			*--*

CAPACITY AND LOS WORKSHEET

General Information

Project Description *GP Update*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Adj. flow rate	*41*	*1336*		*5*	*1312*	*219*	*17*	*37*		*197*	*87*	
Satflow rate	*1719*	*3435*		*1719*	*3445*	*1538*	*1719*	*3124*		*1719*	*3065*	
Lost time	*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*		*2.0*	*2.0*	
Green ratio	*0.04*	*0.52*		*0.04*	*0.52*	*0.89*	*0.14*	*0.17*		*0.14*	*0.17*	
Lane group cap.	*72*	*1775*		*72*	*1780*	*1371*	*244*	*521*		*244*	*511*	
v/c ratio	*0.57*	*0.75*		*0.07*	*0.74*	*0.16*	*0.07*	*0.07*		*0.81*	*0.17*	
Flow ratio	*0.02*	*0.39*		*0.00*	*0.38*	*0.14*	*0.01*	*0.01*		*0.11*	*0.03*	
Crit. lane group	*Y*	*Y*		*N*	*N*	*N*	*N*	*N*		*Y*	*Y*	
Sum flow ratios	*0.56*											
Lost time/cycle	*16.00*											
Critical v/c ratio	*0.64*											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Adj. flow rate	*41*	*1336*		*5*	*1312*	*219*	*17*	*37*		*197*	*87*	
Lane group cap.	*72*	*1775*		*72*	*1780*	*1371*	*244*	*521*		*244*	*511*	
v/c ratio	*0.57*	*0.75*		*0.07*	*0.74*	*0.16*	*0.07*	*0.07*		*0.81*	*0.17*	
Green ratio	*0.04*	*0.52*		*0.04*	*0.52*	*0.89*	*0.14*	*0.17*		*0.14*	*0.17*	
Unif. delay d1	*56.4*	*22.9*		*55.3*	*22.6*	*0.8*	*44.6*	*42.2*		*49.9*	*42.9*	
Delay factor k	*0.16*	*0.31*		*0.11*	*0.29*	*0.11*	*0.11*	*0.11*		*0.35*	*0.11*	
Increm. delay d2	*10.7*	*1.9*		*0.4*	*1.7*	*0.1*	*0.1*	*0.1*		*20.4*	*0.2*	
PF factor	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
Control delay	*67.2*	*24.8*		*55.7*	*24.3*	*0.9*	*44.8*	*42.2*		*70.3*	*43.0*	
Lane group LOS	*E*	*C*		*E*	*C*	*A*	*D*	*D*		*E*	*D*	
Apprch. delay	*26.1*			*21.1*			*43.0*			*62.0*		
Approach LOS	*C*			*C*			*D*			*E*		
Intersec. delay	*27.1*			Intersection LOS						*C*		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *GP Update*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*120.0*			
Prot. phase eff. green intvl, g (s)				
Opposed queue eff. green intvl, g_q (s)				
Unopposed green intvl, g_u (s)				
Red time, r(s)				
Arrival rate, q_a (veh/s)				
Prot. phase departure rate, s_p (veh/s)				
Perm. phase departure rate, s_s (veh/s)				
X_{perm}				
X_{prot} (N/A for lagging left-turns)				

Uniform Queue Size and Delay Computations

	EB	WB	NB	SB
Queue at start of green arrow, Q_a				
Queue at start of unsaturated green, Q_u				
Residual queue, Q_r				
Uniform delay, d_1				

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(S_p - q_s)} + g_q Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(s_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(S_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(S_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(S_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(S_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *GP Update*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	*L*	*TR*		*L*	*T*	*R*	*L*	*TR*		*L*	*TR*	
Init. queue/lane	*0.0*	*0.0*		*0.0*	*0.0*	*0.0*	*0.0*	*0.0*		*0.0*	*0.0*	
Flow rate/lane	*41*	*1336*		*5*	*1312*	*219*	*17*	*37*		*197*	*87*	
Satflow per lane	*1719*	*1804*		*1719*	*1809*	*1538*	*1719*	*1640*		*1719*	*1609*	
Capacity/lane	*72*	*1775*		*72*	*1780*	*1371*	*244*	*521*		*244*	*511*	
Flow ratio	*0.02*	*0.39*		*0.00*	*0.38*	*0.14*	*0.01*	*0.01*		*0.11*	0.03	
v/c ratio	*0.57*	*0.75*		*0.07*	*0.74*	*0.16*	*0.07*	*0.07*		*0.81*	*0.17*	
I factor	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*		*1.000*	*1.000*	
Arrival type	*3*	*3*		*3*	*3*	*3*	*3*	*3*		*3*	*3*	
Platoon ratio	*1.00*	*1.00*		*1.00*	*1.00*	*1.00*	*1.00*	*1.00*		*1.00*	*1.00*	
PF factor	*1.00*	*1.00*		*1.00*	*1.00*	*1.00*	*1.00*	*1.00*		*1.00*	*1.00*	
Q_1	*1.3*	*18.5*		*0.2*	*17.9*	*0.9*	*0.5*	*0.5*		*6.4*	*1.3*	
k_B	*0.2*	*0.8*		*0.2*	*0.8*	*1.0*	*0.4*	*0.4*		*0.4*	*0.4*	
Q_2	*0.2*	*2.3*		*0.0*	*2.2*	*0.2*	*0.0*	*0.0*		*1.4*	*0.1*	
Q avg.	*1.6*	*20.8*		*0.2*	*20.1*	*1.1*	*0.5*	*0.6*		*7.8*	*1.4*	

Percentile Back of Queue (95th percentile)

$f_{B\%}$	*2.1*	*1.7*		*2.1*	*1.7*	*2.1*	*2.1*	*2.1*		*1.9*	*2.1*	
BOQ, $Q_{\%}$	*3.2*	*35.1*		*0.4*	*34.1*	*2.3*	*1.1*	*1.2*		*14.7*	*2.8*	

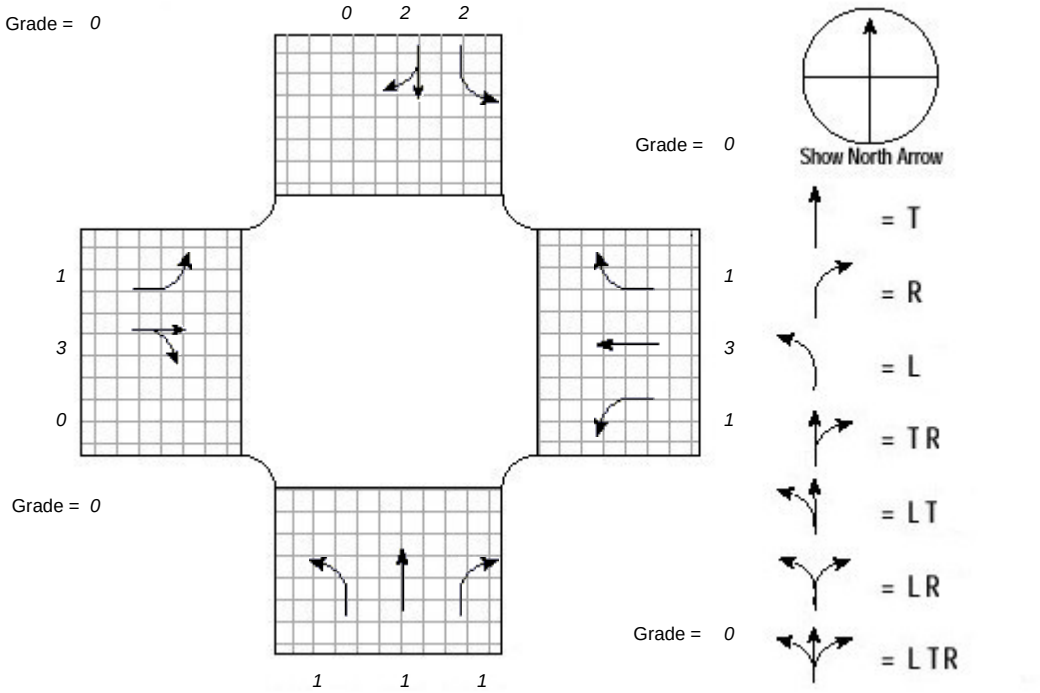
Queue Storage Ratio

Q spacing	*25.0*	*25.0*		*25.0*	*25.0*	*25.0*	*25.0*	*25.0*		*25.0*	*25.0*	
Q storage	*0*	*0*		*0*	*0*	*0*	*0*	*0*		*0*	*0*	
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst		Intersection	*Gene Autry Trail @ E Palm Cyn*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*9/11/06*	Jurisdiction	*Palm Springs*
Time Period	*Midday Peak Hour*	Analysis Year	*GP Buildout*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*193*	*1361*	*97*	*79*	*1289*	*289*	*132*	*169*	*54*	*339*	*135*	*198*
% Heavy veh	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	
Ext. eff. green	*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	
Arrival type	*3*	*3*		*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	
Unit Extension	*3.0*	*3.0*		*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*		*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr	*0*	*0*		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	Excl. Left	EB Only	Thru & RT	04	Excl. Left	Thru & RT	07	08
Timing	G = *9.0*	G = *5.0*	G = *48.0*	G =	G = *15.0*	G = *23.0*	G =	G =
	Y = *4*	Y = *4*	Y = *4*	Y =	Y = *4*	Y = *4*	Y =	Y =
Duration of Analysis (hrs) = *1.00*						Cycle Length C = *120.0*		

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *GP Update*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*193*	*1361*	*97*	*79*	*1289*	*289*	*132*	*169*	*54*	*339*	*135*	*198*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Adj. Flow Rate	*193*	*1361*	*97*	*79*	*1289*	*289*	*132*	*169*	*54*	*339*	*135*	*198*
Lane Group	*L*	*TR*		*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*	
Adj. flow rate	*193*	*1458*		*79*	*1289*	*289*	*132*	*169*	*54*	*339*	*333*	
Prop. LT or RT	*0.000*	*--*	*0.067*	*0.000*	*--*	*0.000*	*0.000*	*--*	*0.000*	*0.000*	*--*	*0.595*

Saturation Flow Rate

Base satflow	*1900*	*1900*		*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	
Num. of lanes	*1*	*3*	*0*	*1*	*3*	*1*	*1*	*1*	*1*	*2*	*2*	*0*
fW	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fHV	*0.952*	*0.952*		*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	
fg	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fp	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fbb	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fa	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fLU	*1.000*	*0.908*		*1.000*	*0.908*	*1.000*	*1.000*	*1.000*	*1.000*	*0.971*	*0.952*	
fLT	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*
Secondary fLT			*--*			*--*			*--*			*--*
fRT	*--*	*0.990*		*--*	*1.000*	*0.850*	*--*	*1.000*	*0.850*	*--*	*0.911*	
fLpb	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*
fRpb	*--*	*1.000*		*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	
Adj. satflow	*1719*	*4880*		*1719*	*4929*	*1538*	*1719*	*1810*	*1538*	*3338*	*3138*	
Sec. adj. satflow			*--*			*--*			*--*			*--*

CAPACITY AND LOS WORKSHEET

General Information

Project Description *GP Update*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*	
Adj. flow rate	*193*	*1458*		*79*	*1289*	*289*	*132*	*169*	*54*	*339*	*333*	
Satflow rate	*1719*	*4880*		*1719*	*4929*	*1538*	*1719*	*1810*	*1538*	*3338*	*3138*	
Lost time	*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	
Green ratio	*0.15*	*0.47*		*0.08*	*0.40*	*0.78*	*0.13*	*0.19*	*0.81*	*0.13*	*0.19*	
Lane group cap.	*258*	*2318*		*129*	*1972*	*1205*	*215*	*347*	*1243*	*417*	*601*	
v/c ratio	*0.75*	*0.63*		*0.61*	*0.65*	*0.24*	*0.61*	*0.49*	*0.04*	*0.81*	*0.55*	
Flow ratio	*0.11*	*0.30*		*0.05*	*0.26*	*0.19*	*0.08*	*0.09*	*0.04*	*0.10*	*0.11*	
Crit. lane group	*Y*	*N*		*N*	*Y*	*N*	*N*	*N*	*N*	*Y*	*Y*	
Sum flow ratios	*0.58*											
Lost time/cycle	*16.00*											
Critical v/c ratio	*0.67*											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*	
Adj. flow rate	*193*	*1458*		*79*	*1289*	*289*	*132*	*169*	*54*	*339*	*333*	
Lane group cap.	*258*	*2318*		*129*	*1972*	*1205*	*215*	*347*	*1243*	*417*	*601*	
v/c ratio	*0.75*	*0.63*		*0.61*	*0.65*	*0.24*	*0.61*	*0.49*	*0.04*	*0.81*	*0.55*	
Green ratio	*0.15*	*0.47*		*0.08*	*0.40*	*0.78*	*0.13*	*0.19*	*0.81*	*0.13*	*0.19*	
Unif. delay d1	*48.8*	*23.6*		*53.8*	*29.2*	*3.5*	*49.8*	*43.2*	*2.3*	*51.1*	*43.9*	
Delay factor k	*0.30*	*0.21*		*0.20*	*0.23*	*0.11*	*0.20*	*0.11*	*0.11*	*0.35*	*0.15*	
Increm. delay d2	*12.2*	*0.6*		*8.6*	*0.8*	*0.1*	*5.3*	*1.1*	*0.0*	*12.8*	*1.1*	
PF factor	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
Control delay	*61.1*	*24.1*		*62.4*	*30.0*	*3.6*	*55.0*	*44.3*	*2.3*	*63.9*	*45.0*	
Lane group LOS	*E*	*C*		*E*	*C*	*A*	*E*	*D*	*A*	*E*	*D*	
Apprch. delay	*28.5*			*27.0*			*41.9*			*54.5*		
Approach LOS	*C*			*C*			*D*			*D*		
Intersec. delay	*33.0*			Intersection LOS						*C*		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *GP Update*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*120.0*			
Prot. phase eff. green intvl, g (s)				
Opposed queue eff. green intvl, g_q (s)				
Unopposed green intvl, g_u (s)				
Red time, r(s)				
Arrival rate, q_a (veh/s)				
Prot. phase departure rate, s_p (veh/s)				
Perm. phase departure rate, s_s (veh/s)				
X_{perm}				
X_{prot} (N/A for lagging left-turns)				

Uniform Queue Size and Delay Computations

	EB	WB	NB	SB
Queue at start of green arrow, Q_a				
Queue at start of unsaturated green, Q_u				
Residual queue, Q_r				
Uniform delay, d_1				

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(S_p - q_s)} + g_q Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(s_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(S_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(S_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(S_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(S_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *GP Update*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	*L*	*TR*		*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*	
Init. queue/lane	*0.0*	*0.0*		*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	
Flow rate/lane	*193*	*1458*		*79*	*1289*	*289*	*132*	*169*	*54*	*339*	*333*	
Satflow per lane	*1719*	*1791*		*1719*	*1809*	*1538*	*1719*	*1810*	*1538*	*1719*	*1648*	
Capacity/lane	*258*	*2318*		*129*	*1972*	*1205*	*215*	*347*	*1243*	*417*	*601*	
Flow ratio	*0.11*	*0.30*		*0.05*	*0.26*	*0.19*	*0.08*	*0.09*	*0.04*	*0.10*	0.11	
v/c ratio	*0.75*	*0.63*		*0.61*	*0.65*	*0.24*	*0.61*	*0.49*	*0.04*	*0.81*	*0.55*	
I factor	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
Arrival type	*3*	*3*		*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	
Platoon ratio	*1.00*	*1.00*		*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	
PF factor	*1.00*	*1.00*		*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	
Q_1	*6.2*	*13.4*		*2.6*	*12.8*	*2.6*	*4.2*	*5.0*	*0.4*	*5.6*	*5.2*	
k_B	*0.4*	*0.7*		*0.2*	*0.7*	*0.9*	*0.3*	*0.4*	*0.9*	*0.3*	*0.4*	
Q_2	*1.0*	*1.3*		*0.4*	*1.3*	*0.3*	*0.5*	*0.4*	*0.0*	*1.3*	*0.5*	
Q avg.	*7.2*	*14.6*		*2.9*	*14.1*	*2.9*	*4.7*	*5.4*	*0.4*	*7.0*	*5.7*	

Percentile Back of Queue (95th percentile)

$f_{B\%}$	*1.9*	*1.8*		*2.0*	*1.8*	*2.0*	*2.0*	*1.9*	*2.1*	*1.9*	*1.9*	
BOQ, $Q_{\%}$	*13.7*	*25.8*		*5.9*	*25.0*	*5.8*	*9.2*	*10.6*	*0.8*	*13.3*	*11.1*	

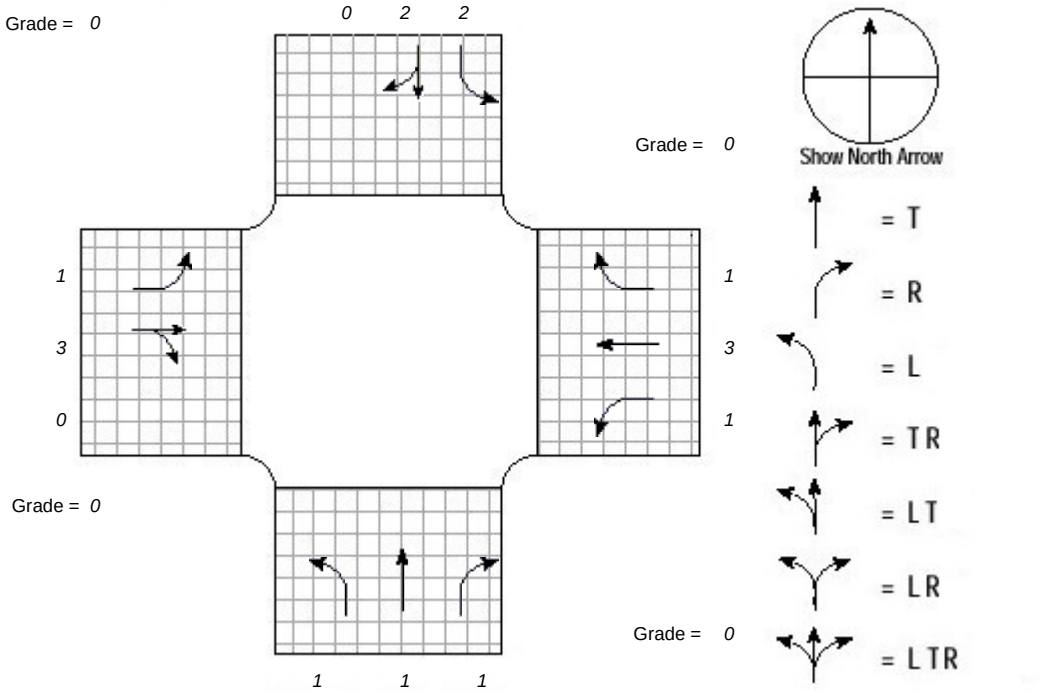
Queue Storage Ratio

Q spacing	*25.0*	*25.0*		*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	
Q storage	*0*	*0*		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst		Intersection	*Gene Autry Trail @ E Palm Cyn*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*9/11/06*	Jurisdiction	*Palm Springs*
Time Period	*PM Peak Hour*	Analysis Year	*GP Buildout*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*223*	*1371*	*94*	*59*	*1622*	*427*	*113*	*195*	*69*	*463*	*174*	*159*
% Heavy veh	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Actuated (P/A)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
Startup lost time	*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	
Ext. eff. green	*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	
Arrival type	*3*	*3*		*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	
Unit Extension	*3.0*	*3.0*		*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	
Ped/Bike/RTOR Volume	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Lane Width	*12.0*	*12.0*		*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	*12.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr	*0*	*0*		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
Ped timing	*3.2*			*3.2*			*3.2*			*3.2*		

	Excl. Left	EB Only	Thru & RT	04	Excl. Left	Thru & RT	07	08
Timing	G = *11.0*	G = *2.0*	G = *45.0*	G =	G = *19.0*	G = *23.0*	G =	G =
	Y = *4*	Y = *4*	Y = *4*	Y =	Y = *4*	Y = *4*	Y =	Y =
Duration of Analysis (hrs) = *1.00*						Cycle Length C = *120.0*		

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *GP Update*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*223*	*1371*	*94*	*59*	*1622*	*427*	*113*	*195*	*69*	*463*	*174*	*159*
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Adj. Flow Rate	*223*	*1371*	*94*	*59*	*1622*	*427*	*113*	*195*	*69*	*463*	*174*	*159*
Lane Group	*L*	*TR*		*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*	
Adj. flow rate	*223*	*1465*		*59*	*1622*	*427*	*113*	*195*	*69*	*463*	*333*	
Prop. LT or RT	*0.000*	*--*	*0.064*	*0.000*	*--*	*0.000*	*0.000*	*--*	*0.000*	*0.000*	*--*	*0.477*

Saturation Flow Rate

Base satflow	*1900*	*1900*		*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	*1900*	
Num. of lanes	*1*	*3*	*0*	*1*	*3*	*1*	*1*	*1*	*1*	*2*	*2*	*0*
fW	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fHV	*0.952*	*0.952*		*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	*0.952*	
fg	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fp	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fbb	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fa	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
fLU	*1.000*	*0.908*		*1.000*	*0.908*	*1.000*	*1.000*	*1.000*	*1.000*	*0.971*	*0.952*	
fLT	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*	*0.950*	*1.000*	*--*
Secondary fLT			*--*			*--*			*--*			*--*
fRT	*--*	*0.990*		*--*	*1.000*	*0.850*	*--*	*1.000*	*0.850*	*--*	*0.928*	
fLpb	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*
fRpb	*--*	*1.000*		*--*	*1.000*	*1.000*	*--*	*1.000*	*1.000*	*--*	*1.000*	
Adj. satflow	*1719*	*4882*		*1719*	*4929*	*1538*	*1719*	*1810*	*1538*	*3338*	*3199*	
Sec. adj. satflow			*--*			*--*			*--*			*--*

CAPACITY AND LOS WORKSHEET

General Information

Project Description *GP Update*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*	
Adj. flow rate	*223*	*1465*		*59*	*1622*	*427*	*113*	*195*	*69*	*463*	*333*	
Satflow rate	*1719*	*4882*		*1719*	*4929*	*1538*	*1719*	*1810*	*1538*	*3338*	*3199*	
Lost time	*2.0*	*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	
Green ratio	*0.14*	*0.43*		*0.09*	*0.38*	*0.79*	*0.16*	*0.19*	*0.77*	*0.16*	*0.19*	
Lane group cap.	*244*	*2075*		*158*	*1848*	*1218*	*272*	*347*	*1192*	*529*	*613*	
v/c ratio	*0.91*	*0.71*		*0.37*	*0.88*	*0.35*	*0.42*	*0.56*	*0.06*	*0.88*	*0.54*	
Flow ratio	*0.13*	*0.30*		*0.03*	*0.33*	*0.28*	*0.07*	*0.11*	*0.04*	*0.14*	*0.10*	
Crit. lane group	*Y*	*N*		*N*	*Y*	*N*	*N*	*Y*	*N*	*Y*	*N*	
Sum flow ratios	*0.71*											
Lost time/cycle	*16.00*											
Critical v/c ratio	*0.81*											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	*L*	*TR*		*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*	
Adj. flow rate	*223*	*1465*		*59*	*1622*	*427*	*113*	*195*	*69*	*463*	*333*	
Lane group cap.	*244*	*2075*		*158*	*1848*	*1218*	*272*	*347*	*1192*	*529*	*613*	
v/c ratio	*0.91*	*0.71*		*0.37*	*0.88*	*0.35*	*0.42*	*0.56*	*0.06*	*0.88*	*0.54*	
Green ratio	*0.14*	*0.43*		*0.09*	*0.38*	*0.79*	*0.16*	*0.19*	*0.77*	*0.16*	*0.19*	
Unif. delay d1	*50.8*	*28.3*		*51.3*	*34.9*	*3.6*	*45.5*	*43.9*	*3.2*	*49.3*	*43.8*	
Delay factor k	*0.43*	*0.27*		*0.11*	*0.40*	*0.11*	*0.11*	*0.16*	*0.11*	*0.40*	*0.14*	
Increm. delay d2	*51.0*	*1.1*		*1.5*	*5.5*	*0.2*	*1.0*	*2.1*	*0.0*	*17.8*	*1.0*	
PF factor	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
Control delay	*101.8*	*29.5*		*52.8*	*40.5*	*3.8*	*46.5*	*46.0*	*3.2*	*67.2*	*44.8*	
Lane group LOS	*F*	*C*		*D*	*D*	*A*	*D*	*D*	*A*	*E*	*D*	
Apprch. delay	*39.0*			*33.4*			*38.3*			*57.8*		
Approach LOS	*D*			*C*			*D*			*E*		
Intersec. delay	*39.6*			Intersection LOS						*D*		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *GP Update*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*120.0*			
Prot. phase eff. green intvl, g (s)				
Opposed queue eff. green intvl, g_q (s)				
Unopposed green intvl, g_u (s)				
Red time, r(s)				
Arrival rate, q_a (veh/s)				
Prot. phase departure rate, s_p (veh/s)				
Perm. phase departure rate, s_s (veh/s)				
X_{perm}				
X_{prot} (N/A for lagging left-turns)				

Uniform Queue Size and Delay Computations

	EB	WB	NB	SB
Queue at start of green arrow, Q_a				
Queue at start of unsaturated green, Q_u				
Residual queue, Q_r				
Uniform delay, d_1				

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(S_p - q_s)} + g_q Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(s_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(S_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(S_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(S_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(S_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *GP Update*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	*L*	*TR*		*L*	*T*	*R*	*L*	*T*	*R*	*L*	*TR*	
Init. queue/lane	*0.0*	*0.0*		*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	
Flow rate/lane	*223*	*1465*		*59*	*1622*	*427*	*113*	*195*	*69*	*463*	*333*	
Satflow per lane	*1719*	*1792*		*1719*	*1809*	*1538*	*1719*	*1810*	*1538*	*1719*	*1680*	
Capacity/lane	*244*	*2075*		*158*	*1848*	*1218*	*272*	*347*	*1192*	*529*	*613*	
Flow ratio	*0.13*	*0.30*		*0.03*	*0.33*	*0.28*	*0.07*	*0.11*	*0.04*	*0.14*	0.10	
v/c ratio	*0.91*	*0.71*		*0.37*	*0.88*	*0.35*	*0.42*	*0.56*	*0.06*	*0.88*	*0.54*	
I factor	*1.000*	*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	
Arrival type	*3*	*3*		*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	
Platoon ratio	*1.00*	*1.00*		*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	
PF factor	*1.00*	*1.00*		*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	
Q_1	*7.3*	*14.7*		*1.8*	*18.5*	*4.1*	*3.4*	*5.9*	*0.5*	*7.8*	*5.2*	
k_B	*0.4*	*0.7*		*0.3*	*0.6*	*0.9*	*0.4*	*0.4*	*0.9*	*0.4*	*0.4*	
Q_2	*2.9*	*1.6*		*0.2*	*4.2*	*0.5*	*0.3*	*0.6*	*0.1*	*2.3*	*0.5*	
Q avg.	*10.2*	*16.3*		*2.0*	*22.7*	*4.6*	*3.7*	*6.4*	*0.6*	*10.1*	*5.7*	

Percentile Back of Queue (95th percentile)

$f_{B\%}$	*1.8*	*1.7*		*2.0*	*1.7*	*2.0*	*2.0*	*1.9*	*2.1*	*1.8*	*1.9*	
BOQ, $Q_{\%}$	*18.9*	*28.5*		*4.1*	*37.9*	*9.0*	*7.3*	*12.4*	*1.2*	*18.5*	*11.1*	

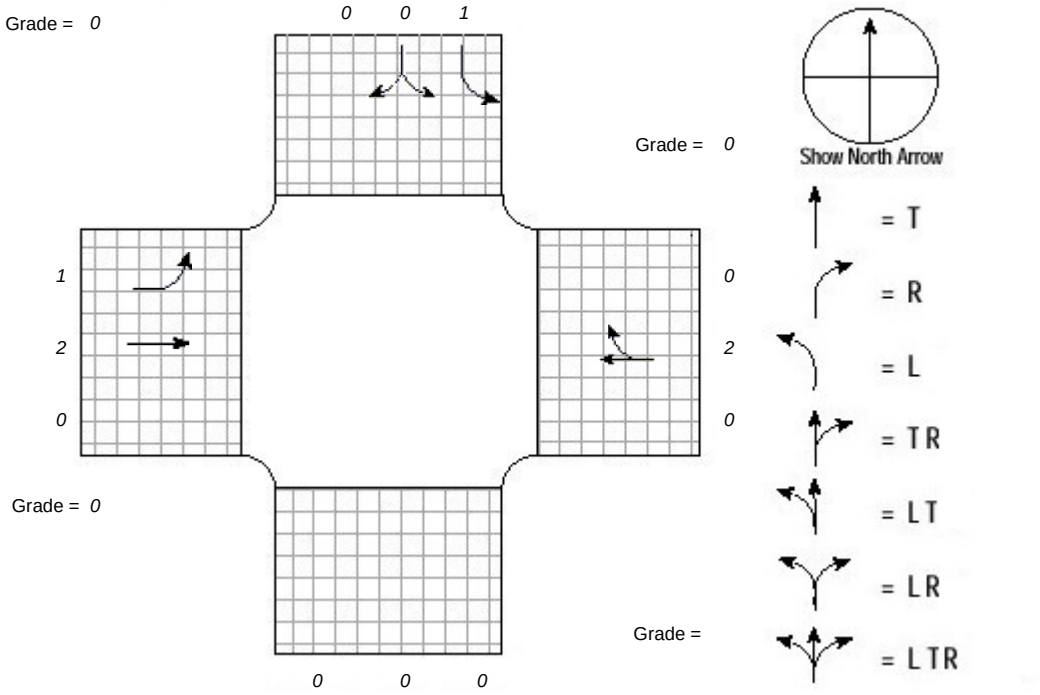
Queue Storage Ratio

Q spacing	*25.0*	*25.0*		*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	*25.0*	
Q storage	*0*	*0*		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst		Intersection	*Golf Club Drive @ E Palm Cyn*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*9/11/06*	Jurisdiction	*Palm Springs*
Time Period	*Midday Peak Hour*	Analysis Year	*GP Buildout*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*129*	*1617*			*1463*	*181*				*295*		*81*
% Heavy veh	*5*	*5*			*5*	*5*				*5*		*5*
PHF	*1.00*	*1.00*			*1.00*	*1.00*				*1.00*		*1.00*
Actuated (P/A)	*A*	*A*			*A*	*A*				*A*		*A*
Startup lost time	*2.0*	*2.0*			*2.0*					*2.0*	*2.0*	
Ext. eff. green	*2.0*	*2.0*			*2.0*					*2.0*	*2.0*	
Arrival type	*3*	*3*			*3*					*3*	*3*	
Unit Extension	*3.0*	*3.0*			*3.0*					*3.0*	*3.0*	
Ped/Bike/RTOR Volume				*0*	*0*	*0*	*0*			*0*	*0*	*0*
Lane Width	*12.0*	*12.0*			*12.0*					*12.0*	*12.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr	*0*	*0*			*0*					*0*	*0*	
Ped timing					*3.2*			*3.2*			*3.2*	

	EB Only	Thru & RT	03	04	SB Only	06	07	08
Timing	G = *12.0*	G = *72.0*	G =	G =	G = *24.0*	G =	G =	G =
	Y = *4*	Y = *4*	Y =	Y =	Y = *4*	Y =	Y =	Y =
Duration of Analysis (hrs) = *1.00*						Cycle Length C = *120.0*		

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *GP Update*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*129*	*1617*			*1463*	*181*				*295*		*81*
PHF	*1.00*	*1.00*			*1.00*	*1.00*				*1.00*		*1.00*
Adj. Flow Rate	*129*	*1617*			*1463*	*181*				*295*		*81*
Lane Group	*L*	*T*			*TR*					*L*	*LR*	
Adj. flow rate	*129*	*1617*			*1644*					*295*	*81*	
Prop. LT or RT	*0.000*	--	*0.000*	*0.000*	--	*0.110*		--		*0.000*	--	*1.000*

Saturation Flow Rate

Base satflow	*1900*	*1900*			*1900*					*1900*	*1900*	
Num. of lanes	*1*	*2*	*0*	*0*	*2*	*0*	*0*	*0*	*0*	*1*	*0*	*0*
fW	*1.000*	*1.000*			*1.000*					*1.000*	*1.000*	
fHV	*0.952*	*0.952*			*0.952*					*0.952*	*0.952*	
fg	*1.000*	*1.000*			*1.000*					*1.000*	*1.000*	
fp	*1.000*	*1.000*			*1.000*					*1.000*	*1.000*	
fbb	*1.000*	*1.000*			*1.000*					*1.000*	*1.000*	
fa	*1.000*	*1.000*			*1.000*					*1.000*	*1.000*	
fLU	*1.000*	*0.952*			*0.952*					*1.000*	*1.000*	
fLT	*0.950*	*1.000*	--		*1.000*	--			--	*0.950*	*1.000*	--
Secondary fLT			--			--			--			--
fRT	--	*1.000*		--	*0.983*		--			--	*0.850*	
fLpb	*1.000*	*1.000*	--		*1.000*	--			--	*1.000*	*1.000*	--
fRpb	--	*1.000*		--	*1.000*		--			--	*1.000*	
Adj. satflow	*1719*	*3445*			*3388*					*1719*	*1538*	
Sec. adj. satflow			--			--			--			--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *GP Update*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	*L*	*T*			*TR*					*L*	*LR*	
Adj. flow rate	*129*	*1617*			*1644*					*295*	*81*	
Satflow rate	*1719*	*3445*			*3388*					*1719*	*1538*	
Lost time	*2.0*	*2.0*			*2.0*					*2.0*	*2.0*	
Green ratio	*0.10*	*0.73*			*0.60*					*0.20*	*0.20*	
Lane group cap.	*172*	*2526*			*2033*					*344*	*308*	
v/c ratio	*0.75*	*0.64*			*0.81*					*0.86*	*0.26*	
Flow ratio	*0.08*	*0.47*			*0.49*					*0.17*	*0.05*	
Crit. lane group	*Y*	*N*			*Y*			*N*		*Y*	*N*	
Sum flow ratios	*0.73*											
Lost time/cycle	*12.00*											
Critical v/c ratio	*0.81*											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	*L*	*T*			*TR*					*L*	*LR*	
Adj. flow rate	*129*	*1617*			*1644*					*295*	*81*	
Lane group cap.	*172*	*2526*			*2033*					*344*	*308*	
v/c ratio	*0.75*	*0.64*			*0.81*					*0.86*	*0.26*	
Green ratio	*0.10*	*0.73*			*0.60*					*0.20*	*0.20*	
Unif. delay d1	*52.5*	*8.0*			*18.6*					*46.3*	*40.5*	
Delay factor k	*0.31*	*0.22*			*0.35*					*0.39*	*0.11*	
Increm. delay d2	*18.4*	*0.6*			*2.6*					*22.5*	*0.5*	
PF factor	*1.000*	*1.000*			*1.000*					*1.000*	*1.000*	
Control delay	*70.9*	*8.6*			*21.3*					*68.9*	*41.0*	
Lane group LOS	*E*	*A*			*C*					*E*	*D*	
Apprch. delay	*13.2*			*21.3*						*62.9*		
Approach LOS	*B*			*C*						*E*		
Intersec. delay	*21.7*			Intersection LOS						*C*		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *GP Update*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*120.0*			
Prot. phase eff. green intvl, g (s)				
Opposed queue eff. green intvl, g_q (s)				
Unopposed green intvl, g_u (s)				
Red time, r(s)				
Arrival rate, q_a (veh/s)				
Prot. phase departure rate, s_p (veh/s)				
Perm. phase departure rate, s_s (veh/s)				
X_{perm}				
X_{prot} (N/A for lagging left-turns)				

Uniform Queue Size and Delay Computations

	EB	WB	NB	SB
Queue at start of green arrow, Q_a				
Queue at start of unsaturated green, Q_u				
Residual queue, Q_r				
Uniform delay, d_1				

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(S_p - q_s)} + g_q Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(s_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(S_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(S_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(S_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(S_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *GP Update*

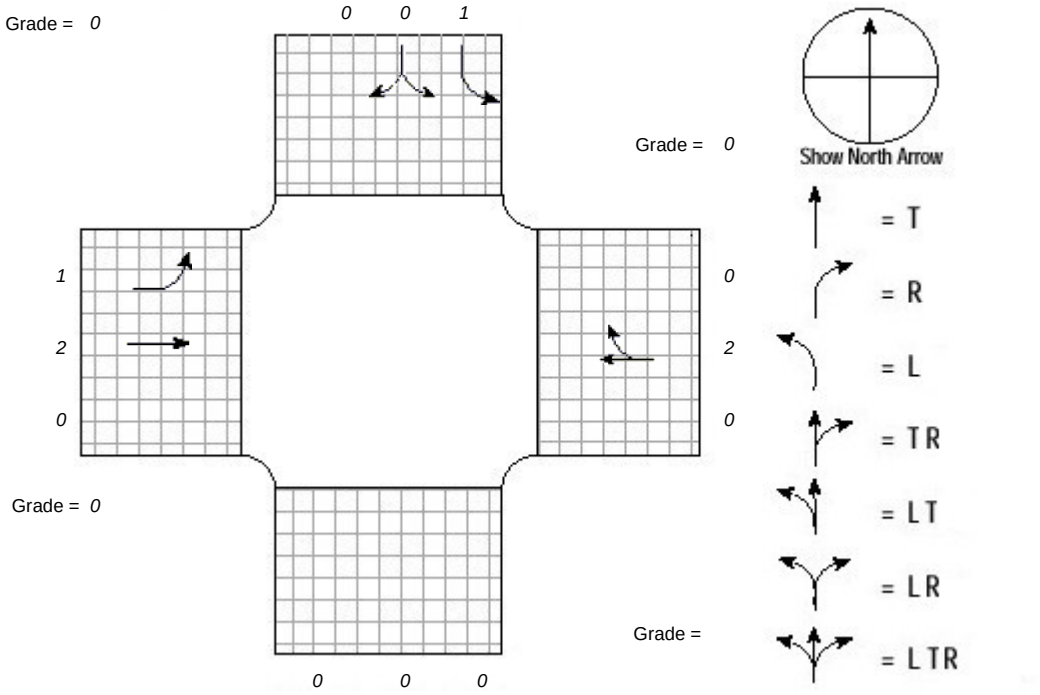
Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	*L*	*T*			*TR*					*L*	*LR*	
Init. queue/lane	*0.0*	*0.0*			*0.0*					*0.0*	*0.0*	
Flow rate/lane	*129*	*1617*			*1644*					*295*	*81*	
Satflow per lane	*1719*	*1809*			*1779*					*1719*	*1538*	
Capacity/lane	*172*	*2526*			*2033*					*344*	*308*	
Flow ratio	*0.08*	*0.47*			*0.49*					*0.17*	0.05	
v/c ratio	*0.75*	*0.64*			*0.81*					*0.86*	*0.26*	
I factor	*1.000*	*1.000*			*1.000*					*1.000*	*1.000*	
Arrival type	*3*	*3*			*3*					*3*	*3*	
Platoon ratio	*1.00*	*1.00*			*1.00*					*1.00*	*1.00*	
PF factor	*1.00*	*1.00*			*1.00*					*1.00*	*1.00*	
Q_1	*4.2*	*14.2*			*22.4*					*9.5*	*2.3*	
k_B	*0.3*	*1.0*			*0.9*					*0.4*	*0.4*	
Q_2	*0.8*	*1.7*			*3.5*					*2.4*	*0.1*	
Q avg.	*5.0*	*15.9*			*25.8*					*11.9*	*2.4*	
Percentile Back of Queue (95th percentile)												
$f_{B\%}$	*2.0*	*1.7*			*1.6*					*1.8*	*2.0*	
BOQ, $Q_{\%}$	*9.8*	*27.9*			*42.5*					*21.5*	*4.9*	
Queue Storage Ratio												
Q spacing	*25.0*	*25.0*			*25.0*					*25.0*	*25.0*	
Q storage	*0*	*0*			*0*					*0*	*0*	
Avg. R_Q												
95% $R_{Q\%}$												

LONG REPORT

General Information		Site Information	
Analyst	*Greg*	Intersection	*Golf Club Drive @ E Palm Cyn*
Agency or Co.	*Endo Engineering*	Area Type	*All other areas*
Date Performed	*9/11/06*	Jurisdiction	*Palm Springs*
Time Period	*PM Peak Hour*	Analysis Year	*GP Buildout*

Intersection Geometry



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume (vph)	*103*	*1566*			*1778*	*206*				*279*		*73*
% Heavy veh	*5*	*5*			*5*	*5*				*5*		*5*
PHF	*1.00*	*1.00*			*1.00*	*1.00*				*1.00*		*1.00*
Actuated (P/A)	*A*	*A*			*A*	*A*				*A*		*A*
Startup lost time	*2.0*	*2.0*			*2.0*					*2.0*	*2.0*	
Ext. eff. green	*2.0*	*2.0*			*2.0*					*2.0*	*2.0*	
Arrival type	*3*	*3*			*3*					*3*	*3*	
Unit Extension	*3.0*	*3.0*			*3.0*					*3.0*	*3.0*	
Ped/Bike/RTOR Volume				*0*	*0*	*0*	*0*			*0*	*0*	*0*
Lane Width	*12.0*	*12.0*			*12.0*					*12.0*	*12.0*	
Parking (Y or N)	*N*		*N*	*N*		*N*	*N*		*N*	*N*		*N*
Parking/hr												
Bus stops/hr	*0*	*0*			*0*					*0*	*0*	
Ped timing					*3.2*			*3.2*			*3.2*	

	EB Only	Thru & RT	03	04	SB Only	06	07	08
Timing	G = *9.0*	G = *77.0*	G =	G =	G = *22.0*	G =	G =	G =
	Y = *4*	Y = *4*	Y =	Y =	Y = *4*	Y =	Y =	Y =

Duration of Analysis (hrs) = *1.00*

Cycle Length C = *120.0*

VOLUME ADJUSTMENT AND SATURATION FLOW RATE WORKSHEET

General Information

Project Description *GP Update*

Volume Adjustment

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Volume	*103*	*1566*			*1778*	*206*				*279*		*73*
PHF	*1.00*	*1.00*			*1.00*	*1.00*				*1.00*		*1.00*
Adj. Flow Rate	*103*	*1566*			*1778*	*206*				*279*		*73*
Lane Group	*L*	*T*			*TR*					*L*	*LR*	
Adj. flow rate	*103*	*1566*			*1984*					*279*	*73*	
Prop. LT or RT	*0.000*	--	*0.000*	*0.000*	--	*0.104*		--		*0.000*	--	*1.000*

Saturation Flow Rate

Base satflow	*1900*	*1900*			*1900*					*1900*	*1900*	
Num. of lanes	*1*	*2*	*0*	*0*	*2*	*0*	*0*	*0*	*0*	*1*	*0*	*0*
fW	*1.000*	*1.000*			*1.000*					*1.000*	*1.000*	
fHV	*0.952*	*0.952*			*0.952*					*0.952*	*0.952*	
fg	*1.000*	*1.000*			*1.000*					*1.000*	*1.000*	
fp	*1.000*	*1.000*			*1.000*					*1.000*	*1.000*	
fbb	*1.000*	*1.000*			*1.000*					*1.000*	*1.000*	
fa	*1.000*	*1.000*			*1.000*					*1.000*	*1.000*	
fLU	*1.000*	*0.952*			*0.952*					*1.000*	*1.000*	
fLT	*0.950*	*1.000*	--		*1.000*	--			--	*0.950*	*1.000*	--
Secondary fLT			--			--			--			--
fRT	--	*1.000*		--	*0.984*		--			--	*0.850*	
fLpb	*1.000*	*1.000*	--		*1.000*	--			--	*1.000*	*1.000*	--
fRpb	--	*1.000*		--	*1.000*		--			--	*1.000*	
Adj. satflow	*1719*	*3445*			*3392*					*1719*	*1538*	
Sec. adj. satflow			--			--			--			--

CAPACITY AND LOS WORKSHEET

General Information

Project Description *GP Update*

Capacity Analysis

	EB			WB			NB			SB		
Lane group	*L*	*T*			*TR*					*L*	*LR*	
Adj. flow rate	*103*	*1566*			*1984*					*279*	*73*	
Satflow rate	*1719*	*3445*			*3392*					*1719*	*1538*	
Lost time	*2.0*	*2.0*			*2.0*					*2.0*	*2.0*	
Green ratio	*0.08*	*0.75*			*0.64*					*0.18*	*0.18*	
Lane group cap.	*129*	*2584*			*2177*					*315*	*282*	
v/c ratio	*0.80*	*0.61*			*0.91*					*0.89*	*0.26*	
Flow ratio	*0.06*	*0.45*			*0.58*					*0.16*	*0.05*	
Crit. lane group	*Y*	*N*			*Y*			*N*		*Y*	*N*	
Sum flow ratios	*0.81*											
Lost time/cycle	*12.00*											
Critical v/c ratio	*0.90*											

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Lane group	*L*	*T*			*TR*					*L*	*LR*	
Adj. flow rate	*103*	*1566*			*1984*					*279*	*73*	
Lane group cap.	*129*	*2584*			*2177*					*315*	*282*	
v/c ratio	*0.80*	*0.61*			*0.91*					*0.89*	*0.26*	
Green ratio	*0.08*	*0.75*			*0.64*					*0.18*	*0.18*	
Unif. delay d1	*54.6*	*6.9*			*18.6*					*47.8*	*42.0*	
Delay factor k	*0.34*	*0.19*			*0.43*					*0.41*	*0.11*	
Increm. delay d2	*34.6*	*0.4*			*7.0*					*31.6*	*0.5*	
PF factor	*1.000*	*1.000*			*1.000*					*1.000*	*1.000*	
Control delay	*89.2*	*7.3*			*25.6*					*79.3*	*42.5*	
Lane group LOS	*F*	*A*			*C*					*E*	*D*	
Apprch. delay	*12.3*			*25.6*						*71.7*		
Approach LOS	*B*			*C*						*E*		
Intersec. delay	*24.1*			Intersection LOS						*C*		

SUPPLEMENTAL UNIFORM DELAY WORKSHEET FOR LEFT TURNS FROM EXCLUSIVE LANES WITH PROTECTED AND PERMITTED PHASES

General Information

Project Description *GP Update*

v/c Ratio Computation

	EB	WB	NB	SB
Cycle length, C (s)	*120.0*			
Prot. phase eff. green intvl, g (s)				
Opposed queue eff. green intvl, g_q (s)				
Unopposed green intvl, g_u (s)				
Red time, r(s)				
Arrival rate, q_a (veh/s)				
Prot. phase departure rate, s_p (veh/s)				
Perm. phase departure rate, s_s (veh/s)				
X_{perm}				
X_{prot} (N/A for lagging left-turns)				

Uniform Queue Size and Delay Computations

	EB	WB	NB	SB
Queue at start of green arrow, Q_a				
Queue at start of unsaturated green, Q_u				
Residual queue, Q_r				
Uniform delay, d_1				

Uniform Queue Size and Delay Equations

	Case	Q_a	Q_u	Q_r	d_1
If X_{perm} <= 1.0 & X_{prot} <= 1.0	1	$q_a r$	$q_a g_q$	0	$[0.5/(q_a C)][r Q_a + Q_a^{2/(S_p - q_s)} + g_q Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} <= 1.0 & X_{prot} > 1.0	2	$q_a r$	$Q_r + q_a g_q$	$Q_a - g(s_p - q_a)$	$[0.5/(q_a C)][r Q_a + g(Q_a + Q_r) + g_q (Q_r + Q_u) + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 & X_{prot} <= 1.0	3	$Q_r + q_a r$	$q_a g_q$	$Q_u - g_u(S_s - q_a)$	$[0.5/(q_a C)][g_q Q_u + g_u(Q_a + Q_r) + r(Q_r + Q_a) + Q_a^{2/(S_p - q_a)}$
If X_{perm} <= 1.0 (lagging lefts)	4	0	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + Q_u^{2/(S_s - q_a)}$
If X_{perm} > 1.0 (lagging lefts)	5	$Q_u - g_u(S_s - q_a)$	$q_a(r + g_q)$	0	$[0.5/(q_a C)][r + g_q)Q_u + g_u(Q_u + Q_a) + Q_a^{2/(S_p - q_a)}$

BACK-OF-QUEUE WORKSHEET

General Information

Project Description *GP Update*

Average Back of Queue

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane group	*L*	*T*			*TR*					*L*	*LR*	
Init. queue/lane	*0.0*	*0.0*			*0.0*					*0.0*	*0.0*	
Flow rate/lane	*103*	*1566*			*1984*					*279*	*73*	
Satflow per lane	*1719*	*1809*			*1781*					*1719*	*1538*	
Capacity/lane	*129*	*2584*			*2177*					*315*	*282*	
Flow ratio	*0.06*	*0.45*			*0.59*					*0.16*	0.05	
v/c ratio	*0.80*	*0.61*			*0.91*					*0.89*	*0.26*	
I factor	*1.000*	*1.000*			*1.000*					*1.000*	*1.000*	
Arrival type	*3*	*3*			*3*					*3*	*3*	
Platoon ratio	*1.00*	*1.00*			*1.00*					*1.00*	*1.00*	
PF factor	*1.00*	*1.00*			*1.00*					*1.00*	*1.00*	
Q_1	*3.4*	*12.6*			*30.0*					*9.1*	*2.1*	
k_B	*0.2*	*1.0*			*0.9*					*0.4*	*0.4*	
Q_2	*0.9*	*1.5*			*7.9*					*2.8*	*0.1*	
Q avg.	*4.3*	*14.1*			*37.9*					*11.8*	*2.2*	

Percentile Back of Queue (95th percentile)

$f_{B\%}$	*2.0*	*1.8*			*1.6*					*1.8*	*2.0*	
BOQ, $Q_{\%}$	*8.4*	*24.9*			*59.6*					*21.4*	*4.5*	

Queue Storage Ratio

Q spacing	*25.0*	*25.0*			*25.0*					*25.0*	*25.0*	
Q storage	*0*	*0*			*0*					*0*	*0*	
Avg. R_Q												
95% $R_{Q\%}$												