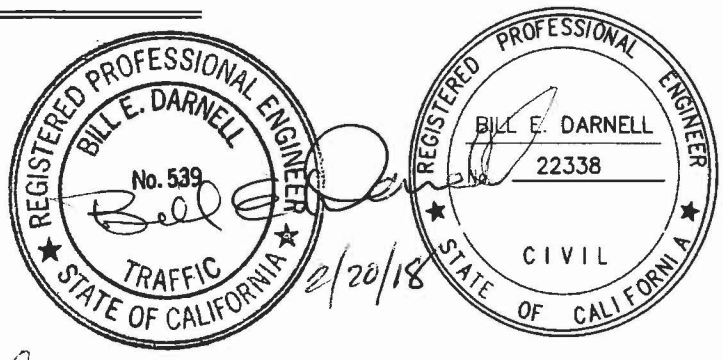
Darnell & ASSOCIATES

TRANSPORTATION PLANNING & TRAFFIC ENGINEERING

MEMORANDUM



DATE: December 20, 2018

TO: Leo Alo, City of San Diego
Ann Gonsalves, City of San Diego
Gina Austin, Austin Legal Group
Sean St. Peter

FROM: Bill E. Darnell, Darnell & Associates

D&A Ref. No: 180303

RE: Sorrento Valley Marijuana Project located 10150 Sorrento Valley Road, City Project Number 545299.

Mr. Alo and Ms. Gonsalves,

In accordance with your request, I have revised our December 9, 2018 report to include our previously recommended 185 second cycle length analysis for the AM peak hour at the I-805 NB Off ramp – Vista Sorrento Parkway/ Sorento Valley Road-Mira Mesa Boulevard intersection. The analysis has been prepared using the Linscott, Law and Greenspan (LL&G) Opening Year 2021 AM peak hour volumes presented in the LL&G report dated September 5, 2018. The volumes represent LL&G Opening Year 2021 Cumulative conditions without the 10150 Sorrento Valley Road project.

We then added the 10150 Sorrento Valley project traffic to represent Opening Year 2021 Plus Cumulative projects traffic Plus project traffic. Our analysis replicates the intersection analysis presented in the LL&G Memorandum submitted by LL&G dated September 5, 2018 and the following assumptions:

- LL&G baseline volumes from their report (Figure 9-2);
- Utilized D&A Project trip distribution'
- PHF = 0.95
- Signal Cycle = 160 seconds and 185 seconds

The AM peak hour volumes were then analyzed for the proposed original project with 3,980 square feet (S.F.) to replicate LL&G's numbers and analysis that reported a 1.1 second vehicle change in the AM Level of Service (LOS). Based on this analysis we then calculated project traffic for 2,014 S.F., 2,500 S. F., 3,000 S. F., 3,500 S. F and 3,980 S.F. and analyzed the traffic volumes were the analyzed to determine the LOS and significant impact. Table 1 presents the results of the analysis. Table 2 summarizes the results for the 3500 Square Foot Alternative with the 185 second signal cycle.

Review of Table 1 and comparison to the City of San Diego Significance Threshold of 1.0 seconds per vehicle, it was concluded that a reduction in the project square footage to 3,500 square feet or less, the project would not create a significant impact, based on the Charles Mandiara's comments.

4411 Mercury Street / Suite 207A/ SAN DIEGO, CA 92111
PHONE: 619-233-9373
E-mail: office@darnell-assoc.com

Review of Tables 1 and 2 shows that with the project reduced to 3,500 square foot or less the project would not create a significant impact. Further is can be concluded the use of the 185 second cycle length reduces the intersection delay from 141.5 seconds to 133.5 seconds.

Table 1 Summary of AM Peak Hour Significance Based on Alternative Development Square Footage for the 10150 Sorrento Valley Road Marijuana Outlet Project at I-805 NB Off Ramp/Vista Sorrento Parkway/Sorrento Valley Road and Mira Mesa Boulevard Intersection with 160 Second Signal Cycle.

Condition	Delay sec/veh	LOS	Δ Delay sec/veh	Significance
2021 Opening Year	140.6	F	N/A	N/A
with 2,014 square Foot Project	140.7	F	0.1	No
with 2,500 square Foot Project	141.2	F	0.6	No
with 3,000 square Foot Project	141.4	F	0.8	No
with 3,500 square Foot Project	141.5	F	0.9	No
with 3,980 square Foot Project	141.7	F	1.1	Yes

Table 2 Summary of AM Peak Hour Significance Based on Alternative Development Square Footage for the 10150 Sorrento Valley Road Marijuana Outlet Project at I-805 NB Off Ramp/Vista Sorrento Parkway/Sorrento Valley Road and Mira Mesa Boulevard Intersection with 185 Second Signal Cycle.

Condition	Delay sec/veh	LOS	Δ Delay sec/veh	Significance
2021 Opening Year	132.6	F	N/A	N/A
with 3,500 square Foot Project	133.5	F	0.9	No

In summary reducing the projects square footage to 3,500 square feet or less shows the project does not create a significant impact based on the higher LL&G traffic volumes and analysis based on their 160 second signal cycle and our recommended 185 second signal cycle. I trust this provides the information you requested.

ATTACHMENT A

- AM Peak Hour Volumes

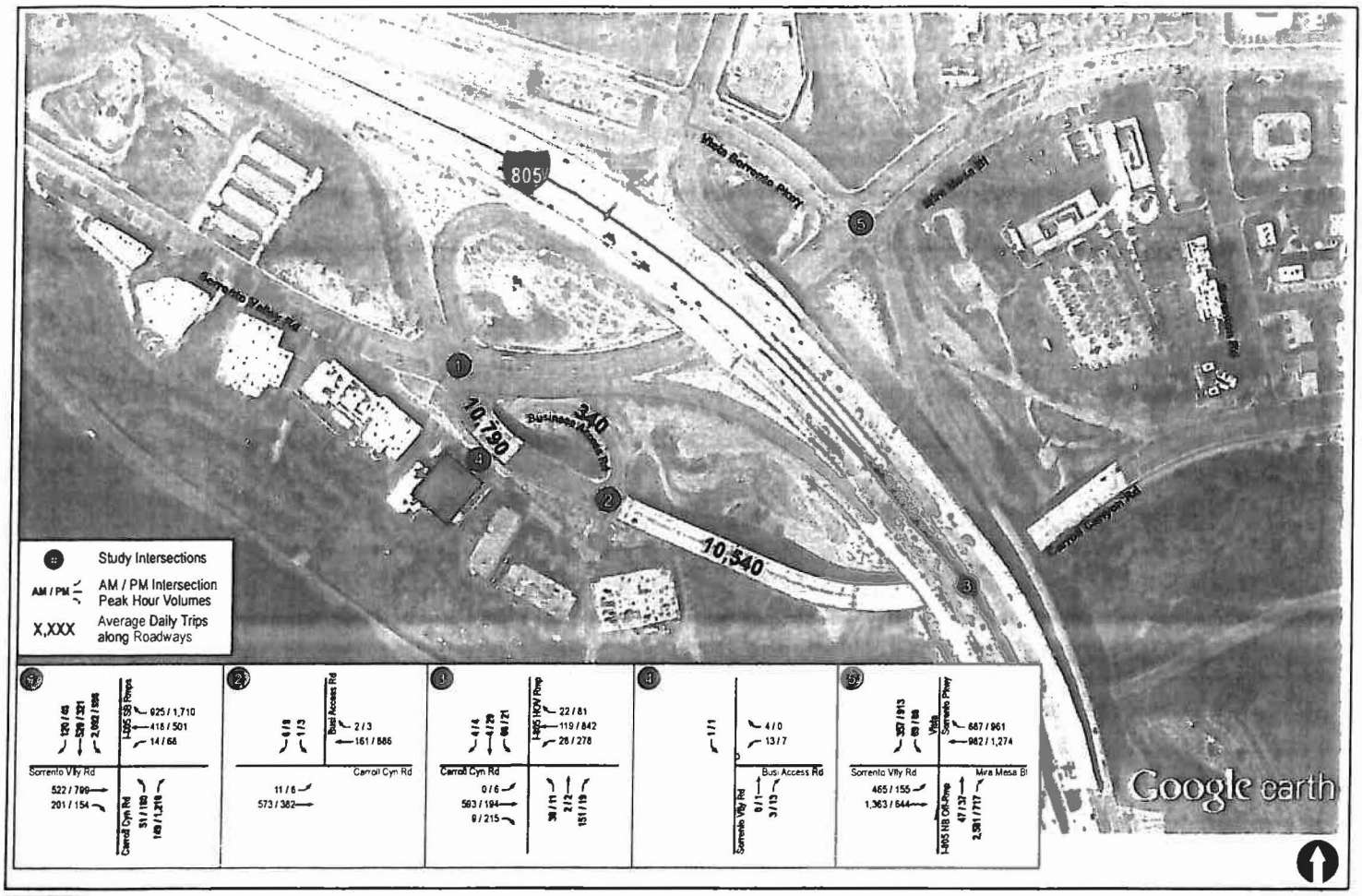
TRIP GENERATION RATES					
		AM PEAK		PM PEAK	
Land Use[1]	Weekday Daily	% ADT	In:Out Ratio	Rate	In:Out Ratio
Marijuana Outlet	250 trips / ksf	9%	0.50 : 0.50	16%	0.50 : 0.50

TRIP GENERATION CALCULATIONS								
			AM PEAK			PM PEAK		
Land Use	Amount	ADT	In	Out	Total	In	Out	Total
Marijuana Outlet (Original Project)	3.980 ksf	995	45	45	90	80	80	160
88% of Original Project	3.500 ksf	875	40	39	79	70	70	140
75% of Original Project	3.000 ksf	750	34	34	68	60	60	120
63% of Original Project	2.500 ksf	625	29	28	57	50	50	100
Marijuana Outlet (LLG Project)	2.014 ksf	504	23	22	45	41	40	81

Notes:

ksf: 1,000 square feet

1. The approved trip rates were provided by City of San Diego staff.

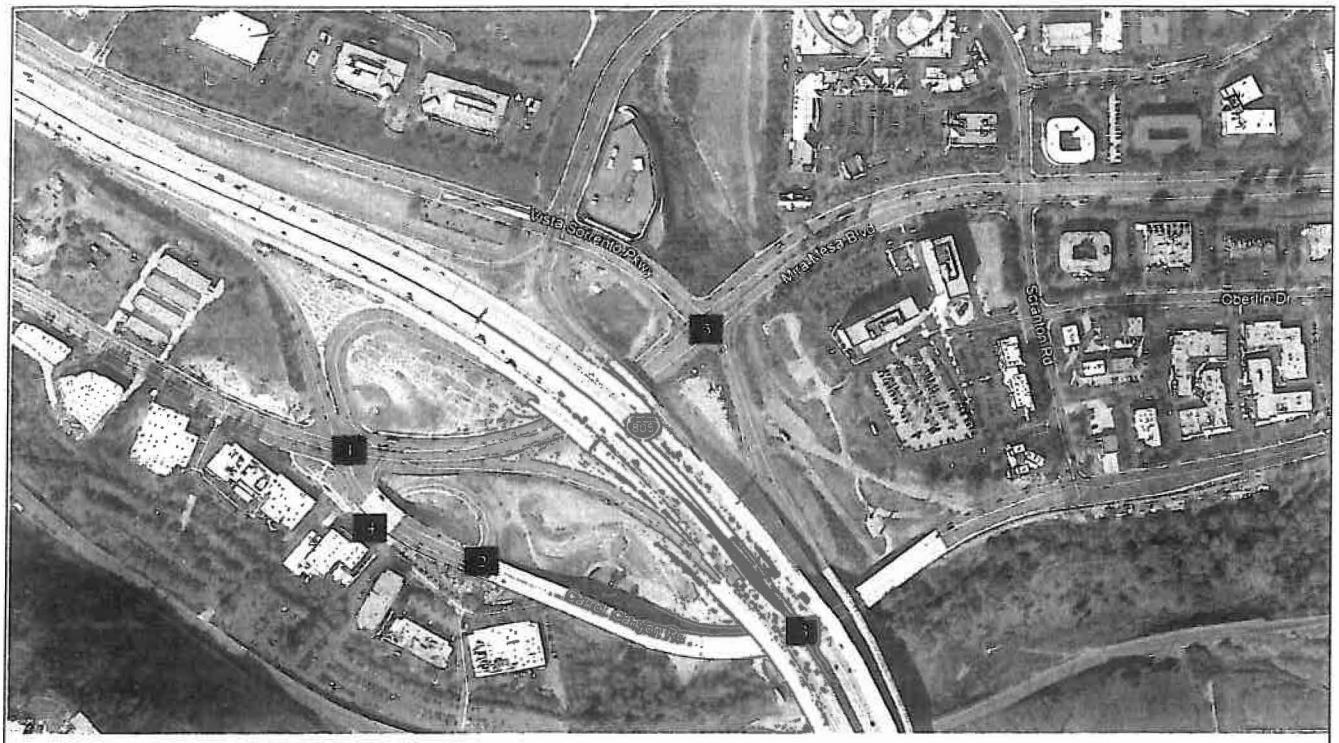


N:\2939\Figures
Date: 08/31/18

Figure 9-2

Near-Term (Opening Day 2021) Traffic Volumes

10170 Sorrento Valley Road - Marijuana Outlet



LEGEND

SB RT
SB TH
SB LT
WB RT
WB TH
WB LT
EB LT
EB TH
EB RT
NB LT
NB TH
NB RT
X

xx / yy - AM / PM Peak Hour Turning Movement Volumes
The naming convention for intersections is North / South @ East / West

N

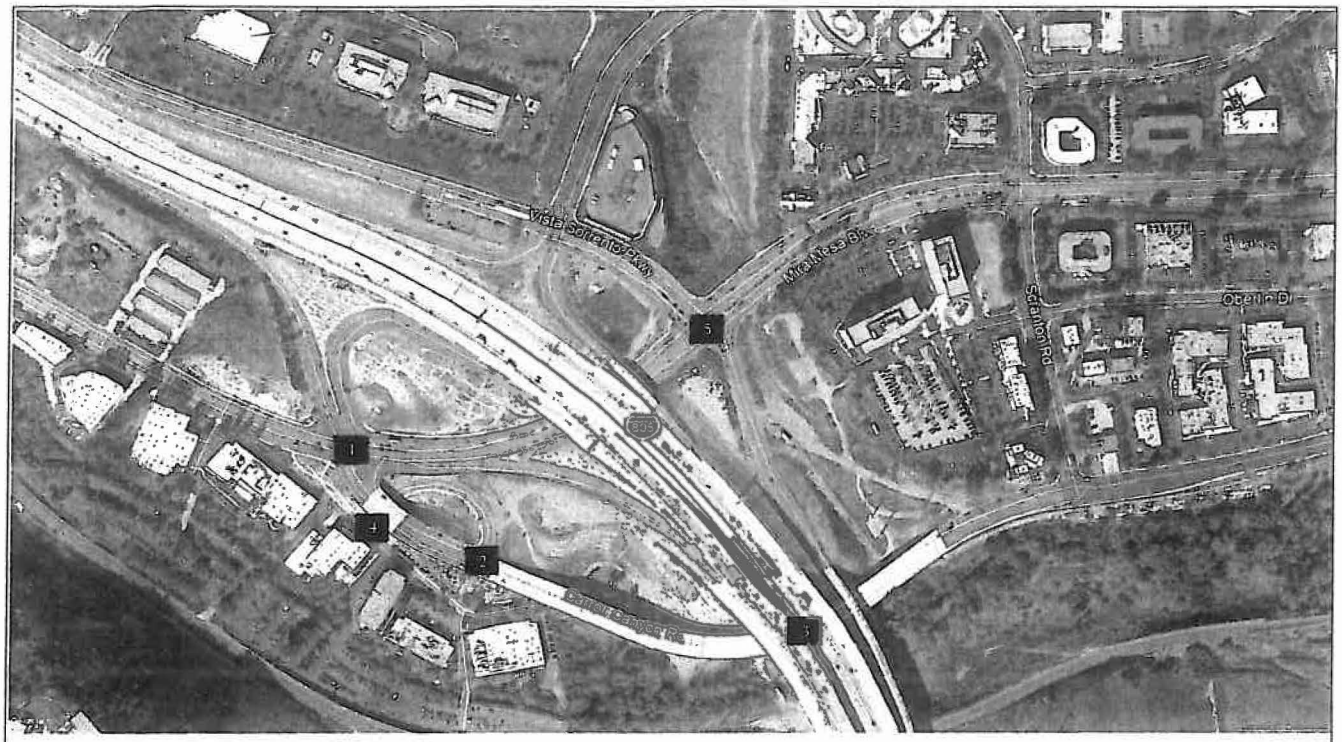
I-805 SB Ramps - Carroll Canyon Rd / Sorrento Valley Rd	Business Access Rd - Carroll Canyon Rd	I-805 HOV Ramps - Carroll Canyon Rd	Sorrento Valley Rd - Business Access Rd

Intersections not analyzed

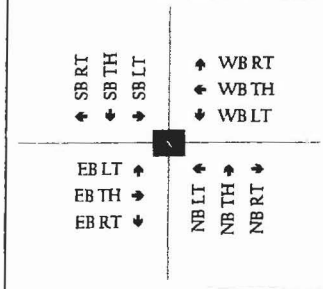
Vista Sorrento Pkwy - I-805 NB Off Ramp / Mira Mesa Blvd

357 / 913
69 / 88
687 / 961
982 / 1274
5
465 / 155
1363 / 644
47 / 37
2581 / 717

Darnell & Associates, Inc.	Sorrento Valley Marijuana Outlet Opening Year 2021 Traffic Volumes (From LLG Report, Fig 9-2)	



LEGEND



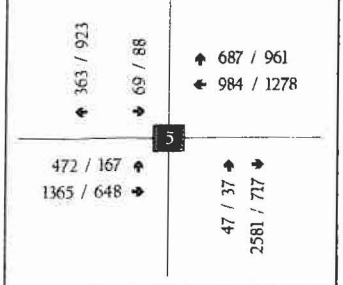
xx / yy = AM / PM Peak Hour Turning Movement Volumes

The naming convention for intersections is North / South @ East / West

1. I-805 SB Ramps - Carroll Canyon Rd - Sorrento Valley Rd
2. Business Access Rd - Carroll Canyon Rd
3. I-805 HOV Ramps - Carroll Canyon Rd
4. Sorrento Valley Rd - Business Access Rd

Intersections not analyzed

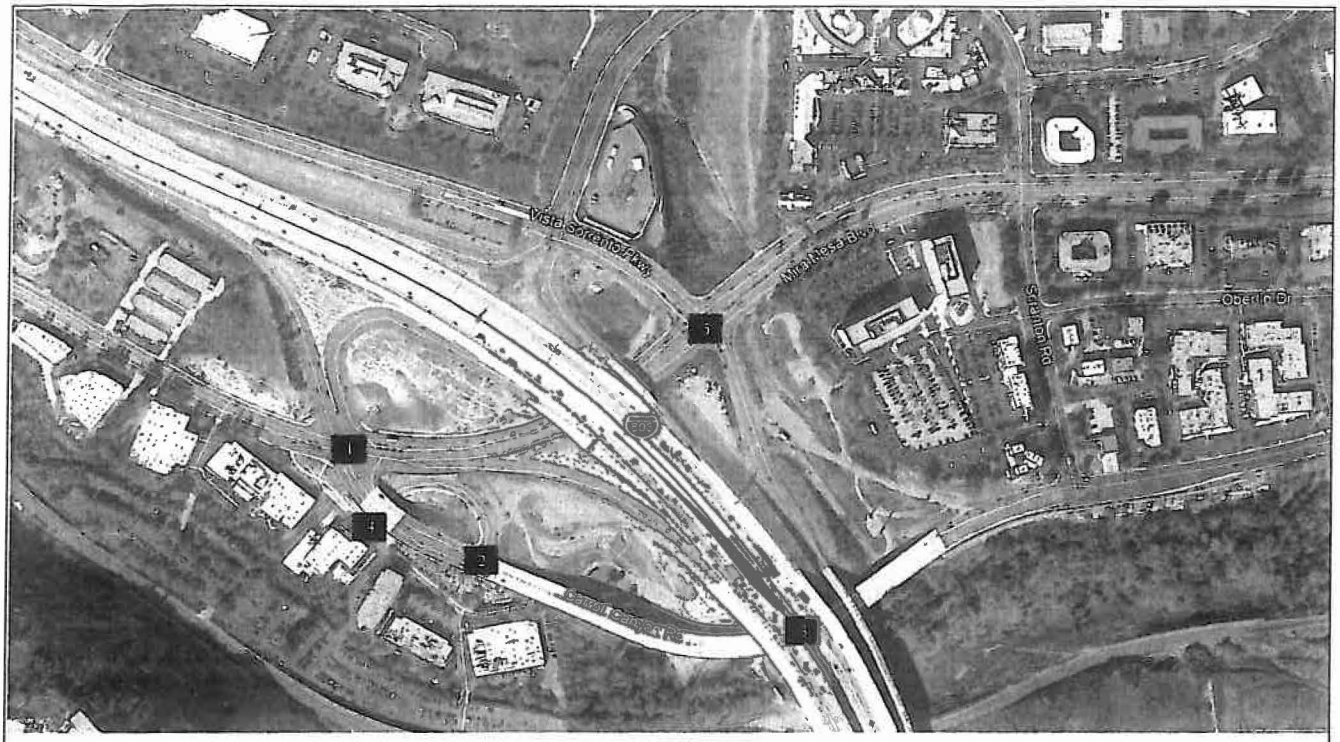
5. Vista Sorrento Pkwy - I-805 NB Off Ramp - Mira Mesa Blvd



Darnell & Associates, Inc.

Sorrento Valley Marijuana Outlet

Opening Year 2021 With Project Traffic Volumes (LLG Volumes, 2,014 sf Proj)



LEGEND

SB RT, SB TH, SB LT		WB RT, WB TH, WB LT
EB LT, EB TH, EB RT		NB LT, NB TH, NB RT

xx / yy - AM / PM Peak Hour Turning Movement Volumes

The naming convention for intersections is North / South @ East / West

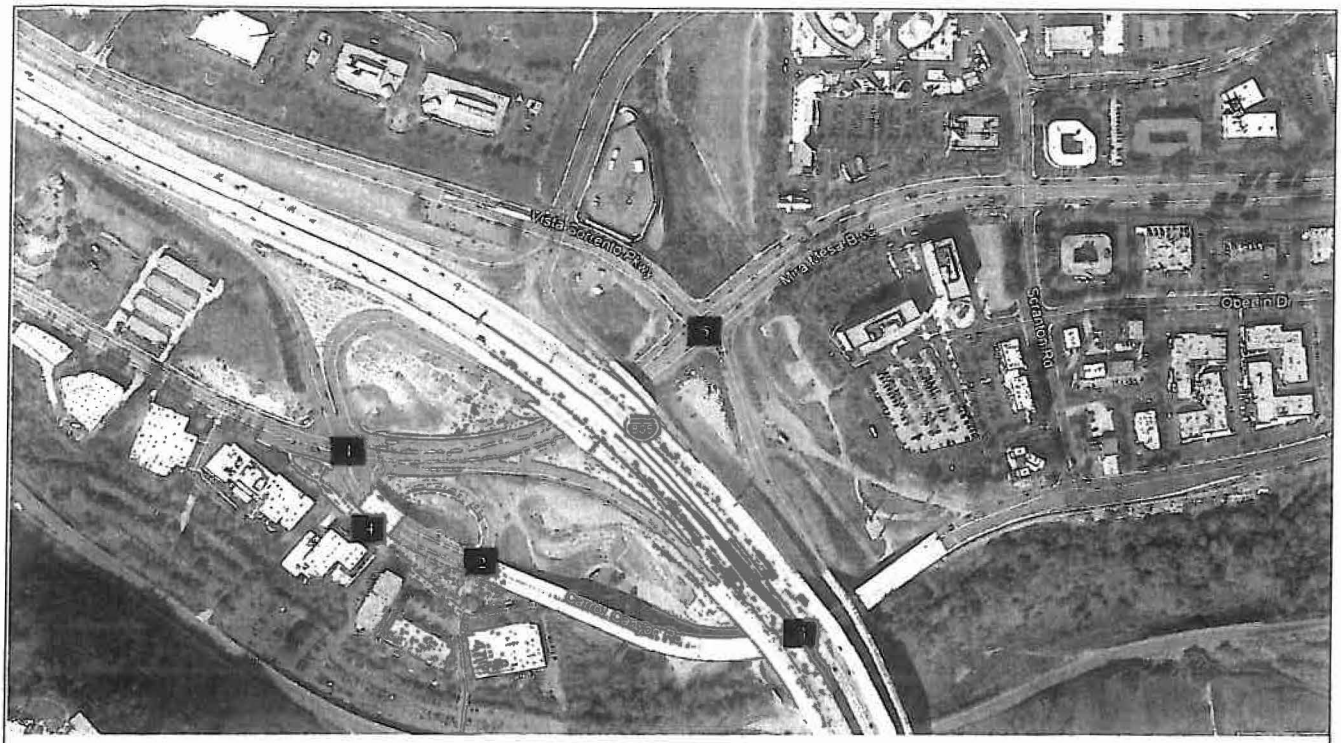
I-805 SB Ramps - Carroll Canyon Rd / Sorrento Valley Rd	Business Access Rd / Carroll Canyon Rd	I-805 NB On Ramps - Carroll Canyon Rd	Sorrento Valley Rd / Business Access Rd
Intersections not analyzed			

Vista Sorrento Pkwy / Mira Mesa Blvd	I-805 NB Off Ramp &
364 / 926	687 / 961
69 / 88	985 / 1279
473 / 170	47 / 37
1366 / 649	2581 / 717

Darnell & Associates, Inc

Sorrento Valley Marijuana Outlet

Opening Year 2021 With Project Traffic Volumes (LLG Volumes, 2,500 sf Proj)



LEGEND

SB RT
SB TH
SB LT
WB RT
WB TH
WB LT
EB LT
EB TH
EB RT
NB LT
NB TH
NB RT

xx / yy - AM / PM Peak Hour Turning Movement Volumes
The naming convention for intersections is North / South & East / West

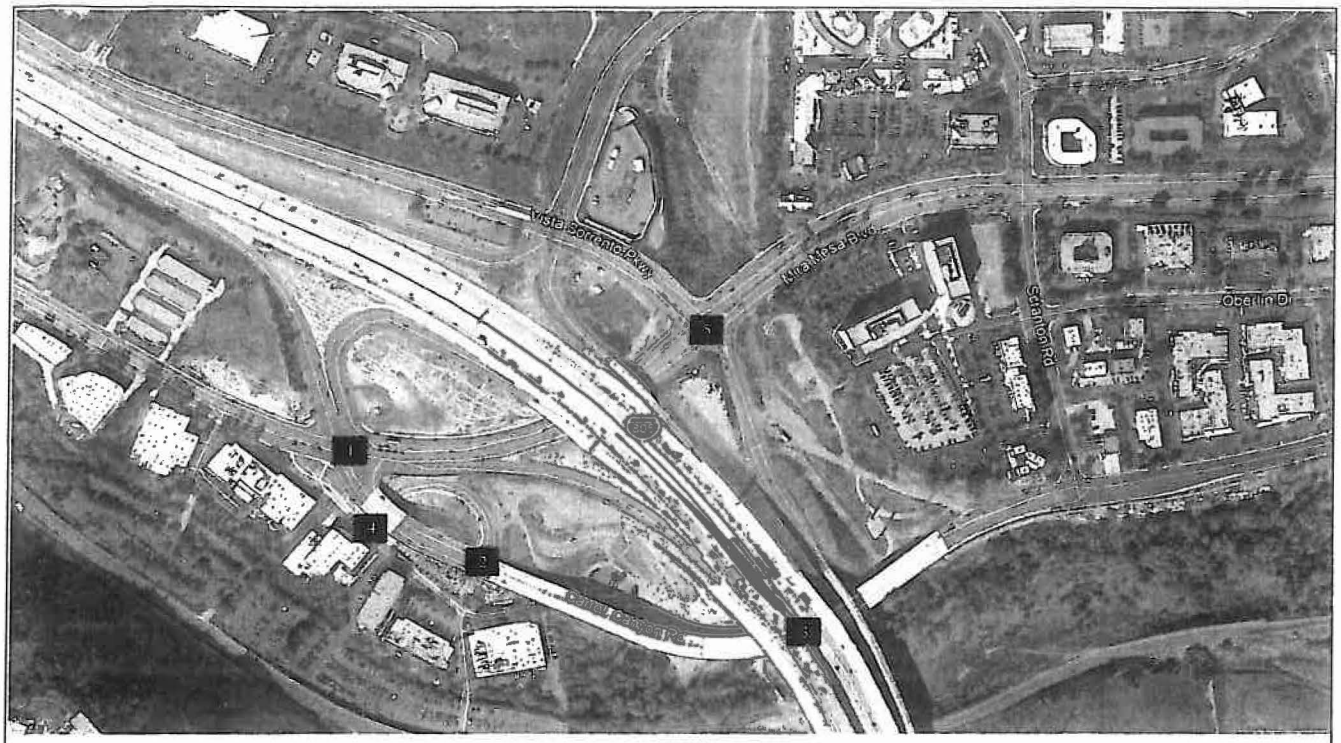
I-805 SB Ramps - Carroll Canyon Rd - Sorrento Valley Rd | Business Access Rd - Carroll Canyon Rd | I-805 HOV Ramps - Camino Del Sur | Sorrento Valley Rd - Business Access Rd

Intersections not analyzed

Vista Sorrento Pkwy - I-805 NB Off Ramp - Vira Mesa Blvd

366 / 928
69 / 88
687 / 961
985 / 1280
475 / 173
1366 / 650
47 / 37
2581 / 717

Darnell & Associates, Inc	Sorrento Valley Marijuana Outlet Opening Year 2021 With Project Traffic Volumes (LLG Volumes, 3,000 sf Proj)	



LEGEND

SB RT, SB TH, SB LT		WB RT, WB TH, WB LT
EB LT, EB TH, EB RT	X	NB LT, NB TH, NB RT

xx / yy = AM / PM Peak Hour Turning Movement Volumes
The naming convention for intersections is North / South @ East / West

N

I-805 SB Ramps - Carroll Canyon Rd / Sorrento Valley Rd | Business Access Rd - Carroll Canyon Rd | I-805 NB Ramps - Carroll Canyon Rd | Sorrento Valley Rd - Business Access Rd

Intersections not analyzed

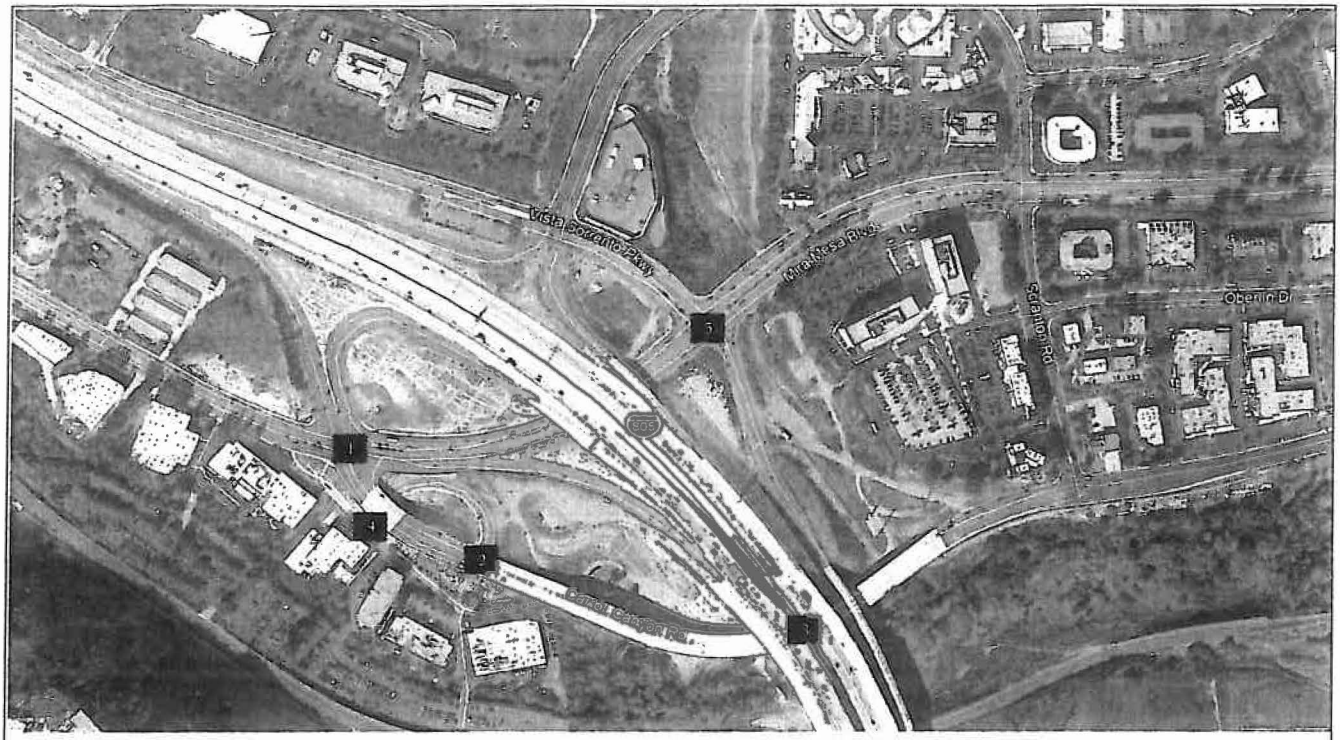
Vista Sorrento Pkwy - I-805 NB Off Ramp - Miramar Blvd

367 / 931, 69 / 88		687 / 961, 986 / 1281
477 / 176, 1367 / 651	5	47 / 37, 2581 / 717

Darnell & Associates, Inc.

Sorrento Valley Marijuana Outlet

Opening Year 2021 With Project Traffic Volumes (LLG Volumes, 3,500 sf Proj)



LEGEND

SB RT, SB TH, SB LT		WB RT, WB TH, WB LT
EB LT, EB TH, EB RT	X	NB LT, NB TH, NB RT

xx / yy = AM / PM Peak Hour Turning Movement Volumes

The naming convention for intersections is North / South @ East / West

N

I-805 SB Ramps - Carroll Canyon Rd - Sorrento Valley Rd	Private Access Rd - Carroll Canyon Rd	I-805 HOV Ramps - Carroll Canyon Rd	Sorrento Valley Rd - Private Access Rd

Intersections not analyzed

Vista Sorrento Pkwy - I-805 NB Off-Ramp - Mira Mesa Blvd	
368 / 933	687 / 961
69 / 88	987 / 1282
5	
479 / 179	47 / 37
1368 / 652	2581 / 717

Darnell & Associates, Inc

Sorrento Valley Marijuana Outlet

Opening Year 2021 With Project Traffic Volumes (LLG Volumes, 3,980 sf Proj)

ATTACHMENT B

- Synchro 10 Worksheets with 185 Cycle Length
- Synchro 10 Worksheets with 160 Cycle Length

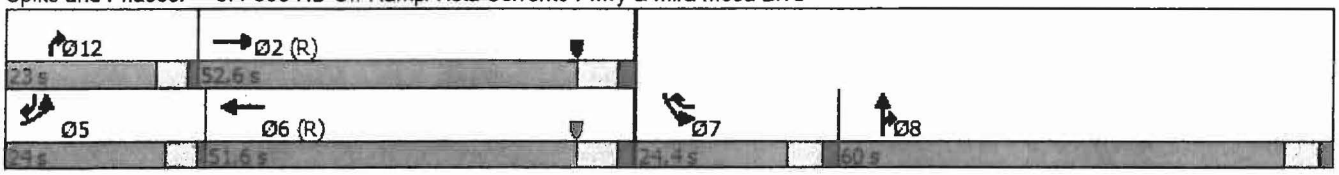
- Synchro 10 Worksheets with 185 Cycle Length

Lane Group	EBL	EBT	WBT	WBR	NBT	NBR	SBL	SBR	Ø12
Lane Configurations									
Traffic Volume (vph)	465	1363	982	687	47	2581	69	357	
Future Volume (vph)	465	1363	982	687	47	2581	69	357	
Turn Type	Prot	NA	NA	pm+ov	NA	custom	Prot	pm+ov	
Protected Phases	5	2	6	7	8	8 12	7	5	12
Permitted Phases				6				7	
Detector Phase	5	2	6	7	8	8 12	7	5	
Switch Phase									
Minimum Initial (s)	17.0	16.0	17.0	18.0	5.0		18.0	17.0	4.0
Minimum Split (s)	21.7	23.0	51.0	24.1	23.0		24.1	21.7	23.0
Total Split (s)	24.0	52.6	51.6	24.4	60.0		24.4	24.0	23.0
Total Split (%)	15.0%	32.9%	32.3%	15.3%	37.5%		15.3%	15.0%	14%
Yellow Time (s)	3.7	5.0	5.0	4.1	4.1		4.1	3.7	4.0
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0		2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	7.0	7.0	6.1	6.1		6.1	4.7	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	None		None	None	None

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 150
Control Type: Actuated-Coordinated

Splits and Phases: 5: I-805 NB Off-Ramp/Vista Sorrento Pkwy & Mira Mesa Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	465	1363	0	0	982	687	0	47	2581	69	0	357
Future Volume (vph)	465	1363	0	0	982	687	0	47	2581	69	0	357
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	7.0			7.0	6.1		6.1	6.1	6.1		4.7
Lane Util. Factor	0.97	0.91			0.86	1.00		1.00	0.76	1.00		0.88
Frt	1.00	1.00			1.00	0.85		1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	5085			6408	1583		1863	3610	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	5085			6408	1583		1863	3610	1770		2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	489	1435	0	0	1034	723	0	49	2717	73	0	376
RTOR Reduction (vph)	0	0	0	0	0	414	0	0	163	0	0	288
Lane Group Flow (vph)	489	1435	0	0	1034	309	0	49	2554	73	0	88
Turn Type	Prot	NA			NA	pm+ov		NA	custom	Prot		pm+ov
Protected Phases	5	2			6	7		8	8 12	7		5
Permitted Phases						6						7
Actuated Green, G (s)	19.3	45.6			44.6	62.7		54.1	78.2	18.1		37.4
Effective Green, g (s)	19.3	45.6			44.6	62.7		54.1	78.2	18.1		37.4
Actuated g/C Ratio	0.12	0.29			0.28	0.39		0.34	0.49	0.11		0.23
Clearance Time (s)	4.7	7.0			7.0	6.1		6.1		6.1		4.7
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0		3.0		3.0
Lane Grp Cap (vph)	414	1449			1786	620		629	1764	200		651
v/s Ratio Prot	0.14	c0.28			0.16	c0.06		0.03	c0.71	0.04		0.02
v/s Ratio Perm						0.14						0.02
v/c Ratio	1.18	0.99			0.58	0.50		0.08	1.45	0.36		0.14
Uniform Delay, d1	70.3	57.0			49.6	36.8		36.0	40.9	65.6		48.5
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2	103.8	21.5			1.4	0.6		0.1	204.8	1.1		0.1
Delay (s)	174.1	78.4			51.0	37.4		36.0	245.7	66.8		48.6
Level of Service	F	E			D	D		D	F	E		D
Approach Delay (s)		102.8			45.4			241.9			51.6	
Approach LOS		F			D			F			D	

Intersection Summary

HCM 2000 Control Delay	140.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.2
Intersection Capacity Utilization	104.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	479	1368	0	0	987	687	0	47	2581	69	0	368
Future Volume (vph)	479	1368	0	0	987	687	0	47	2581	69	0	368
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	7.0			7.0	6.1		6.1	6.1	6.1		4.7
Lane Util. Factor	0.97	0.91			0.86	1.00		1.00	0.76	1.00		0.88
Frt	1.00	1.00			1.00	0.85		1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	5085			6408	1583		1863	3610	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	5085			6408	1583		1863	3610	1770		2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	504	1440	0	0	1039	723	0	49	2717	73	0	387
RTOR Reduction (vph)	0	0	0	0	0	414	0	0	163	0	0	297
Lane Group Flow (vph)	504	1440	0	0	1039	309	0	49	2554	73	0	90
Turn Type	Prot	NA			NA	pm+ov		NA	custom	Prot		pm+ov
Protected Phases	5	2			6	7		8	8 12	7		5
Permitted Phases						6						7
Actuated Green, G (s)	19.3	45.6			44.6	62.7		54.1	78.2	18.1		37.4
Effective Green, g (s)	19.3	45.6			44.6	62.7		54.1	78.2	18.1		37.4
Actuated g/C Ratio	0.12	0.29			0.28	0.39		0.34	0.49	0.11		0.23
Clearance Time (s)	4.7	7.0			7.0	6.1		6.1		6.1		4.7
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0		3.0		3.0
Lane Grp Cap (vph)	414	1449			1786	620		629	1764	200		651
v/s Ratio Prot	0.15	c0.28			0.16	c0.06		0.03	c0.71	0.04		0.02
v/s Ratio Perm						0.14						0.02
v/c Ratio	1.22	0.99			0.58	0.50		0.08	1.45	0.36		0.14
Uniform Delay, d1	70.3	57.1			49.7	36.8		36.0	40.9	65.6		48.5
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2	118.0	22.2			1.4	0.6		0.1	204.8	1.1		0.1
Delay (s)	188.4	79.3			51.1	37.4		36.0	245.7	66.8		48.6
Level of Service	F	E			D	D		D	F	E		D
Approach Delay (s)		107.6			45.5			241.9			51.5	
Approach LOS		F			D			F			D	

Intersection Summary			
HCM 2000 Control Delay	141.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.2
Intersection Capacity Utilization	104.7%	ICU Level of Service	G
Analysis Period (min)	15		

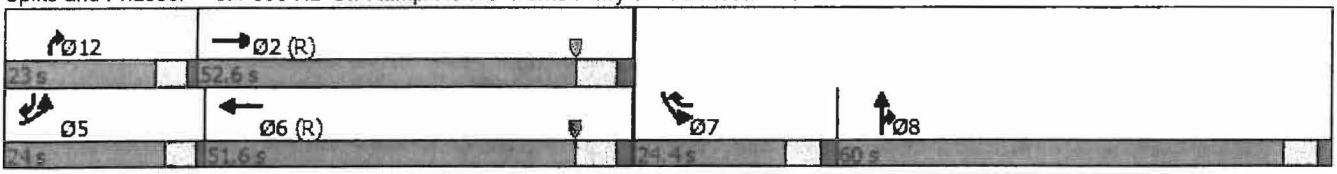
c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBT	NBR	SBL	SBR	Ø12
Lane Configurations									
Traffic Volume (vph)	477	1367	986	687	47	2581	69	367	
Future Volume (vph)	477	1367	986	687	47	2581	69	367	
Turn Type	Prot	NA	NA	pm+ov	NA	custom	Prot	pm+ov	
Protected Phases	5	2	6	7	8	8 12	7	5	12
Permitted Phases				6				7	
Detector Phase	5	2	6	7	8	8 12	7	5	
Switch Phase									
Minimum Initial (s)	17.0	16.0	17.0	18.0	5.0		18.0	17.0	4.0
Minimum Split (s)	21.7	23.0	51.0	24.1	23.0		24.1	21.7	23.0
Total Split (s)	24.0	52.6	51.6	24.4	60.0		24.4	24.0	23.0
Total Split (%)	15.0%	32.9%	32.3%	15.3%	37.5%		15.3%	15.0%	14%
Yellow Time (s)	3.7	5.0	5.0	4.1	4.1		4.1	3.7	4.0
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0		2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	7.0	7.0	6.1	6.1		6.1	4.7	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	None		None	None	None

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 150
Control Type: Actuated-Coordinated

Splits and Phases: 5: I-805 NB Off-Ramp/Vista Sorrento Pkwy & Mira Mesa Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	477	1367	0	0	986	687	0	47	2581	69	0	367
Future Volume (vph)	477	1367	0	0	986	687	0	47	2581	69	0	367
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	7.0			7.0	6.1		6.1	6.1	6.1		4.7
Lane Util. Factor	0.97	0.91			0.86	1.00		1.00	0.76	1.00		0.88
Frt	1.00	1.00			1.00	0.85		1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	5085			6408	1583		1863	3610	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	5085			6408	1583		1863	3610	1770		2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	502	1439	0	0	1038	723	0	49	2717	73	0	386
RTOR Reduction (vph)	0	0	0	0	0	414	0	0	163	0	0	296
Lane Group Flow (vph)	502	1439	0	0	1038	309	0	49	2554	73	0	90
Turn Type	Prot	NA			NA	pm+ov		NA	custom	Prot		pm+ov
Protected Phases	5	2			6	7		8	8 12	7		5
Permitted Phases						6						7
Actuated Green, G (s)	19.3	45.6			44.6	62.7		54.1	78.2	18.1		37.4
Effective Green, g (s)	19.3	45.6			44.6	62.7		54.1	78.2	18.1		37.4
Actuated g/C Ratio	0.12	0.29			0.28	0.39		0.34	0.49	0.11		0.23
Clearance Time (s)	4.7	7.0			7.0	6.1		6.1		6.1		4.7
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0		3.0		3.0
Lane Grp Cap (vph)	414	1449			1786	620		629	1764	200		651
v/s Ratio Prot	0.15	c0.28			0.16	c0.06		0.03	c0.71	0.04		0.02
v/s Ratio Perm						0.14						0.02
v/c Ratio	1.21	0.99			0.58	0.50		0.08	1.45	0.36		0.14
Uniform Delay, d1	70.3	57.0			49.7	36.8		36.0	40.9	65.6		48.5
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2	116.1	22.1			1.4	0.6		0.1	204.8	1.1		0.1
Delay (s)	186.4	79.1			51.0	37.4		36.0	245.7	66.8		48.6
Level of Service	F	E			D	D		D	F	E		D
Approach Delay (s)		106.9			45.5			241.9			51.5	
Approach LOS		F			D			F			D	

Intersection Summary			
HCM 2000 Control Delay	141.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.2
Intersection Capacity Utilization	104.7%	ICU Level of Service	G
Analysis Period (min)	15		

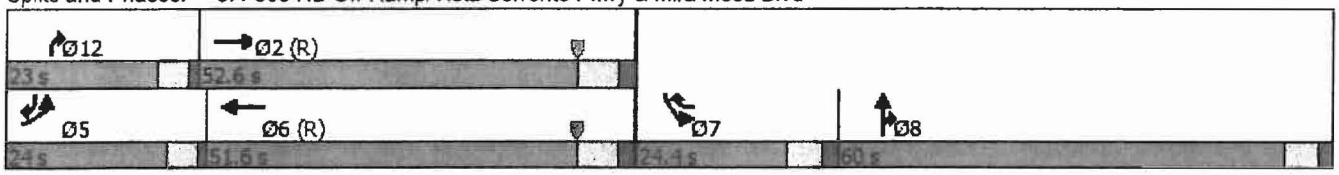
c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBT	NBR	SBL	SBR	Ø12
Lane Configurations									
Traffic Volume (vph)	475	1366	985	687	47	2581	69	366	
Future Volume (vph)	475	1366	985	687	47	2581	69	366	
Turn Type	Prot	NA	NA	pm+ov	NA	custom	Prot	pm+ov	
Protected Phases	5	2	6	7	8	8 12	7	5	12
Permitted Phases				6				7	
Detector Phase	5	2	6	7	8	8 12	7	5	
Switch Phase									
Minimum Initial (s)	17.0	16.0	17.0	18.0	5.0		18.0	17.0	4.0
Minimum Split (s)	21.7	23.0	51.0	24.1	23.0		24.1	21.7	23.0
Total Split (s)	24.0	52.6	51.6	24.4	60.0		24.4	24.0	23.0
Total Split (%)	15.0%	32.9%	32.3%	15.3%	37.5%		15.3%	15.0%	14%
Yellow Time (s)	3.7	5.0	5.0	4.1	4.1		4.1	3.7	4.0
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0		2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	7.0	7.0	6.1	6.1		6.1	4.7	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	None		None	None	None

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 150
Control Type: Actuated-Coordinated

Splits and Phases: 5: I-805 NB Off-Ramp/Vista Sorrento Pkwy & Mira Mesa Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	475	1366	0	0	985	687	0	47	2581	69	0	366
Future Volume (vph)	475	1366	0	0	985	687	0	47	2581	69	0	366
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	7.0			7.0	6.1		6.1	6.1	6.1		4.7
Lane Util. Factor	0.97	0.91			0.86	1.00		1.00	0.76	1.00		0.88
Frt	1.00	1.00			1.00	0.85		1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	5085			6408	1583		1863	3610	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	5085			6408	1583		1863	3610	1770		2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	500	1438	0	0	1037	723	0	49	2717	73	0	385
RTOR Reduction (vph)	0	0	0	0	0	414	0	0	163	0	0	295
Lane Group Flow (vph)	500	1438	0	0	1037	309	0	49	2554	73	0	90
Turn Type	Prot	NA			NA	pm+ov		NA	custom	Prot		pm+ov
Protected Phases	5	2			6	7		8	8 12	7		5
Permitted Phases						6						7
Actuated Green, G (s)	19.3	45.6			44.6	62.7		54.1	78.2	18.1		37.4
Effective Green, g (s)	19.3	45.6			44.6	62.7		54.1	78.2	18.1		37.4
Actuated g/C Ratio	0.12	0.29			0.28	0.39		0.34	0.49	0.11		0.23
Clearance Time (s)	4.7	7.0			7.0	6.1		6.1		6.1		4.7
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0		3.0		3.0
Lane Grp Cap (vph)	414	1449			1786	620		629	1764	200		651
v/s Ratio Prot	0.15	c0.28			0.16	c0.06		0.03	c0.71	0.04		0.02
v/s Ratio Perm						0.14						0.02
v/c Ratio	1.21	0.99			0.58	0.50		0.08	1.45	0.36		0.14
Uniform Delay, d1	70.3	57.0			49.7	36.8		36.0	40.9	65.6		48.5
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2	114.2	21.9			1.4	0.6		0.1	204.8	1.1		0.1
Delay (s)	184.5	78.9			51.0	37.4		36.0	245.7	66.8		48.6
Level of Service	F	E			D	D		D	F	E		D
Approach Delay (s)		106.2			45.4			241.9			51.5	
Approach LOS		F			D			F			D	

Intersection Summary			
HCM 2000 Control Delay	141.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.2
Intersection Capacity Utilization	104.7%	ICU Level of Service	G
Analysis Period (min)	15		

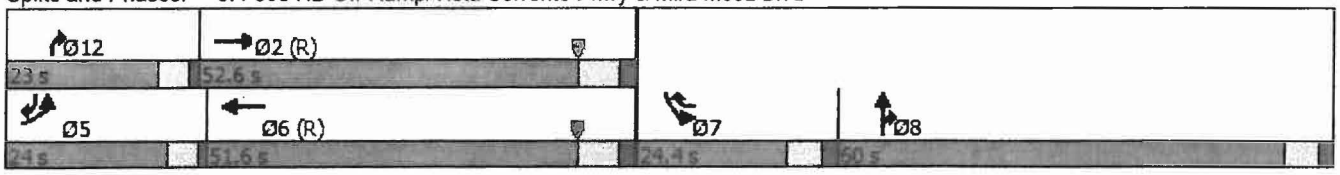
c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBT	NBR	SBL	SBR	Ø12
Lane Configurations									
Traffic Volume (vph)	473	1366	985	687	47	2581	69	364	
Future Volume (vph)	473	1366	985	687	47	2581	69	364	
Turn Type	Prot	NA	NA	pm+ov	NA	custom	Prot	pm+ov	
Protected Phases	5	2	6	7	8	8 12	7	5	12
Permitted Phases				6				7	
Detector Phase	5	2	6	7	8	8 12	7	5	
Switch Phase									
Minimum Initial (s)	17.0	16.0	17.0	18.0	5.0		18.0	17.0	4.0
Minimum Split (s)	21.7	23.0	51.0	24.1	23.0		24.1	21.7	23.0
Total Split (s)	24.0	52.6	51.6	24.4	60.0		24.4	24.0	23.0
Total Split (%)	15.0%	32.9%	32.3%	15.3%	37.5%		15.3%	15.0%	14%
Yellow Time (s)	3.7	5.0	5.0	4.1	4.1		4.1	3.7	4.0
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0		2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	7.0	7.0	6.1	6.1		6.1	4.7	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	None		None	None	None

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 150
Control Type: Actuated-Coordinated

Splits and Phases: 5: I-805 NB Off-Ramp/Vista Sorrento Pkwy & Mira Mesa Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	473	1366	0	0	985	687	0	47	2581	69	0	364
Future Volume (vph)	473	1366	0	0	985	687	0	47	2581	69	0	364
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	7.0			7.0	6.1		6.1	6.1	6.1		4.7
Lane Util. Factor	0.97	0.91			0.86	1.00		1.00	0.76	1.00		0.88
Frt	1.00	1.00			1.00	0.85		1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	5085			6408	1583		1863	3610	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	5085			6408	1583		1863	3610	1770		2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	498	1438	0	0	1037	723	0	49	2717	73	0	383
RTOR Reduction (vph)	0	0	0	0	0	414	0	0	163	0	0	293
Lane Group Flow (vph)	498	1438	0	0	1037	309	0	49	2554	73	0	90
Turn Type	Prot	NA			NA	pm+ov		NA	custom	Prot		pm+ov
Protected Phases	5	2			6	7		8	8 12	7		5
Permitted Phases						6						7
Actuated Green, G (s)	19.3	45.6			44.6	62.7		54.1	78.2	18.1		37.4
Effective Green, g (s)	19.3	45.6			44.6	62.7		54.1	78.2	18.1		37.4
Actuated g/C Ratio	0.12	0.29			0.28	0.39		0.34	0.49	0.11		0.23
Clearance Time (s)	4.7	7.0			7.0	6.1		6.1		6.1		4.7
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0		3.0		3.0
Lane Grp Cap (vph)	414	1449			1786	620		629	1764	200		651
v/s Ratio Prot	0.15	c0.28			0.16	c0.06		0.03	c0.71	0.04		0.02
v/s Ratio Perm						0.14						0.02
v/c Ratio	1.20	0.99			0.58	0.50		0.08	1.45	0.36		0.14
Uniform Delay, d1	70.3	57.0			49.7	36.8		36.0	40.9	65.6		48.5
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2	112.3	21.9			1.4	0.6		0.1	204.8	1.1		0.1
Delay (s)	182.6	78.9			51.0	37.4		36.0	245.7	66.8		48.6
Level of Service	F	E			D	D		D	F	E		D
Approach Delay (s)		105.6			45.4			241.9			51.5	
Approach LOS		F			D			F			D	

Intersection Summary			
HCM 2000 Control Delay	141.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.2
Intersection Capacity Utilization	104.7%	ICU Level of Service	G
Analysis Period (min)	15		

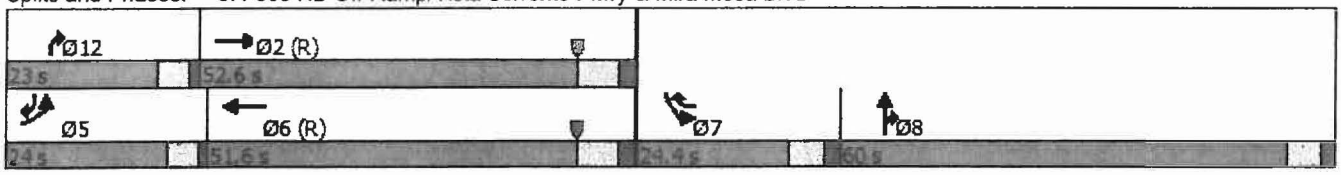
c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBT	NBR	SBL	SBR	Ø12
Lane Configurations									
Traffic Volume (vph)	472	1365	984	687	47	2581	69	363	
Future Volume (vph)	472	1365	984	687	47	2581	69	363	
Turn Type	Prot	NA	NA	pm+ov	NA	custom	Prot	pm+ov	
Protected Phases	5	2	6	7	8	8 12	7	5	12
Permitted Phases				6				7	
Detector Phase	5	2	6	7	8	8 12	7	5	
Switch Phase									
Minimum Initial (s)	17.0	16.0	17.0	18.0	5.0		18.0	17.0	4.0
Minimum Split (s)	21.7	23.0	51.0	24.1	23.0		24.1	21.7	23.0
Total Split (s)	24.0	52.6	51.6	24.4	60.0		24.4	24.0	23.0
Total Split (%)	15.0%	32.9%	32.3%	15.3%	37.5%		15.3%	15.0%	14%
Yellow Time (s)	3.7	5.0	5.0	4.1	4.1		4.1	3.7	4.0
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0		2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	7.0	7.0	6.1	6.1		6.1	4.7	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	None		None	None	None

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 150
Control Type: Actuated-Coordinated

Splits and Phases: 5: I-805 NB Off-Ramp/Vista Sorrento Pkwy & Mira Mesa Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	472	1365	0	0	984	687	0	47	2581	69	0	363
Future Volume (vph)	472	1365	0	0	984	687	0	47	2581	69	0	363
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	7.0			7.0	6.1		6.1	6.1	6.1		4.7
Lane Util. Factor	0.97	0.91			0.86	1.00		1.00	0.76	1.00		0.88
Frt	1.00	1.00			1.00	0.85		1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	5085			6408	1583		1863	3610	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	5085			6408	1583		1863	3610	1770		2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	497	1437	0	0	1036	723	0	49	2717	73	0	382
RTOR Reduction (vph)	0	0	0	0	0	414	0	0	163	0	0	293
Lane Group Flow (vph)	497	1437	0	0	1036	309	0	49	2554	73	0	89
Turn Type	Prot	NA			NA	pm+ov		NA	custom	Prot		pm+ov
Protected Phases	5	2			6	7		8	8 12	7		5
Permitted Phases						6						7
Actuated Green, G (s)	19.3	45.6			44.6	62.7		54.1	78.2	18.1		37.4
Effective Green, g (s)	19.3	45.6			44.6	62.7		54.1	78.2	18.1		37.4
Actuated g/C Ratio	0.12	0.29			0.28	0.39		0.34	0.49	0.11		0.23
Clearance Time (s)	4.7	7.0			7.0	6.1		6.1		6.1		4.7
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0		3.0		3.0
Lane Grp Cap (vph)	414	1449			1786	620		629	1764	200		651
v/s Ratio Prot	0.14	c0.28			0.16	c0.06		0.03	c0.71	0.04		0.02
v/s Ratio Perm						0.14						0.02
v/c Ratio	1.20	0.99			0.58	0.50		0.08	1.45	0.36		0.14
Uniform Delay, d1	70.3	57.0			49.6	36.8		36.0	40.9	65.6		48.5
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2	111.3	21.8			1.4	0.6		0.1	204.8	1.1		0.1
Delay (s)	181.7	78.8			51.0	37.4		36.0	245.7	66.8		48.6
Level of Service	F	E			D	D		D	F	E		D
Approach Delay (s)		105.2			45.4			241.9			51.5	
Approach LOS		F			D			F			D	

Intersection Summary			
HCM 2000 Control Delay	141.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.2
Intersection Capacity Utilization	104.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

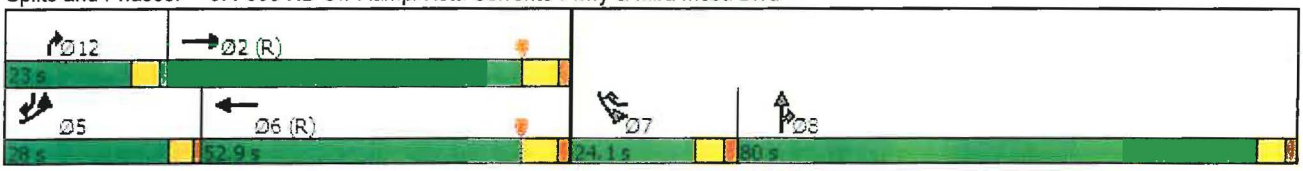
- Synchro 10 Worksheets with 160 Cycle Length

Lane Group	EBL	EBT	WBT	WBR	NBT	NBR	SBL	SBR	Ø12
Lane Configurations									
Traffic Volume (vph)	465	1363	982	687	47	2581	69	357	
Future Volume (vph)	465	1363	982	687	47	2581	69	357	
Turn Type	Prot	NA	NA	pm+ov	NA	custom	Prot	pm+ov	
Protected Phases	5	2	6	7	8	8 12	7	5	12
Permitted Phases				6				7	
Detector Phase	5	2	6	7	8	8 12	7	5	
Switch Phase									
Minimum Initial (s)	17.0	16.0	17.0	18.0	5.0		18.0	17.0	4.0
Minimum Split (s)	21.7	23.0	51.0	24.1	23.0		24.1	21.7	23.0
Total Split (s)	28.0	57.9	52.9	24.1	80.0		24.1	28.0	23.0
Total Split (%)	15.1%	31.3%	28.6%	13.0%	43.2%		13.0%	15.1%	12%
Yellow Time (s)	3.7	5.0	5.0	4.1	4.1		4.1	3.7	4.0
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0		2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	7.0	7.0	6.1	6.1		6.1	4.7	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	None		None	None	None

Intersection Summary

Cycle Length: 185
Actuated Cycle Length: 185
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 150
Control Type: Actuated-Coordinated

Splits and Phases: 5: I-805 NB Off-Ramp/Vista Sorrento Pkwy & Mira Mesa Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	465	1363	0	0	982	687	0	47	2581	69	0	357
Future Volume (vph)	465	1363	0	0	982	687	0	47	2581	69	0	357
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	7.0			7.0	6.1		6.1	6.1	6.1		4.7
Lane Util. Factor	0.97	0.91			0.86	1.00		1.00	0.76	1.00		0.88
Frt	1.00	1.00			1.00	0.85		1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	5085			6408	1583		1863	3610	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	5085			6408	1583		1863	3610	1770		2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	489	1435	0	0	1034	723	0	49	2717	73	0	376
RTOR Reduction (vph)	0	0	0	0	0	473	0	0	125	0	0	292
Lane Group Flow (vph)	489	1435	0	0	1034	250	0	49	2592	73	0	84
Turn Type	Prot	NA			NA	pm+ov		NA	custom	Prot		pm+ov
Protected Phases	5	2			6	7		8	8 12	7		5
Permitted Phases						6						7
Actuated Green, G (s)	23.3	50.9			45.9	63.9		73.9	98.0	18.0		41.3
Effective Green, g (s)	23.3	50.9			45.9	63.9		73.9	98.0	18.0		41.3
Actuated g/C Ratio	0.13	0.28			0.25	0.35		0.40	0.53	0.10		0.22
Clearance Time (s)	4.7	7.0			7.0	6.1		6.1		6.1		4.7
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0		3.0		3.0
Lane Grp Cap (vph)	432	1399			1589	546		744	1912	172		622
v/s Ratio Prot	c0.14	c0.28			0.16	c0.04		0.03	c0.72	0.04		0.02
v/s Ratio Perm						0.11						0.01
v/c Ratio	1.13	1.03			0.65	0.46		0.07	1.36	0.42		0.13
Uniform Delay, d1	80.8	67.0			62.4	47.1		34.3	43.5	78.6		57.5
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2	84.5	30.8			2.1	0.6		0.0	163.5	1.7		0.1
Delay (s)	165.3	97.9			64.4	47.7		34.3	207.0	80.3		57.6
Level of Service	F	F			E	D		C	F	F		E
Approach Delay (s)		115.0			57.5			204.0			61.3	
Approach LOS		F			E			F			E	

Intersection Summary			
HCM 2000 Control Delay	132.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	185.0	Sum of lost time (s)	24.2
Intersection Capacity Utilization	104.6%	ICU Level of Service	G
Analysis Period (min)	15		

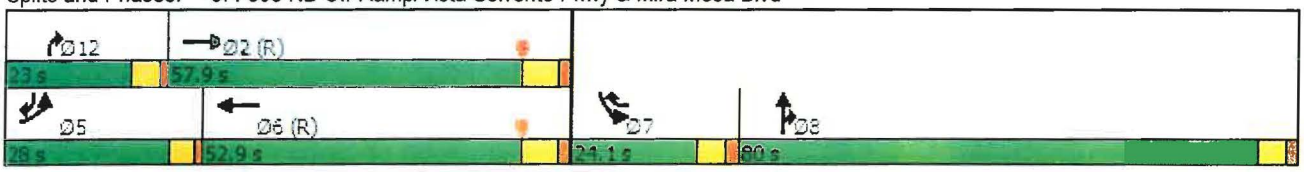
c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBT	NBR	SBL	SBR	Ø12
Lane Configurations									
Traffic Volume (vph)	477	1367	986	687	47	2581	69	367	
Future Volume (vph)	477	1367	986	687	47	2581	69	367	
Turn Type	Prot	NA	NA	pm+ov	NA	custom	Prot	pm+ov	
Protected Phases	5	2	6	7	8	8 12	7	5	12
Permitted Phases				6				7	
Detector Phase	5	2	6	7	8	8 12	7	5	
Switch Phase									
Minimum Initial (s)	17.0	16.0	17.0	18.0	5.0		18.0	17.0	4.0
Minimum Split (s)	21.7	23.0	51.0	24.1	23.0		24.1	21.7	23.0
Total Split (s)	28.0	57.9	52.9	24.1	80.0		24.1	28.0	23.0
Total Split (%)	15.1%	31.3%	28.6%	13.0%	43.2%		13.0%	15.1%	12%
Yellow Time (s)	3.7	5.0	5.0	4.1	4.1		4.1	3.7	4.0
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0		2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	7.0	7.0	6.1	6.1		6.1	4.7	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	None		None	None	None

Intersection Summary

Cycle Length: 185
Actuated Cycle Length: 185
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 150
Control Type: Actuated-Coordinated

Splits and Phases: 5: I-805 NB Off-Ramp/Vista Sorrento Pkwy & Mira Mesa Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	477	1367	0	0	986	687	0	47	2581	69	0	367
Future Volume (vph)	477	1367	0	0	986	687	0	47	2581	69	0	367
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	7.0			7.0	6.1		6.1	6.1	6.1		4.7
Lane Util. Factor	0.97	0.91			0.86	1.00		1.00	0.76	1.00		0.88
Frt	1.00	1.00			1.00	0.85		1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	5085			6408	1583		1863	3610	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	5085			6408	1583		1863	3610	1770		2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	502	1439	0	0	1038	723	0	49	2717	73	0	386
RTOR Reduction (vph)	0	0	0	0	0	473	0	0	125	0	0	300
Lane Group Flow (vph)	502	1439	0	0	1038	250	0	49	2592	73	0	86
Turn Type	Prot	NA			NA	pm+ov		NA	custom	Prot		pm+ov
Protected Phases	5	2			6	7		8	8 12	7		5
Permitted Phases						6						7
Actuated Green, G (s)	23.3	50.9			45.9	63.9		73.9	98.0	18.0		41.3
Effective Green, g (s)	23.3	50.9			45.9	63.9		73.9	98.0	18.0		41.3
Actuated g/C Ratio	0.13	0.28			0.25	0.35		0.40	0.53	0.10		0.22
Clearance Time (s)	4.7	7.0			7.0	6.1		6.1		6.1		4.7
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0		3.0		3.0
Lane Grp Cap (vph)	432	1399			1589	546		744	1912	172		622
v/s Ratio Prot	c0.15	c0.28			0.16	c0.04		0.03	c0.72	0.04		0.02
v/s Ratio Perm						0.11						0.01
v/c Ratio	1.16	1.03			0.65	0.46		0.07	1.36	0.42		0.14
Uniform Delay, d1	80.8	67.0			62.4	47.1		34.3	43.5	78.6		57.6
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2	95.7	31.7			2.1	0.6		0.0	163.5	1.7		0.1
Delay (s)	176.5	98.7			64.5	47.7		34.3	207.0	80.3		57.7
Level of Service	F	F			E	D		C	F	F		E
Approach Delay (s)		118.8			57.6			204.0			61.3	
Approach LOS		F			E			F			E	

Intersection Summary			
HCM 2000 Control Delay	133.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	185.0	Sum of lost time (s)	24.2
Intersection Capacity Utilization	104.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Darnell & ASSOCIATES

TRANSPORTATION PLANNING & TRAFFIC ENGINEERING

MEMORANDUM

DATE: December 9, 2018

TO: Gina Austin, Austin Legal Group

FROM: Bill E. Darnell, |Darnell & Associates

D&A Ref. No: 180303

RE: Sorrento Valley Marijuana Project located 10150 Sorrento Valley Road, City Project Number 545299.

Ms. Austin,

In accordance with your request, Darnell & Associates has reanalyzed the AM peak hour at the I-805 NB Off ramp – Vista Sorrento Parkway/ Sorento Valley Road-Mira Mesa Boulevard intersection. The analysis has been prepared using the Linscott, Law and Greenspan (LL&G) Opening Year 2021 AM peak hour volumes presented in the LL&G report dated September 5, 2018. The volumes represent LL&G Opening Year 2021 Cumulative conditions without the 10150 Sorrento Valley Road project.

We then added the 10150 Sorrento Valley project traffic to represent Opening Year 2021 Plus Cumulative projects traffic Plus project traffic. Our analysis replicates the intersection analysis presented in the LL&G Memorandum submitted by LL&G dated September 5, 2018 and the following assumptions:

- LL&G baseline volumes from their report (Figure 9-2);
- Utilized D&A Project trip distribution'
- PHF = 0.95
- Signal Cycle = 160 seconds

The AM peak hour volumes were then analyzed for the proposed original project with 3,980 square feet (S.F.) to replicate LL&G's numbers and analysis that reported a 1.1 second vehicle change in the AM Level of Service (LOS). Based o this analysis we then calculated project traffic for 2,014 S.F., 2,500 S. F., 3,000 S. F., 3,500 S. F and 3,980 S.F. and analyzed the traffic volumes were the analyzed to determine the LOS and significant impact. Table 1 presents the results of the analysis.

Review of Table 1 and comparison to the City of San Diego Significance Threshold of 1.0 seconds per vehicle, it was concluded that a reduction in the project square footage to 3,500 square feet or less, the project would not create a significant impact, based on the Charles Mandiara's comment.

In summary reducing the projects square footage to 3,500 square feet or less shows the project does not create a significant impact based on the higher LL&G traffic volumes and analysis based on their 160 second signal cycle.

4411 Mercury Street / Suite 207A/ SAN DIEGO, CA 92111
PHONE: 619-233-9373
E-mail: office@darnell-assoc.com

Table 1 Summary of AM Peak Hour Significance Based on Alternative Development Square Footage for the 10150 Sorrento Valley Road Marijuana Outlet Project at I-805 NB Off Ramp/Vista Sorrento Parkway/Sorrento Valley Road and Mira Mesa Boulevard Intersection.				
Condition	Delay sec/veh	LOS	Δ Delay sec/veh	Significance
2021 Opening Year	140.6	F	N/A	N/A
with 2,014 square Foot Project	140.7	F	0.1	No
with 2,500 square Foot Project	141.2	F	0.6	No
with 3,000 square Foot Project	141.4	F	0.8	No
with 3,500 square Foot Project	141.5	F	0.9	No
with 3,980 square Foot Project	141.7	F	1.1	Yes

ATTACHMENT A

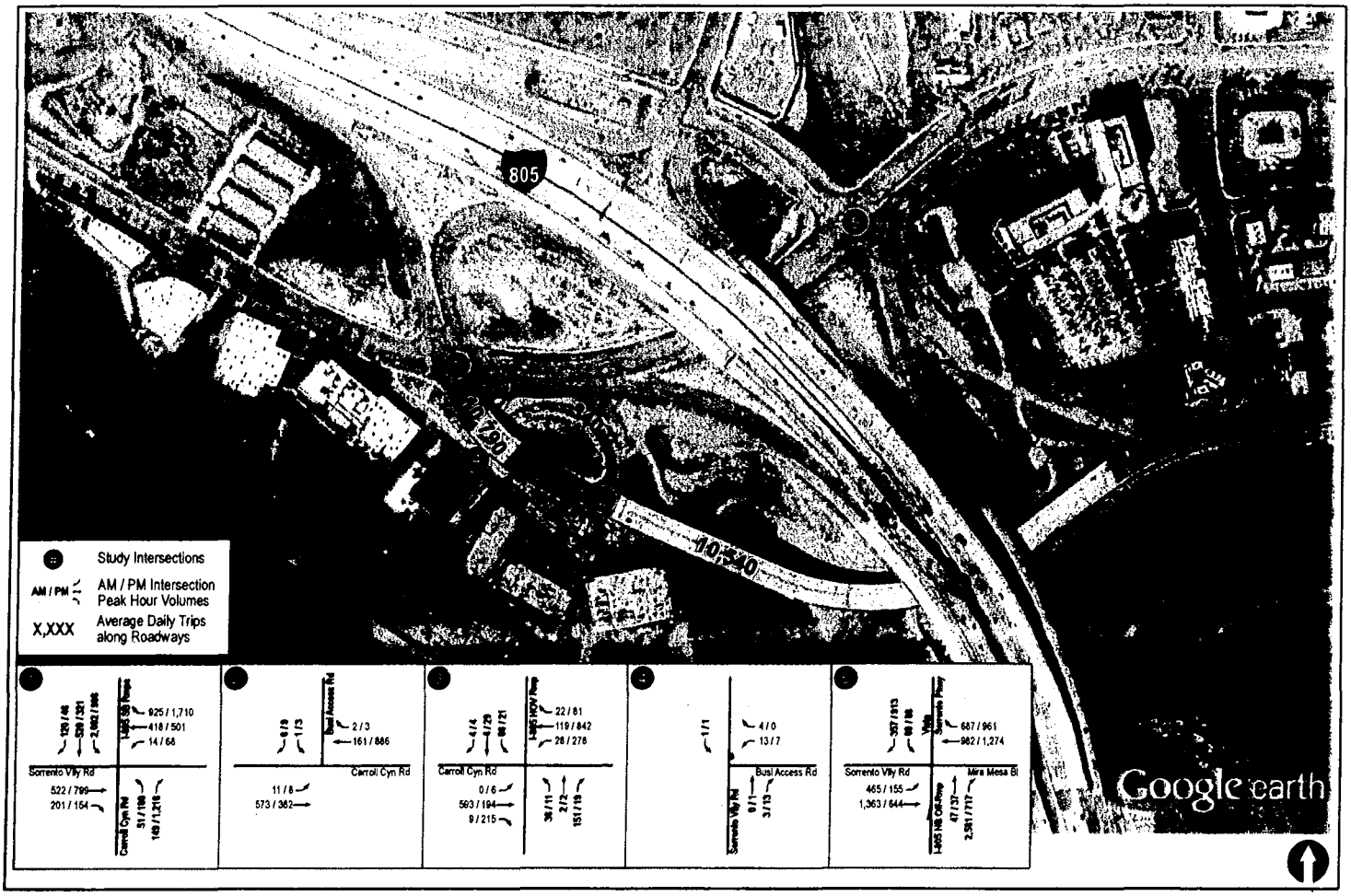
- AM Peak Hour Volumes

TRIP GENERATION RATES						
		AM PEAK		PM PEAK		
Land Use	Weekday Daily	% ADT	In:Out Ratio	Rate	In:Out Ratio	
Marijuana Outlet	250 trips / ksf	9%	0.50 : 0.50	16%	0.50 : 0.50	
TRIP GENERATION CALCULATIONS						
			AM PEAK			PM PEAK		
Land Use	Amount	ADT	In	Out	Total	In	Out	Total
Marijuana Outlet (Original Project)	3.980 ksf	995	45	45	90	80	80	160
88% of Original Project	3.500 ksf	875	40	39	79	70	70	140
75% of Original Project	3.000 ksf	750	34	34	68	60	60	120
63% of Original Project	2.500 ksf	625	29	28	57	50	50	100
Marijuana Outlet (LLG Project)	2.014 ksf	504	23	22	45	41	40	81

Notes:

ksf: 1,000 square feet

1. The approved trip rates were provided by City of San Diego staff.

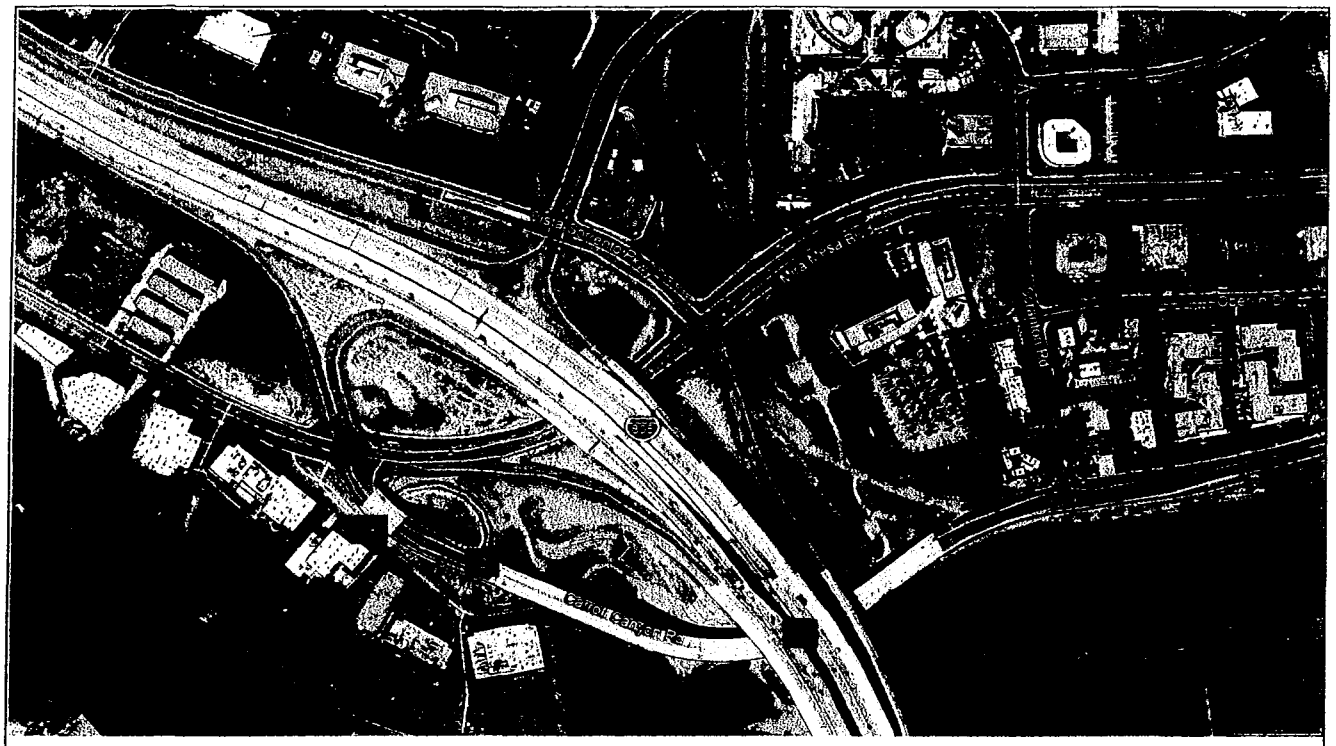


N:\2939\Figures
Date: 08/31/18

Figure 9-2

Near-Term (Opening Day 2021) Traffic Volumes

10170 Sorrento Valley Road - Marijuana Outlet



LEGEND

SB RT
SB TH
SB LT
WB RT
WB TH
WB LT
EB LT
EB TH
EB RT
NB LT
NB TH
NB RT

xx / yy - AM / PM Peak-Hour Turning Movement Volumes
The naming convention for intersections is North / South @ East / West

N

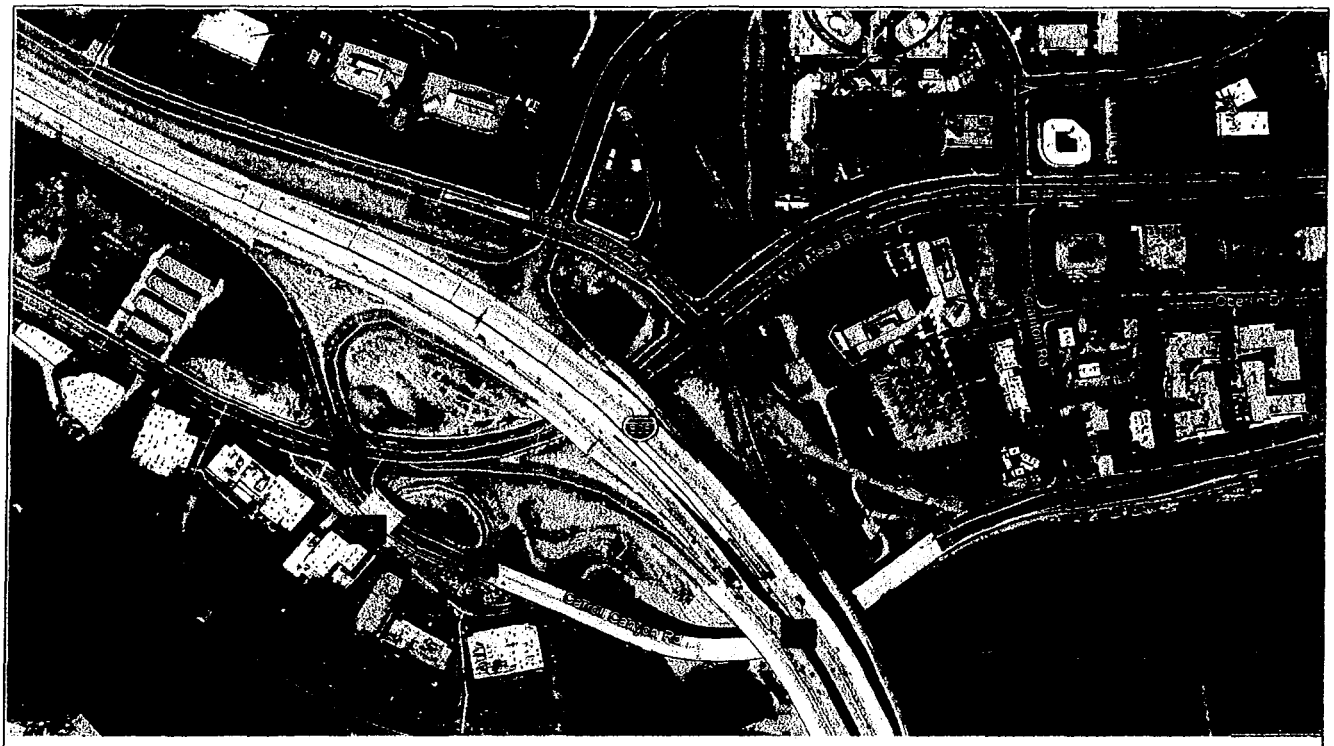
Intersections not analyzed

357 / 913
69 / 88
687 / 961
982 / 1274
465 / 155
1363 / 644
47 / 37
2581 / 717

Darnell & Associates, Inc.

Sorrento Valley Marijuana Outlet

Opening Year 2021 Traffic Volumes (From LLG Report, Fig 9-2)



LEGEND

SB RT
SB TH
SB LT
WB RT
WB TH
WB LT
EB LT
EB TH
EB RT
NB LT
NB TH
NB RT

xx / yy - AM / PM Peak-Hour Turning Movement Volumes
The naming convention for Intersections is North / South @ East / West

N

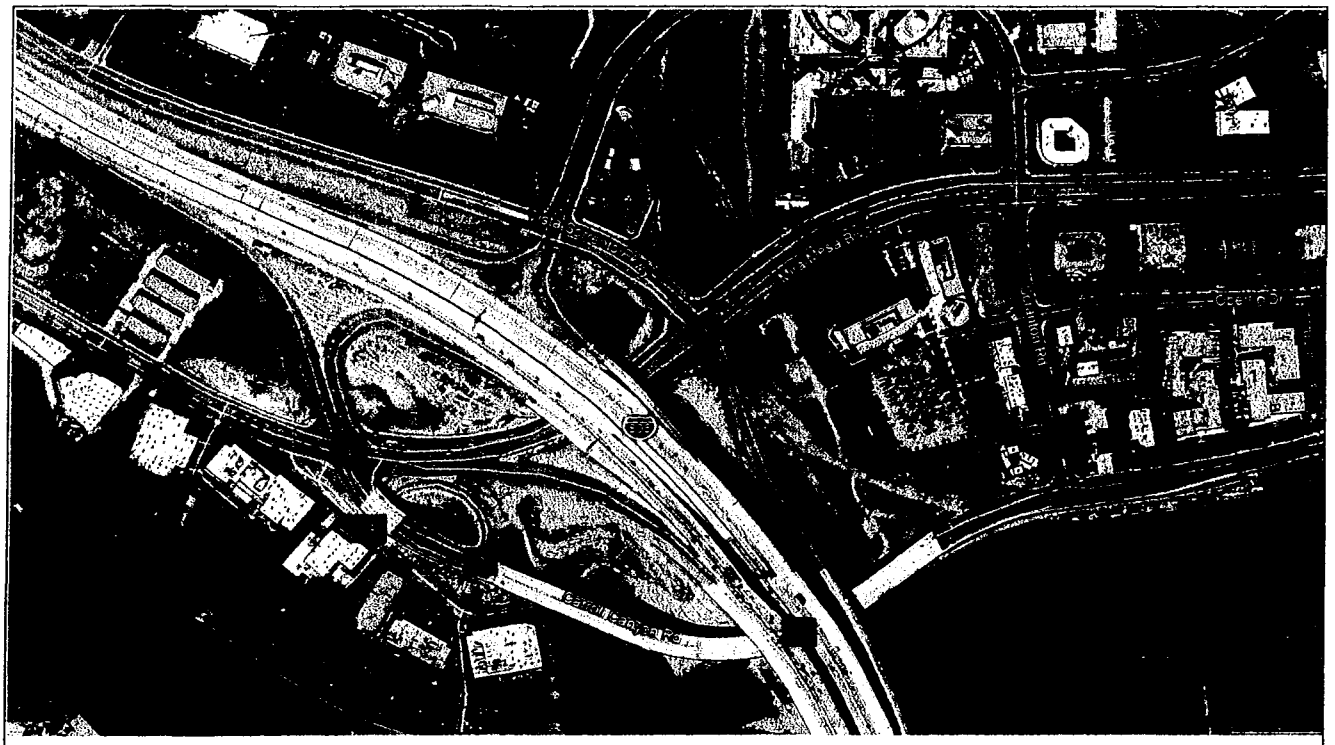
Intersections not analyzed

363 / 923
69 / 88
687 / 961
984 / 1278
472 / 167
1365 / 648
47 / 37
2581 / 717

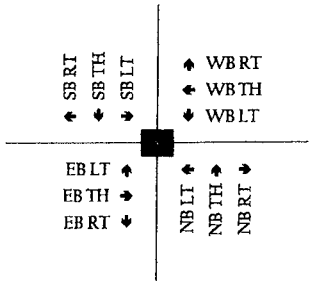
Darnell & Associates, Inc.

Sorrento Valley Marijuana Outlet

Opening Year 2021 With Project Traffic Volumes (LLG Volumes, 2,014 sf Proj)

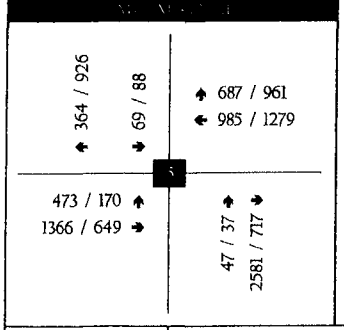


LEGEND



xx / yy = AM / PM Peak-Hour Turning Movement Volumes
The naming convention for intersections is North / South @ East / West

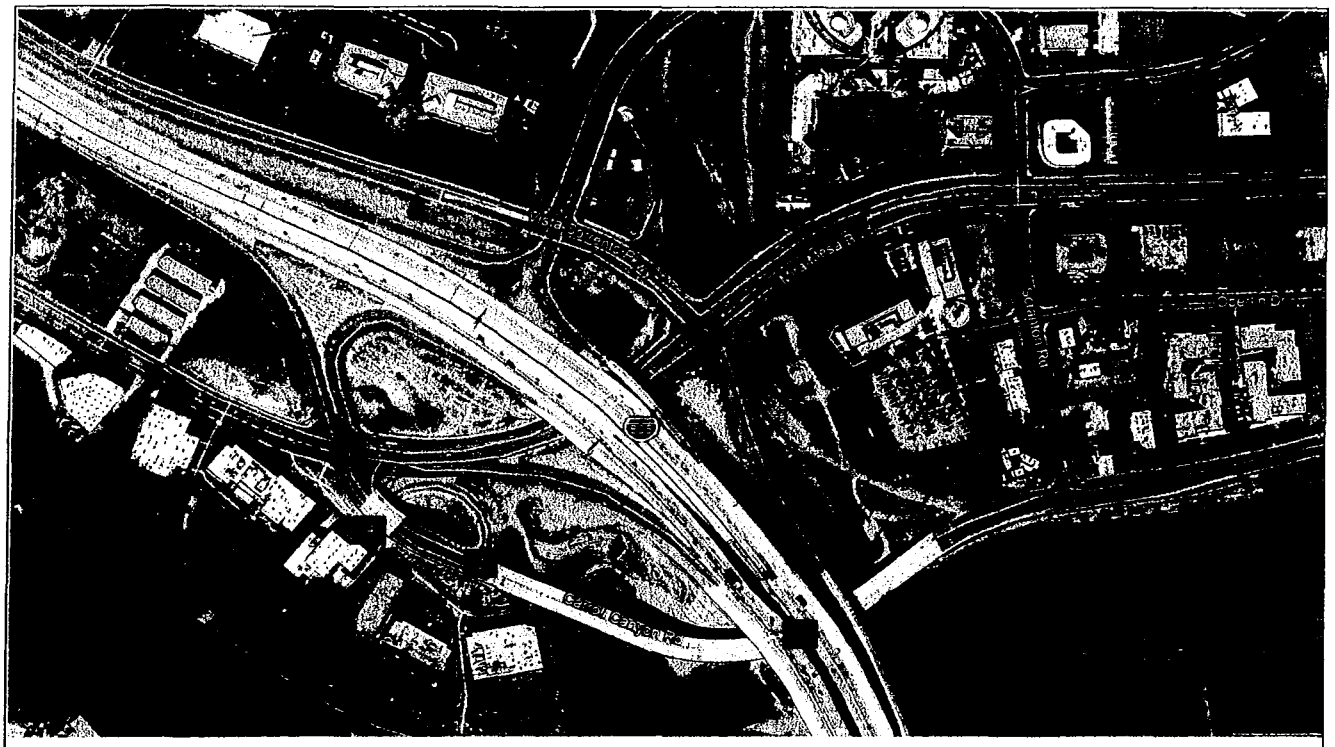
Intersections not analyzed



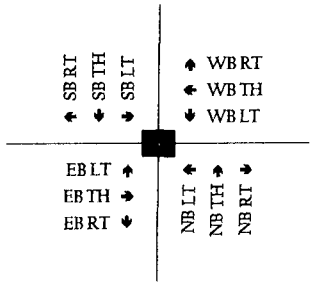
Darnell & Associates, Inc.

Sorrento Valley Marijuana Outlet

Opening Year 2021 With Project Traffic Volumes (LLG Volumes, 2,500 sf Proj)

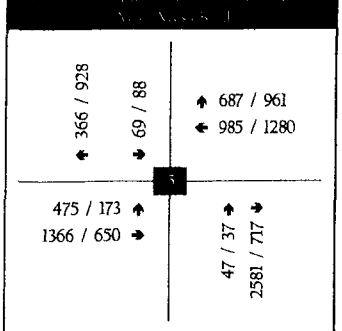


LEGEND



xx / yy = AM / PM Peak-Hour Turning Movement Volumes
The naming convention for intersections is North / South @ East / West

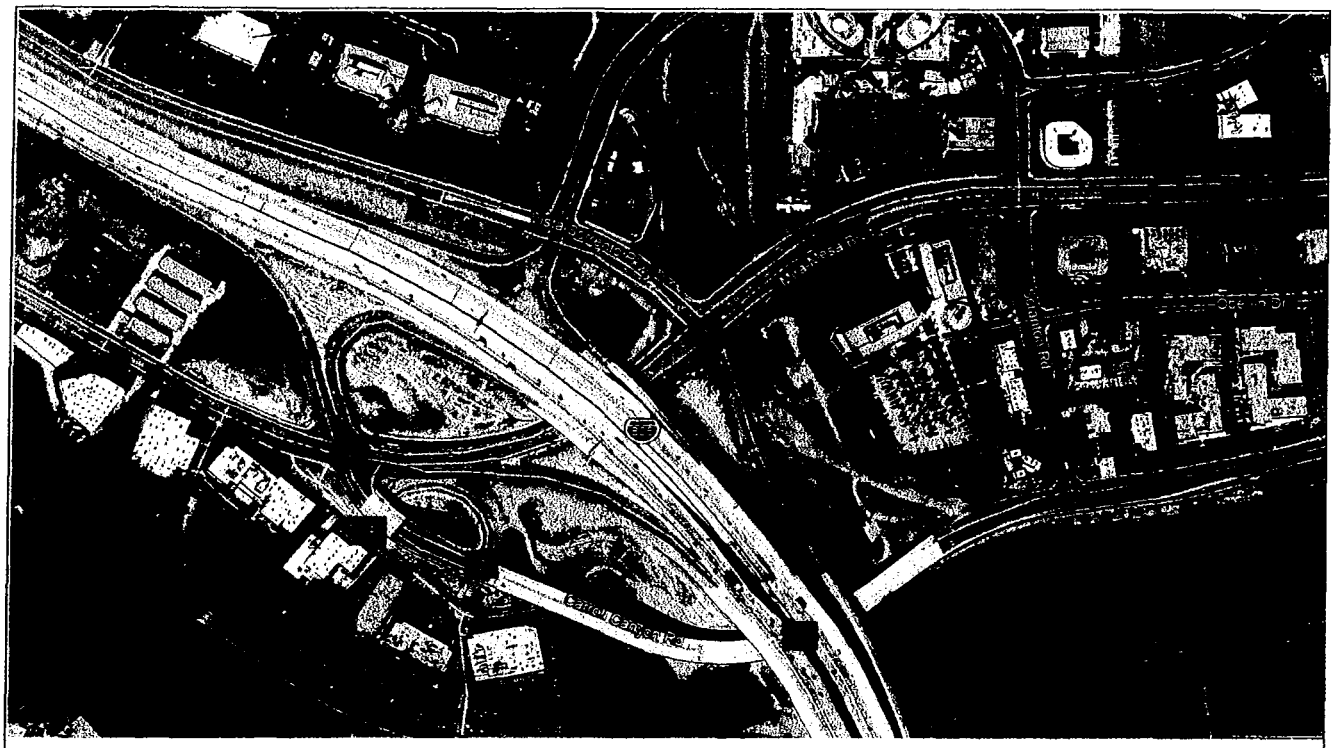
Intersections not analyzed



Darnell & Associates, Inc.

Sorrento Valley Marijuana Outlet

Opening Year 2021 With Project Traffic Volumes (LLG Volumes, 3,000 sf Proj)



LEGEND

SB RT
SB TH
SB LT
WB RT
WB TH
WB LT
EB LT
EB TH
EB RT
NB LT
NB TH
NB RT

xx / yy - AM / PM Peak-Hour Turning Movement Volumes
The naming convention for intersections is North / South @ East / West

N

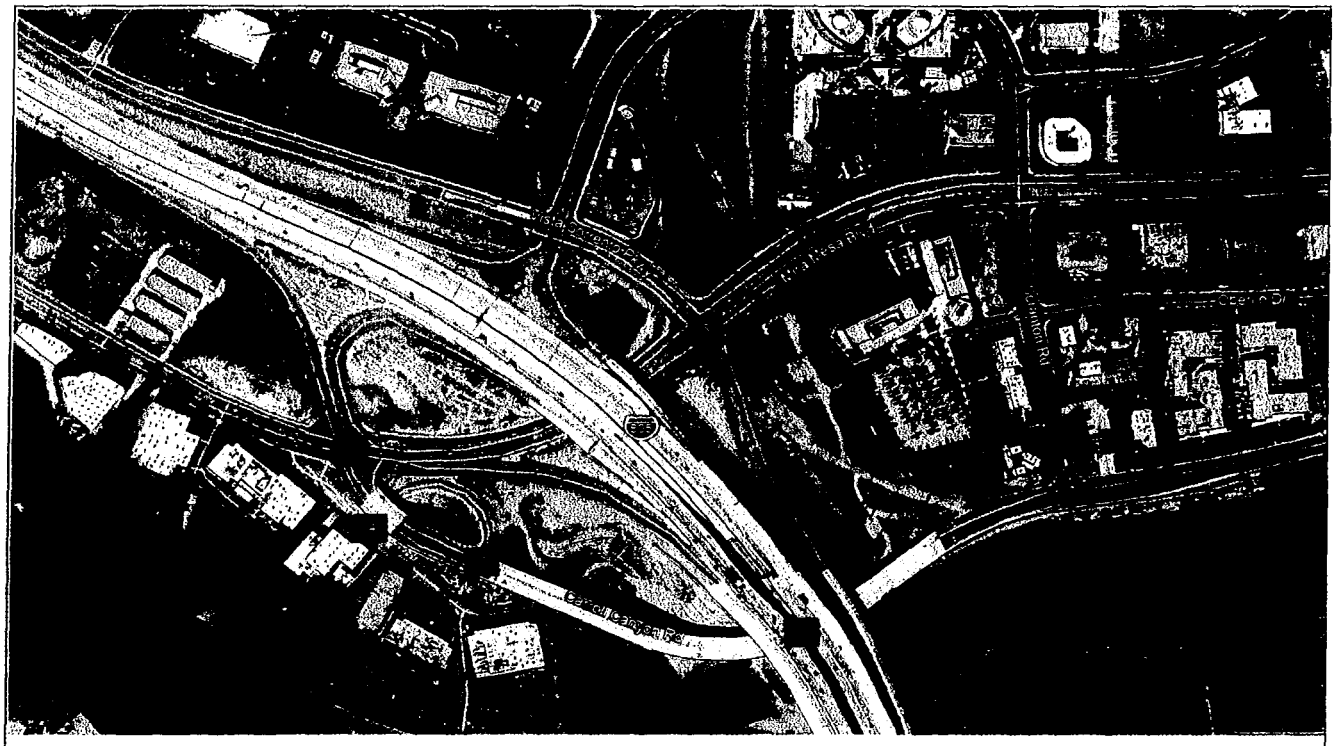
Intersections not analyzed

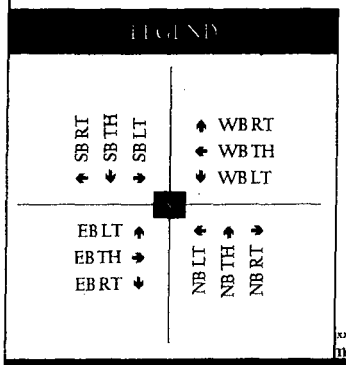
367 / 931
69 / 88
687 / 961
986 / 1281
477 / 176
1367 / 651
47 / 37
2581 / 717

Darnell & Associates, Inc.

Sorrento Valley Marijuana Outlet

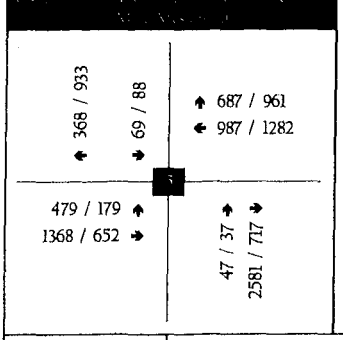
Opening Year 2021 With Project Traffic Volumes (LLG Volumes, 3,500 sf Proj)





xx / yy = AM / PM Peak Hour Turning Movement Volumes
The naming convention for intersections is North / South @ East / West

Intersections not analyzed



Darnell & Associates, Inc.

Sorrento Valley Marijuana Outlet

Opening Year 2021 With Project Traffic Volumes (LLG Volumes, 3,980 sf Proj)

ATTACHMENT B

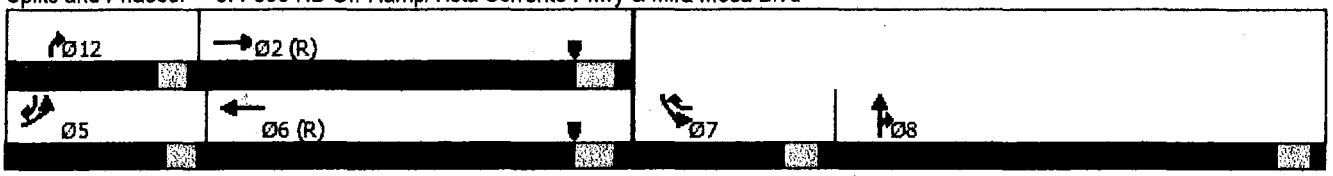
- Synchro 10 Worksheets

Lane Group	EBL	EBT	WBT	WBR	NBT	NBR	SBL	SBR	Ø12
Lane Configurations									
Traffic Volume (vph)	465	1363	982	687	47	2581	69	357	
Future Volume (vph)	465	1363	982	687	47	2581	69	357	
Turn Type	Prot	NA	NA	pm+ov	NA	custom	Prot	pm+ov	
Protected Phases	5	2	6	7	8	8 12	7	5	12
Permitted Phases				6				7	
Detector Phase	5	2	6	7	8	8 12	7	5	
Switch Phase									
Minimum Initial (s)	17.0	16.0	17.0	18.0	5.0		18.0	17.0	4.0
Minimum Split (s)	21.7	23.0	51.0	24.1	23.0		24.1	21.7	23.0
Total Split (s)	24.0	52.6	51.6	24.4	60.0		24.4	24.0	23.0
Total Split (%)	15.0%	32.9%	32.3%	15.3%	37.5%		15.3%	15.0%	14%
Yellow Time (s)	3.7	5.0	5.0	4.1	4.1		4.1	3.7	4.0
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0		2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	7.0	7.0	6.1	6.1		6.1	4.7	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	None		None	None	None

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 150
Control Type: Actuated-Coordinated

Splits and Phases: 5: I-805 NB Off-Ramp/Vista Sorrento Pkwy & Mira Mesa Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	465	1363	0	0	982	687	0	47	2581	69	0	357
Future Volume (vph)	465	1363	0	0	982	687	0	47	2581	69	0	357
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	7.0			7.0	6.1		6.1	6.1	6.1		4.7
Lane Util. Factor	0.97	0.91			0.86	1.00		1.00	0.76	1.00		0.88
Frt	1.00	1.00			1.00	0.85		1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	5085			6408	1583		1863	3610	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	5085			6408	1583		1863	3610	1770		2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	489	1435	0	0	1034	723	0	49	2717	73	0	376
RTOR Reduction (vph)	0	0	0	0	0	414	0	0	163	0	0	288
Lane Group Flow (vph)	489	1435	0	0	1034	309	0	49	2554	73	0	88
Turn Type	Prot	NA			NA	pm+ov		NA	custom	Prot		pm+ov
Protected Phases	5	2			6	7		8	8 12	7		5
Permitted Phases						6						7
Actuated Green, G (s)	19.3	45.6			44.6	62.7		54.1	78.2	18.1		37.4
Effective Green, g (s)	19.3	45.6			44.6	62.7		54.1	78.2	18.1		37.4
Actuated g/C Ratio	0.12	0.29			0.28	0.39		0.34	0.49	0.11		0.23
Clearance Time (s)	4.7	7.0			7.0	6.1		6.1		6.1		4.7
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0		3.0		3.0
Lane Grp Cap (vph)	414	1449			1786	620		629	1764	200		651
v/s Ratio Prot	0.14	c0.28			0.16	c0.06		0.03	c0.71	0.04		0.02
v/s Ratio Perm						0.14						0.02
v/c Ratio	1.18	0.99			0.58	0.50		0.08	1.45	0.36		0.14
Uniform Delay, d1	70.3	57.0			49.6	36.8		36.0	40.9	65.6		48.5
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2	103.8	21.5			1.4	0.6		0.1	204.8	1.1		0.1
Delay (s)	174.1	78.4			51.0	37.4		36.0	245.7	66.8		48.6
Level of Service	F	E			D	D		D	F	E		D
Approach Delay (s)		102.8			45.4			241.9			51.6	
Approach LOS		F			D			F			D	

Intersection Summary			
HCM 2000 Control Delay	140.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.2
Intersection Capacity Utilization	104.6%	ICU Level of Service	G
Analysis Period (min)	15		

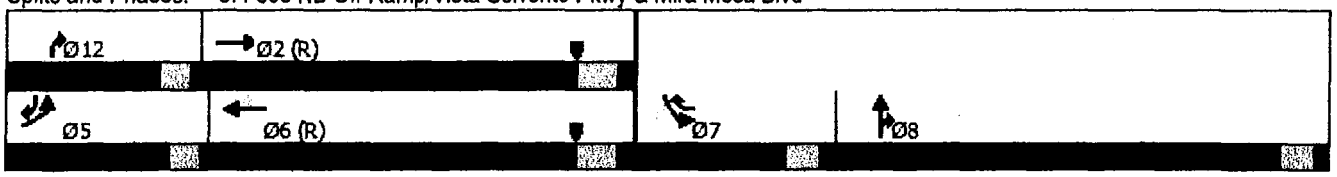
c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBT	NBR	SBL	SBR	Ø12
Lane Configurations									
Traffic Volume (vph)	479	1368	987	687	47	2581	69	368	
Future Volume (vph)	479	1368	987	687	47	2581	69	368	
Turn Type	Prot	NA	NA	pm+ov	NA	custom	Prot	pm+ov	
Protected Phases	5	2	6	7	8	8 12	7	5	12
Permitted Phases				6				7	
Detector Phase	5	2	6	7	8	8 12	7	5	
Switch Phase									
Minimum Initial (s)	17.0	16.0	17.0	18.0	5.0		18.0	17.0	4.0
Minimum Split (s)	21.7	23.0	51.0	24.1	23.0		24.1	21.7	23.0
Total Split (s)	24.0	52.6	51.6	24.4	60.0		24.4	24.0	23.0
Total Split (%)	15.0%	32.9%	32.3%	15.3%	37.5%		15.3%	15.0%	14%
Yellow Time (s)	3.7	5.0	5.0	4.1	4.1		4.1	3.7	4.0
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0		2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	7.0	7.0	6.1	6.1		6.1	4.7	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	None		None	None	None

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 150
Control Type: Actuated-Coordinated

Splits and Phases: 5: I-805 NB Off-Ramp/Vista Sorrento Pkwy & Mira Mesa Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	479	1368	0	0	987	687	0	47	2581	69	0	368
Future Volume (vph)	479	1368	0	0	987	687	0	47	2581	69	0	368
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	7.0			7.0	6.1		6.1	6.1	6.1		4.7
Lane Util. Factor	0.97	0.91			0.86	1.00		1.00	0.76	1.00		0.88
Frt	1.00	1.00			1.00	0.85		1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	5085			6408	1583		1863	3610	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	5085			6408	1583		1863	3610	1770		2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	504	1440	0	0	1039	723	0	49	2717	73	0	387
RTOR Reduction (vph)	0	0	0	0	0	414	0	0	163	0	0	297
Lane Group Flow (vph)	504	1440	0	0	1039	309	0	49	2554	73	0	90
Turn Type	Prot	NA			NA	pm+ov		NA	custom	Prot		pm+ov
Protected Phases	5	2			6	7		8	8 12	7		5
Permitted Phases						6						7
Actuated Green, G (s)	19.3	45.6			44.6	62.7		54.1	78.2	18.1		37.4
Effective Green, g (s)	19.3	45.6			44.6	62.7		54.1	78.2	18.1		37.4
Actuated g/C Ratio	0.12	0.29			0.28	0.39		0.34	0.49	0.11		0.23
Clearance Time (s)	4.7	7.0			7.0	6.1		6.1		6.1		4.7
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0		3.0		3.0
Lane Grp Cap (vph)	414	1449			1786	620		629	1764	200		651
v/s Ratio Prot	0.15	c0.28			0.16	c0.06		0.03	c0.71	0.04		0.02
v/s Ratio Perm						0.14						0.02
v/c Ratio	1.22	0.99			0.58	0.50		0.08	1.45	0.36		0.14
Uniform Delay, d1	70.3	57.1			49.7	36.8		36.0	40.9	65.6		48.5
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2	118.0	22.2			1.4	0.6		0.1	204.8	1.1		0.1
Delay (s)	188.4	79.3			51.1	37.4		36.0	245.7	66.8		48.6
Level of Service	F	E			D	D		D	F	E		D
Approach Delay (s)		107.6			45.5			241.9			51.5	
Approach LOS		F			D			F			D	

Intersection Summary			
HCM 2000 Control Delay	141.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.2
Intersection Capacity Utilization	104.7%	ICU Level of Service	G
Analysis Period (min)	15		

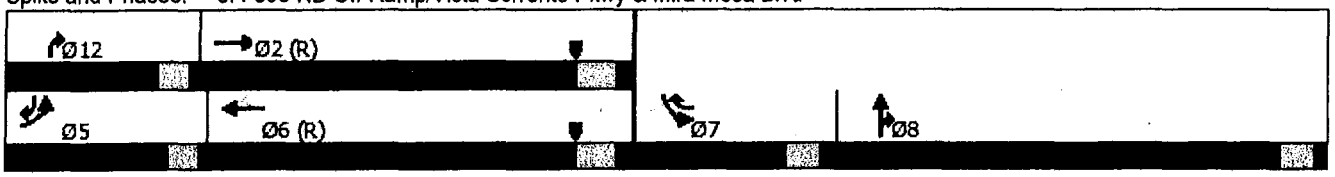
c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBT	NBR	SBL	SBR	Ø12
Lane Configurations									
Traffic Volume (vph)	477	1367	986	687	47	2581	69	367	
Future Volume (vph)	477	1367	986	687	47	2581	69	367	
Turn Type	Prot	NA	NA	pm+ov	NA	custom	Prot	pm+ov	
Protected Phases	5	2	6	7	8	8 12	7	5	12
Permitted Phases				6				7	
Detector Phase	5	2	6	7	8	8 12	7	5	
Switch Phase									
Minimum Initial (s)	17.0	16.0	17.0	18.0	5.0		18.0	17.0	4.0
Minimum Split (s)	21.7	23.0	51.0	24.1	23.0		24.1	21.7	23.0
Total Split (s)	24.0	52.6	51.6	24.4	60.0		24.4	24.0	23.0
Total Split (%)	15.0%	32.9%	32.3%	15.3%	37.5%		15.3%	15.0%	14%
Yellow Time (s)	3.7	5.0	5.0	4.1	4.1		4.1	3.7	4.0
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0		2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	7.0	7.0	6.1	6.1		6.1	4.7	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	None		None	None	None

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 150
Control Type: Actuated-Coordinated

Splits and Phases: 5: I-805 NB Off-Ramp/Vista Sorrento Pkwy & Mira Mesa Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	477	1367	0	0	986	687	0	47	2581	69	0	367
Future Volume (vph)	477	1367	0	0	986	687	0	47	2581	69	0	367
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	7.0			7.0	6.1		6.1	6.1	6.1		4.7
Lane Util. Factor	0.97	0.91			0.86	1.00		1.00	0.76	1.00		0.88
Frt	1.00	1.00			1.00	0.85		1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	5085			6408	1583		1863	3610	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	5085			6408	1583		1863	3610	1770		2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	502	1439	0	0	1038	723	0	49	2717	73	0	386
RTOR Reduction (vph)	0	0	0	0	0	414	0	0	163	0	0	296
Lane Group Flow (vph)	502	1439	0	0	1038	309	0	49	2554	73	0	90
Turn Type	Prot	NA			NA	pm+ov		NA	custom	Prot		pm+ov
Protected Phases	5	2			6	7		8	8 12	7		5
Permitted Phases						6						7
Actuated Green, G (s)	19.3	45.6			44.6	62.7		54.1	78.2	18.1		37.4
Effective Green, g (s)	19.3	45.6			44.6	62.7		54.1	78.2	18.1		37.4
Actuated g/C Ratio	0.12	0.29			0.28	0.39		0.34	0.49	0.11		0.23
Clearance Time (s)	4.7	7.0			7.0	6.1		6.1		6.1		4.7
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0		3.0		3.0
Lane Grp Cap (vph)	414	1449			1786	620		629	1764	200		651
v/s Ratio Prot	0.15	c0.28			0.16	c0.06		0.03	c0.71	0.04		0.02
v/s Ratio Perm						0.14						0.02
v/c Ratio	1.21	0.99			0.58	0.50		0.08	1.45	0.36		0.14
Uniform Delay, d1	70.3	57.0			49.7	36.8		36.0	40.9	65.6		48.5
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2	116.1	22.1			1.4	0.6		0.1	204.8	1.1		0.1
Delay (s)	186.4	79.1			51.0	37.4		36.0	245.7	66.8		48.6
Level of Service	F	E			D	D		D	F	E		D
Approach Delay (s)		106.9			45.5			241.9			51.5	
Approach LOS		F			D			F			D	

Intersection Summary			
HCM 2000 Control Delay	141.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.2
Intersection Capacity Utilization	104.7%	ICU Level of Service	G
Analysis Period (min)	15		

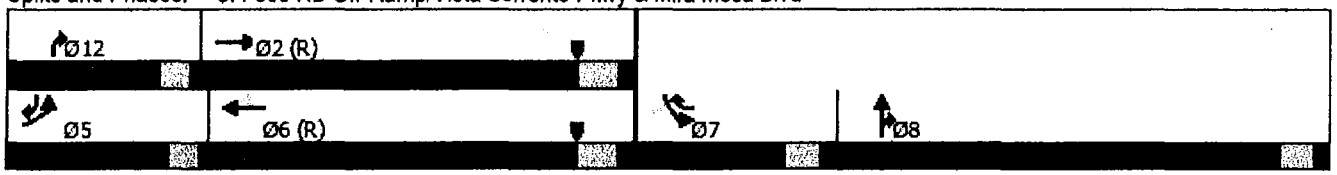
c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBT	NBR	SBL	SBR	Ø12
Lane Configurations									
Traffic Volume (vph)	475	1366	985	687	47	2581	69	366	
Future Volume (vph)	475	1366	985	687	47	2581	69	366	
Turn Type	Prot	NA	NA	pm+ov	NA	custom	Prot	pm+ov	
Protected Phases	5	2	6	7	8	8 12	7	5	12
Permitted Phases				6				7	
Detector Phase	5	2	6	7	8	8 12	7	5	
Switch Phase									
Minimum Initial (s)	17.0	16.0	17.0	18.0	5.0		18.0	17.0	4.0
Minimum Split (s)	21.7	23.0	51.0	24.1	23.0		24.1	21.7	23.0
Total Split (s)	24.0	52.6	51.6	24.4	60.0		24.4	24.0	23.0
Total Split (%)	15.0%	32.9%	32.3%	15.3%	37.5%		15.3%	15.0%	14%
Yellow Time (s)	3.7	5.0	5.0	4.1	4.1		4.1	3.7	4.0
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0		2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	7.0	7.0	6.1	6.1		6.1	4.7	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	None		None	None	None

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 150
Control Type: Actuated-Coordinated

Splits and Phases: 5: I-805 NB Off-Ramp/Vista Sorrento Pkwy & Mira Mesa Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	475	1366	0	0	985	687	0	47	2581	69	0	366
Future Volume (vph)	475	1366	0	0	985	687	0	47	2581	69	0	366
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	7.0			7.0	6.1		6.1	6.1	6.1		4.7
Lane Util. Factor	0.97	0.91			0.86	1.00		1.00	0.76	1.00		0.88
Frt	1.00	1.00			1.00	0.85		1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	5085			6408	1583		1863	3610	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	5085			6408	1583		1863	3610	1770		2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	500	1438	0	0	1037	723	0	49	2717	73	0	385
RTOR Reduction (vph)	0	0	0	0	0	414	0	0	163	0	0	295
Lane Group Flow (vph)	500	1438	0	0	1037	309	0	49	2554	73	0	90
Turn Type	Prot	NA			NA	pm+ov		NA	custom	Prot		pm+ov
Protected Phases	5	2			6	7		8	8 12	7		5
Permitted Phases						6						7
Actuated Green, G (s)	19.3	45.6			44.6	62.7		54.1	78.2	18.1		37.4
Effective Green, g (s)	19.3	45.6			44.6	62.7		54.1	78.2	18.1		37.4
Actuated g/C Ratio	0.12	0.29			0.28	0.39		0.34	0.49	0.11		0.23
Clearance Time (s)	4.7	7.0			7.0	6.1		6.1		6.1		4.7
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0		3.0		3.0
Lane Grp Cap (vph)	414	1449			1786	620		629	1764	200		651
v/s Ratio Prot	0.15	c0.28			0.16	c0.06		0.03	c0.71	0.04		0.02
v/s Ratio Perm						0.14						0.02
v/c Ratio	1.21	0.99			0.58	0.50		0.08	1.45	0.36		0.14
Uniform Delay, d1	70.3	57.0			49.7	36.8		36.0	40.9	65.6		48.5
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2	114.2	21.9			1.4	0.6		0.1	204.8	1.1		0.1
Delay (s)	184.5	78.9			51.0	37.4		36.0	245.7	66.8		48.6
Level of Service	F	E			D	D		D	F	E		D
Approach Delay (s)		106.2			45.4			241.9			51.5	
Approach LOS		F			D			F			D	

Intersection Summary			
HCM 2000 Control Delay	141.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.2
Intersection Capacity Utilization	104.7%	ICU Level of Service	G
Analysis Period (min)	15		

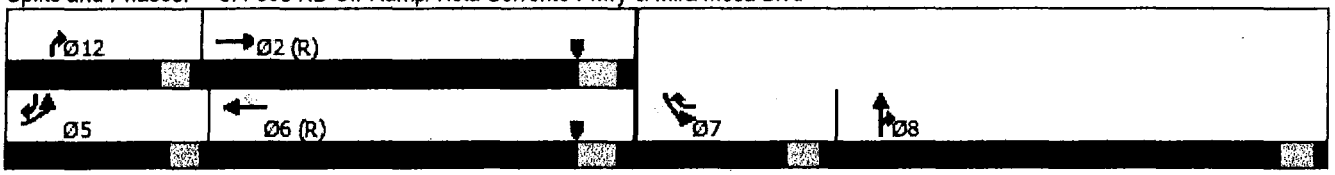
c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBT	NBR	SBL	SBR	Ø12
Lane Configurations									
Traffic Volume (vph)	473	1366	985	687	47	2581	69	364	
Future Volume (vph)	473	1366	985	687	47	2581	69	364	
Turn Type	Prot	NA	NA	pm+ov	NA	custom	Prot	pm+ov	
Protected Phases	5	2	6	7	8	8 12	7	5	12
Permitted Phases				6				7	
Detector Phase	5	2	6	7	8	8 12	7	5	
Switch Phase									
Minimum Initial (s)	17.0	16.0	17.0	18.0	5.0		18.0	17.0	4.0
Minimum Split (s)	21.7	23.0	51.0	24.1	23.0		24.1	21.7	23.0
Total Split (s)	24.0	52.6	51.6	24.4	60.0		24.4	24.0	23.0
Total Split (%)	15.0%	32.9%	32.3%	15.3%	37.5%		15.3%	15.0%	14%
Yellow Time (s)	3.7	5.0	5.0	4.1	4.1		4.1	3.7	4.0
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0		2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	7.0	7.0	6.1	6.1		6.1	4.7	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	None		None	None	None

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 150
Control Type: Actuated-Coordinated

Splits and Phases: 5: I-805 NB Off-Ramp/Vista Sorrento Pkwy & Mira Mesa Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	473	1366	0	0	985	687	0	47	2581	69	0	364
Future Volume (vph)	473	1366	0	0	985	687	0	47	2581	69	0	364
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	7.0			7.0	6.1		6.1	6.1	6.1		4.7
Lane Util. Factor	0.97	0.91			0.86	1.00		1.00	0.76	1.00		0.88
Frt	1.00	1.00			1.00	0.85		1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	5085			6408	1583		1863	3610	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	5085			6408	1583		1863	3610	1770		2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	498	1438	0	0	1037	723	0	49	2717	73	0	383
RTOR Reduction (vph)	0	0	0	0	0	414	0	0	163	0	0	293
Lane Group Flow (vph)	498	1438	0	0	1037	309	0	49	2554	73	0	90
Turn Type	Prot	NA			NA	pm+ov		NA	custom	Prot		pm+ov
Protected Phases	5	2			6	7		8	8 12	7		5
Permitted Phases						6						7
Actuated Green, G (s)	19.3	45.6			44.6	62.7		54.1	78.2	18.1		37.4
Effective Green, g (s)	19.3	45.6			44.6	62.7		54.1	78.2	18.1		37.4
Actuated g/C Ratio	0.12	0.29			0.28	0.39		0.34	0.49	0.11		0.23
Clearance Time (s)	4.7	7.0			7.0	6.1		6.1		6.1		4.7
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0		3.0		3.0
Lane Grp Cap (vph)	414	1449			1786	620		629	1764	200		651
v/s Ratio Prot	0.15	c0.28			0.16	c0.06		0.03	c0.71	0.04		0.02
v/s Ratio Perm						0.14						0.02
v/c Ratio	1.20	0.99			0.58	0.50		0.08	1.45	0.36		0.14
Uniform Delay, d1	70.3	57.0			49.7	36.8		36.0	40.9	65.6		48.5
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2	112.3	21.9			1.4	0.6		0.1	204.8	1.1		0.1
Delay (s)	182.6	78.9			51.0	37.4		36.0	245.7	66.8		48.6
Level of Service	F	E			D	D		D	F	E		D
Approach Delay (s)		105.6			45.4			241.9			51.5	
Approach LOS		F			D			F			D	

Intersection Summary			
HCM 2000 Control Delay	141.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.2
Intersection Capacity Utilization	104.7%	ICU Level of Service	G
Analysis Period (min)	15		

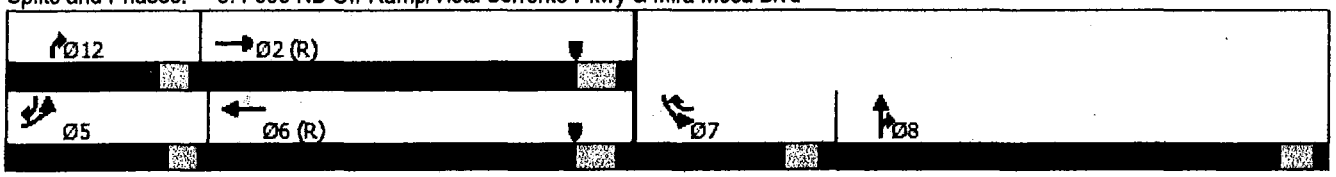
c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBT	NBR	SBL	SBR	Ø12
Lane Configurations									
Traffic Volume (vph)	472	1365	984	687	47	2581	69	363	
Future Volume (vph)	472	1365	984	687	47	2581	69	363	
Turn Type	Prot	NA	NA	pm+ov	NA	custom	Prot	pm+ov	
Protected Phases	5	2	6	7	8	8 12	7	5	12
Permitted Phases				6				7	
Detector Phase	5	2	6	7	8	8 12	7	5	
Switch Phase									
Minimum Initial (s)	17.0	16.0	17.0	18.0	5.0		18.0	17.0	4.0
Minimum Split (s)	21.7	23.0	51.0	24.1	23.0		24.1	21.7	23.0
Total Split (s)	24.0	52.6	51.6	24.4	60.0		24.4	24.0	23.0
Total Split (%)	15.0%	32.9%	32.3%	15.3%	37.5%		15.3%	15.0%	14%
Yellow Time (s)	3.7	5.0	5.0	4.1	4.1		4.1	3.7	4.0
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0		2.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	7.0	7.0	6.1	6.1		6.1	4.7	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	None		None	None	None

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 150
Control Type: Actuated-Coordinated

Splits and Phases: 5: I-805 NB Off-Ramp/Vista Sorrento Pkwy & Mira Mesa Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	472	1365	0	0	984	687	0	47	2581	69	0	363
Future Volume (vph)	472	1365	0	0	984	687	0	47	2581	69	0	363
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	7.0			7.0	6.1		6.1	6.1	6.1		4.7
Lane Util. Factor	0.97	0.91			0.86	1.00		1.00	0.76	1.00		0.88
Frt	1.00	1.00			1.00	0.85		1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	5085			6408	1583		1863	3610	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	5085			6408	1583		1863	3610	1770		2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	497	1437	0	0	1036	723	0	49	2717	73	0	382
RTOR Reduction (vph)	0	0	0	0	0	414	0	0	163	0	0	293
Lane Group Flow (vph)	497	1437	0	0	1036	309	0	49	2554	73	0	89
Turn Type	Prot	NA			NA	pm+ov		NA	custom	Prot		pm+ov
Protected Phases	5	2			6	7		8	8 12	7		5
Permitted Phases						6						7
Actuated Green, G (s)	19.3	45.6			44.6	62.7		54.1	78.2	18.1		37.4
Effective Green, g (s)	19.3	45.6			44.6	62.7		54.1	78.2	18.1		37.4
Actuated g/C Ratio	0.12	0.29			0.28	0.39		0.34	0.49	0.11		0.23
Clearance Time (s)	4.7	7.0			7.0	6.1		6.1		6.1		4.7
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0		3.0		3.0
Lane Grp Cap (vph)	414	1449			1786	620		629	1764	200		651
v/s Ratio Prot	0.14	c0.28			0.16	c0.06		0.03	c0.71	0.04		0.02
v/s Ratio Perm						0.14						0.02
v/c Ratio	1.20	0.99			0.58	0.50		0.08	1.45	0.36		0.14
Uniform Delay, d1	70.3	57.0			49.6	36.8		36.0	40.9	65.6		48.5
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2	111.3	21.8			1.4	0.6		0.1	204.8	1.1		0.1
Delay (s)	181.7	78.8			51.0	37.4		36.0	245.7	66.8		48.6
Level of Service	F	E			D	D		D	F	E		D
Approach Delay (s)		105.2			45.4			241.9			51.5	
Approach LOS		F			D			F			D	

Intersection Summary			
HCM 2000 Control Delay	141.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	24.2
Intersection Capacity Utilization	104.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Darnell & ASSOCIATES, INC.

TRANSPORTATION PLANNING & TRAFFIC ENGINEERING

MEMORANDUM

DATE: November 20, 2018

TO: Ms. Gina Austin, Austin Legal Group, APC

FROM: Bill E. Darnell

D&A Ref. No: 180303.

RE: Marijuana Outlet Project located at 10150 Sorrento Valley Road City Project No. 545299.

In accordance with your request, I have prepared additional intersection analysis for the AM peak hour intersection operating conditions at the I-805 Northbound Off Ramp at Mira Mesa Boulevard/Sorrento Valley Road/Vista Sorrento Valley Parkway intersection to respond to Christopher Mendiara, Associate Principal at Linscott, Law and Greenspan, Engineers comments dated August 8, 2018 and the October 19, 2018 email to Leo Alo, Associate Traffic Engineer in the City of San Diego Development Services.

This memorandum summarizes my additional investigation to support my June 28, 2018 Access Analysis Study for the project. At this time my response and analysis is focused on Mr. Mandiara's comment that Darnell & Associates used two (2) outdated HCM 2000 and HCM 2010 intersection methodologies.

In my response to Mr. Mandiara's statement that we used outdated software, we purchased the HCM 6 Synchro 10 software and prepared the following additional analysis to confirm our previous conclusion that the project does not create a significant impact at the I-805 Northbound Off Ramp at Mira Mesa Boulevard/Sorrento Valley Road/Vista Sorrento Valley Parkway intersection.

Using the HCM 6 and Synchro 10 software, we analyzed he AM peak traffic volumes dated April 20, 2018 presented in our June 28, 2018 report and the LL&G traffic volumes dated June 28, 2018. To confirm the traffic signal cycle to use in the analysis, we conducted site visits at the intersection and contacted Duncan Hughes, Deputy Director at the City of San Diego to get his input on the cycle length to be used at the intersection with the new adaptive traffic signal controller at the intersection. Based on my discussions with Mr. Hughes, we utilized a 185 second signal cycle. A copy of the traffic counts and Mr. Hughes recommendations on cycle length is attached.

Using the HCM 6 software, we found that HCM 6 does not support non-NEMA Phasing, therefore it was necessary to use the HCM 2000 and Synchro 10 software. HCM 2000 program was used in our original report analysis. Tables 1 and 2 present the results of the Opening Year 2019 Plus project AM peak hour analysis. Table 1 presents the analysis based on the April 20, 2018 AM peak hour counts presented in the approved June 28, 2018 report and Table 2 presents the analysis based on LL&G traffic counts dated June 12, 2018.

Table 1 – Summary of Opening Year 2019 AM Intersection Level of Service
for Opening year 2019 Traffic Volumes,
based on the April 20, 2018 AM Peak Existing Traffic Counts

Intersection	Control	Peak Hour	Opening Year 2019		Opening Year 2019 Plus Project			Significance
			Delay sec/veh	LOS	Delay sec/veh	LOS	Δ Delay sec/veh	
I-805 Northbound Off Ramp at Mira Mesa Boulevard/Sorrento Valley Road/Vista Sorrento Valley Parkway	Signal	AM	110.0	F	110.2	F	0.2	No

Table 2 – Summary of Opening Year 2019 Intersection Level of Service								
Intersection	Control	Peak Hour	Opening Year 2019		Opening Year 2019 Plus Project			Significance
			Delay sec/veh	LOS	Delay sec/veh	LOS	Δ Delay sec/veh	
I-805 Northbound Off Ramp at Mira Mesa Boulevard/Sorrento Valley Road/Vista Sorrento Valley Parkway	Signal	AM	147.5	F	147.6	F	0.1	No

Review of Tables 1 and 2 show that analysis of the I-805 Northbound Off Ramp at Mira Mesa Boulevard/Sorrento Valley Road/Vista Sorrento Valley Parkway intersection shows and documents that the Marijuana Outlet Project at 10150 Sorrento Valley road, City of San Diego Project Number 545299 does not create a significant direct impact and complies with the City of San Diego Traffic Study Manual.

Please feel free to contact the office if you have any questions.

Sincerely,

DARNELL & ASSOCIATES, INC.

Bill E Darnell

Bill E. Darnell, P.E.
RCE: 22338

BED/jam
180303-Sorrento Valley MO 545299 Intersection Analysis/11/18



11/20/2018



11/20/2018

ATTACHMENT A

- November 19, 2018 Intersection Level of Service Worksheets

- Email from Duncan Hughes, Deputy Director, City of San Diego on AM Peak Hour Traffic Signal Cycle Lengths

- Copy of November 19, 2018 email requesting a copy of Synchro/Intersection Analysis worksheets not provided to support Christopher Mendiara' s memorandum and findings dated August 8, 2018

- Copy of November 1, 2018 Memorandum responding to Christopher Mendiara' s comments dated August 8, 2018

- November 19, 2018 Intersection Level of Service Worksheets



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	426	1463	0	0	679	464	0	181	2190	47	0	395
Future Volume (vph)	426	1463	0	0	679	464	0	181	2190	47	0	395
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	7.0			7.0	6.1		6.1	6.1	6.1		4.7
Lane Util. Factor	0.97	0.91			0.86	1.00		1.00	0.76	1.00		0.88
Frt	1.00	1.00			1.00	0.85		1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	5085			6408	1583		1863	3610	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	5085			6408	1583		1863	3610	1770		2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	435	1493	0	0	693	473	0	185	2235	48	0	403
RTOR Reduction (vph)	0	0	0	0	0	19	0	0	461	0	0	301
Lane Group Flow (vph)	435	1493	0	0	693	454	0	185	1774	48	0	102
Turn Type	Prot	NA			NA	pm+ov		NA	custom	Prot		pm+ov
Protected Phases	5	2			6	7		8	1	7		5
Permitted Phases						6						7
Actuated Green, G (s)	28.6	50.9			97.6	115.6		16.9	73.9	18.0		46.6
Effective Green, g (s)	28.6	50.9			97.6	115.6		16.9	73.9	18.0		46.6
Actuated g/C Ratio	0.15	0.28			0.53	0.62		0.09	0.40	0.10		0.25
Clearance Time (s)	4.7	7.0			7.0	6.1		6.1	6.1	6.1		4.7
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	530	1399			3380	989		170	1442	172		702
v/s Ratio Prot	0.13	c0.29			0.11	c0.04		c0.10	c0.49	0.03		0.02
v/s Ratio Perm						0.24						0.01
v/c Ratio	0.82	1.07			0.21	0.46		1.09	1.23	0.28		0.14
Uniform Delay, d1	75.7	67.0			23.1	18.3		84.0	55.5	77.5		53.7
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2	9.9	44.2			0.1	0.3		94.5	109.8	0.9		0.1
Delay (s)	85.6	111.3			23.3	18.6		178.6	165.4	78.4		53.8
Level of Service	F	F			C	B		F	F	E		D
Approach Delay (s)		105.5			21.4			166.4			56.4	
Approach LOS		F			C			F			E	

Intersection Summary			
HCM 2000 Control Delay	110.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	185.0	Sum of lost time (s)	25.3
Intersection Capacity Utilization	96.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	440	1468	0	0	684	464	0	181	2190	47	0	406
Future Volume (vph)	440	1468	0	0	684	464	0	181	2190	47	0	406
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	7.0			7.0	6.1		6.1	6.1	6.1		4.7
Lane Util. Factor	0.97	0.91			0.86	1.00		1.00	0.76	1.00		0.88
Frt	1.00	1.00			1.00	0.85		1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	5085			6408	1583		1863	3610	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	5085			6408	1583		1863	3610	1770		2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	449	1498	0	0	698	473	0	185	2235	48	0	414
RTOR Reduction (vph)	0	0	0	0	0	18	0	0	461	0	0	309
Lane Group Flow (vph)	449	1498	0	0	698	455	0	185	1774	48	0	105
Turn Type	Prot	NA			NA	pm+ov		NA	custom	Prot		pm+ov
Protected Phases	5	2			6	7		8	1	7		5
Permitted Phases						6						7
Actuated Green, G (s)	29.1	50.9			97.1	115.1		16.9	73.9	18.0		47.1
Effective Green, g (s)	29.1	50.9			97.1	115.1		16.9	73.9	18.0		47.1
Actuated g/C Ratio	0.16	0.28			0.52	0.62		0.09	0.40	0.10		0.25
Clearance Time (s)	4.7	7.0			7.0	6.1		6.1	6.1	6.1		4.7
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	540	1399			3363	984		170	1442	172		709
v/s Ratio Prot	0.13	c0.29			0.11	c0.04		c0.10	c0.49	0.03		0.02
v/s Ratio Perm						0.24						0.01
v/c Ratio	0.83	1.07			0.21	0.46		1.09	1.23	0.28		0.15
Uniform Delay, d1	75.6	67.0			23.4	18.5		84.0	55.5	77.5		53.4
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2	10.5	45.5			0.1	0.3		94.5	109.8	0.9		0.1
Delay (s)	86.1	112.5			23.6	18.9		178.6	165.4	78.4		53.5
Level of Service	F	F			C	B		F	F	E		D
Approach Delay (s)		106.4			21.7			166.4			56.1	
Approach LOS		F			C			F			E	

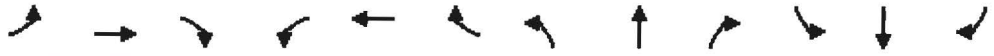
Intersection Summary			
HCM 2000 Control Delay	110.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	185.0	Sum of lost time (s)	25.3
Intersection Capacity Utilization	97.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	472	1365	0	0	851	687	0	175	2581	69	0	363
Future Volume (vph)	472	1365	0	0	851	687	0	175	2581	69	0	363
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	7.0			7.0	6.1		6.1	6.1	6.1		4.7
Lane Util. Factor	0.97	0.91			0.86	1.00		1.00	0.76	1.00		0.88
Frt	1.00	1.00			1.00	0.85		1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	5085			6408	1583		1863	3610	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	5085			6408	1583		1863	3610	1770		2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	482	1393	0	0	868	701	0	179	2634	70	0	370
RTOR Reduction (vph)	0	0	0	0	0	24	0	0	468	0	0	271
Lane Group Flow (vph)	482	1393	0	0	868	677	0	179	2166	70	0	99
Turn Type	Prot	NA			NA	pm+ov		NA	custom	Prot		pm+ov
Protected Phases	5	2			6	7		8	1	7		5
Permitted Phases						6						7
Actuated Green, G (s)	31.5	43.0			91.8	109.9		19.7	78.9	18.1		49.6
Effective Green, g (s)	31.5	43.0			91.8	109.9		19.7	78.9	18.1		49.6
Actuated g/C Ratio	0.17	0.23			0.50	0.59		0.11	0.43	0.10		0.27
Clearance Time (s)	4.7	7.0			7.0	6.1		6.1	6.1	6.1		4.7
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	584	1181			3179	940		198	1539	173		747
v/s Ratio Prot	0.14	c0.27			0.14	c0.07		c0.10	c0.60	0.04		0.02
v/s Ratio Perm						0.36						0.01
v/c Ratio	0.83	1.18			0.27	0.72		0.90	1.41	0.40		0.13
Uniform Delay, d1	74.1	71.0			27.2	26.6		81.7	53.0	78.4		51.4
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2	9.3	89.8			0.2	2.7		38.2	187.3	1.5		0.1
Delay (s)	83.4	160.8			27.4	29.4		119.9	240.3	79.9		51.5
Level of Service	F	F			C	C		F	F	E		D
Approach Delay (s)		140.9			28.3			232.7			56.0	
Approach LOS		F			C			F			E	

Intersection Summary			
HCM 2000 Control Delay	147.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	185.0	Sum of lost time (s)	25.3
Intersection Capacity Utilization	104.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	486	1370	0	0	856	687	0	175	2581	69	0	374
Future Volume (vph)	486	1370	0	0	856	687	0	175	2581	69	0	374
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	7.0			7.0	6.1		6.1	6.1	6.1		4.7
Lane Util. Factor	0.97	0.91			0.86	1.00		1.00	0.76	1.00		0.88
Frt	1.00	1.00			1.00	0.85		1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	5085			6408	1583		1863	3610	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	5085			6408	1583		1863	3610	1770		2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	496	1398	0	0	873	701	0	179	2634	70	0	382
RTOR Reduction (vph)	0	0	0	0	0	23	0	0	468	0	0	279
Lane Group Flow (vph)	496	1398	0	0	873	678	0	179	2166	70	0	103
Turn Type	Prot	NA			NA	pm+ov		NA	custom	Prot		pm+ov
Protected Phases	5	2			6	7		8	1	7		5
Permitted Phases						6						7
Actuated Green, G (s)	32.0	43.0			91.3	109.4		19.7	78.9	18.1		50.1
Effective Green, g (s)	32.0	43.0			91.3	109.4		19.7	78.9	18.1		50.1
Actuated g/C Ratio	0.17	0.23			0.49	0.59		0.11	0.43	0.10		0.27
Clearance Time (s)	4.7	7.0			7.0	6.1		6.1	6.1	6.1		4.7
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	593	1181			3162	936		198	1539	173		754
v/s Ratio Prot	0.14	c0.27			0.14	c0.07		c0.10	c0.60	0.04		0.02
v/s Ratio Perm						0.36						0.01
v/c Ratio	0.84	1.18			0.28	0.72		0.90	1.41	0.40		0.14
Uniform Delay, d1	74.0	71.0			27.5	27.0		81.7	53.0	78.4		51.1
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2	10.0	91.6			0.2	2.8		38.2	187.3	1.5		0.1
Delay (s)	83.9	162.6			27.7	29.8		119.9	240.3	79.9		51.2
Level of Service	F	F			C	C		F	F	E		D
Approach Delay (s)		142.0			28.6			232.7			55.6	
Approach LOS		F			C			F			E	

Intersection Summary			
HCM 2000 Control Delay	147.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	185.0	Sum of lost time (s)	25.3
Intersection Capacity Utilization	104.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

- Email from Duncan Hughes, Deputy Director, City of San Diego on AM Peak Hour Traffic Signal Cycle Lengths

Bill Darnell

From: Hughes, Duncan <DRHughes@sandiego.gov>
Sent: Monday, November 19, 2018 1:10 PM
To: Bill Darnell
Subject: RE: Signal cycle at I-805 northbound offramp at Sorrento v alley Road-Mira Mesa Blvd-Sorrento Valley Parkway intersection

As discussed, the InSync adaptive system only records and retains the last 30 days of count and period length data. I am unable therefore to go back and get data for June, 2018.

I did review the data for last Tuesday; the period length (cycle length) during the AM peak hours was generally around 185 seconds, with minor fluctuations of about 5 seconds above and below that number.

Duncan Hughes, P.E.
Deputy Director
City of San Diego
Transportation & Storm Water Department

T (619) 533-3141
www.sandiego.gov

Improving the quality of life through transportation

From: Bill Darnell [mailto:bdarnell@darnell-assoc.com]
Sent: Monday, November 19, 2018 11:36 AM
To: Hughes, Duncan <DRHughes@sandiego.gov>
Subject: Signal cycle at I-805 northbound offramp at Sorrento v alley Road-Mira Mesa Blvd-Sorrento Valley Parkway intersection

Mr. Hughes
As we discussed this morning your review of the AM signal timing at the intersection you indicated that a 190 second cycle was the appropriate cycle length for current conditions. Can you check your records and advise me on the cycle length that would have been appropriate for Tuesday June 12 or the week of June 12, 2018.
Thank you for your assistance.

Bill E. Darnell
Darnell & Associates
4411 Mercury Street, #207A
San Diego, CA. 92111
(619) 233-9373
bdarnell@darnell-assoc.com

- Copy of November 19, 2018 email requesting a copy of Synchro/Intersection Analysis worksheets not provided to support Christopher Mendiara' s memorandum and findings dated August 8, 2018

Bill Darnell

From: Alo, Leo <LAlo@sandiego.gov>
Sent: Monday, November 19, 2018 1:04 PM
To: Bill Darnell
Cc: Gonsalves, Ann
Subject: RE: MO VM Follow-up

Bill,

We do not have them but I believe we will be formally requesting the backup documentation if it has not been done already.

Thanks,

Leo Alo, RTE

Associate Traffic Engineer
City of San Diego
Development Services
(619) 446-5033

From: Bill Darnell <bdarnell@darnell-assoc.com>
Sent: Monday, November 19, 2018 12:04 PM
To: Alo, Leo <LAlo@sandiego.gov>
Cc: Gonsalves, Ann <AGonsalves@sandiego.gov>
Subject: RE: MO VM Follow-up

Leo

I need you to send me a copy of the synchro files that supports Christopher Mendiara's memorandum findings dated august 8,2018 submitted to Mr. Abney Schweitzer that was included in the October 3,2018 Appeal signed by HS Riley. To date I have not received any of the backup information related to the statements in the appeal submitted by Mr. Mendiara.

Bill E. Darnell
Darnell & Associates
4411 Mercury Street, #207A
San Diego, CA. 92111
(619) 233-9373
bdarnell@darnell-assoc.com

From: Alo, Leo <LAlo@sandiego.gov>
Sent: Wednesday, October 31, 2018 9:56 AM
To: Bill Darnell <bdarnell@darnell-assoc.com>
Subject: RE: MO VM Follow-up

- Copy of November 1, 2018 Memorandum responding to Christopher Mendiara' s comments dated August 8, 2018

Darnell & ASSOCIATES, INC.
TRANSPORTATION PLANNING & TRAFFIC ENGINEERING

MEMORANDUM

DATE: November 1, 2018

TO: Ms. Gina Austin, Austin Legal Group, APC

FROM: Bill E. Darnell

D&A Ref. No: 180303.

RE: Responses to LL&G Comments dated August 8, 2018 to Mr. Abhay Schweitzer, Techne regarding the 10170 Sorrento Valley Road Analysis – City Comments. The Traffic Access Analysis for the project located at 10150 Sorrento Valley Road City Project No. 545299.

Darnell & Associates, Inc. (D&A) has reviewed LL&G's August 8, 2018 comments on our D&A's June 19, 2018 Traffic Access Analysis for the 10150 Sorrento Valley Road Marijuana Outlet Project. The following summarizes our responses to LL&G's comment and each of the traffic related comments.

Comment 1: ***Existing Traffic Counts: LLG's counts were conducted in June of 2018. The counts used in the D&A report were conducted in March and April of 2018. While LLG's counts could be considered "summer" counts with respect to schools, the volumes are in many cases higher than the D&A volumes, resulting in a conservative analysis. One of the D&A volumes was estimated;***

Response 1: Darnell & Associates proceeded on the project in March 2018 and ordered and received traffic counts dated March 20, 2018, and submitted our study area trip generation report to City staff. The City staff responded that we needed to add the I-805 NB off ramp/Sorrento Valley Parkway at Sorrento Valley Road intersection to the study area. The new count was ordered and conducted on April 24, 2018. Therefore, the traffic counts utilized in our report have been collected during the time we prepared our traffic study and responded to all City comments to conform with City requirements.

Comment 2: ***Analysis Method: LLG utilized the latest version of the Highway Capacity Manual (HCM) intersection methodology (HCM 6). D&A used two outdated versions (HCM 2000 and HCM 2010);***

Response 2: D&A utilized Synchro 8 software that is acceptable to the City of San Diego. In addition, we secured Synchro 10 software and submitted the attached analysis showing that our June 19, 2018 analysis and conclusions satisfy City requirements and do not show any impact.

Comment 3: ***Segment Capacities: LLG and D&A used slightly different roadway capacities for two Carroll Canyon Road segments;***

Response 3: D&A capacities were submitted to the City of San Diego for approval. The capacity on Carroll Canyon Road east of I-805 was based on no raised median, which reduces the available capacity. The reduction does not create any impacts.

Comment 4: ***Local Roadway Project Traffic Distribution: LLG estimated that 60% of Project traffic would be oriented to local roadways; D&A assumed 45%.***

Response 4: D&A based distribution on our experience and discussions with the Applicant.

Comment 5: ***Cumulative Projects: LLG used a growth factor over 3 years to estimate near-term growth. D&A utilized a "list of Projects" approach that included 2 other nearby MO's, including the Proposed Project. Neither of these two competing projects should be included as only 1 of the 3 MO's could be developed, based on City code.***

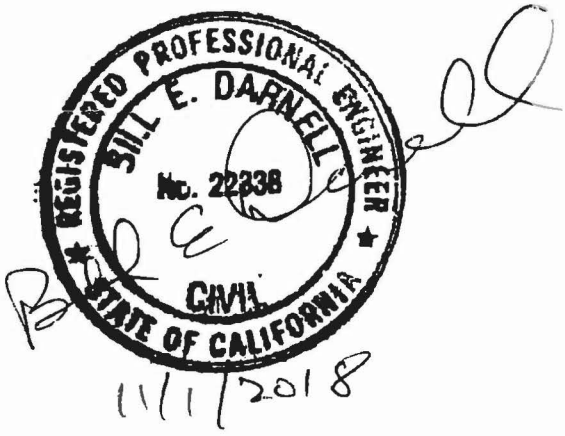
Response 5: D&A worked with City staff to identify cumulative projects to be used for cumulative impacts analysis. Descriptions, trip generation and distribution data for each project was submitted and was included in our traffic report submittals. Copies of the cumulative projects data is presented in Appendix B of the approved report. It should be noted that the City of San Diego Relief Marijuana Project Located at 10170 Sorrento Valley Road, City Project Number 575936 was included as a cumulative project in our cumulative impact analysis.

Comment 6: ***It is LLG's opinion twat the differences in approach and methodology would not result in either study's conclusions changing regarding significant impacts.***

Response 6: D&A agrees and/or additional analysis comparing Synchro 8 and Synchro 10 software confirms our June 19, 2018 traffic analysis and conclusion that the project does not have any direct/or cumulative impacts.

Please feel free to contact the office if you have any questions on the above responses.





ATTACHMENT B

- October 30, 2018 Memorandum to Ann Gonsalves and Leo Alo At the City of San Diego

Darnell & ASSOCIATES, INC.

TRANSPORTATION PLANNING & TRAFFIC ENGINEERING

TRANSMITAL

DATE: October 30, 2018

TO: Ann Gonsalves, City of San Diego
Leo Alo, City of San Diego

FROM: Bill Darnell, P.E.

D&A Ref. No: 180303

RE: Sorrento Valley Marijuana Outlet located at 10150 Sorrento Valley Road, City of San Diego Project Number: 544299

REGISTERED PROFESSIONAL ENGINEER
BILL E. DARNELL
No. 539
TRAFFIC
STATE OF CALIFORNIA
10/30/2018

I have reviewed the Linscott, Law and Greenspan (LLG) comments in the appeal on the subject project. In response to LL&G's comments on the use of outdated software, we purchased Synchro 10 Software and analyzed the 2019 Opening Year and 2019 Opening Year Plus Project AM/PM conditions. At the following intersections:

- I-805 SB Ramps / Carroll Canyon Rd & Sorrento Valley Rd
- Vista Sorrento Pkwy / I-805 NB Off-Ramp & Mira Mesa Blvd [c]

The analysis was prepared for the following conditions:

- Table 1 - Original Report Analysis Using HCM 2010 and Synchro 8,
- Table 2 - Original Report Analysis Optimized Using HCM 2010 and Synchro 8,
- Table 3 - Analysis Based on Using HCM 6,
- Table 4 - Optimized Analysis Based Using HCM 6.

The purpose of the analysis is to show that our original analysis using HCM 2010 and Synchro 8 has adequately analyzed the projects impacts and shows that the proposed project does not create any significant impacts as demonstrated in tables 1 thru 4 using our original HCM 2010 and Synchro 8 as well as the HCM 6 software where applicable.

Further review of Tables 3 and 4 identify the HCM 2010/HCM 6 does not support custom phasing that is required for the Vista Sorrento Parkway/I-805 Northbound Off Ramp& Mira Mesa Boulevard intersection.

By separate transmittal I will provide responses to each of the LL&G comments in the August 8, 2018 Memorandum to Mr. Abbey Schweitzer.

Table 1 – Original Analysis Using HCM 2010 and Synchro 8

#	Intersection	Traffic Control	Peak Hour	Cycle Length	Opening Year (2019)		Opening Year (2019) with Project		Δ Delay sec/veh	Significance
					Original Analysis		Original Analysis			
					Delay (a) sec/veh	LOS (b)	Delay (a) sec/veh	LOS (b)		
1	I-805 SB Ramps / Carroll Canyon Rd & Sorrento Valley Rd	Signal	AM	218.2	39.5	D	39.8	D	0.3	No
			PM	198.2	35.3	D	35.5	D	0.2	No
5	Vista Sorrento Pkwy / I-805 NB Off-Ramp & Mira Mesa Blvd (c)	Signal	AM	214.9	**93.8**	**F**	**94.7**	**F**	0.9	No
			PM	260.9	**57.5**	**E**	**58.2**	**E**	0.7	No

Notes:

(a) Delays are reported as the average control delay for the entire intersection at signalized intersections and the worst movement at unsignalized intersections.

(b) LOS calculations are based on the methodology outlined in the *2010 Highway Capacity Manual* (HCM) and performed using Synchro 8.

(c) LOS calculations are based on the methodology outlined in the *2000 Highway Capacity Manual* (HCM) and performed using Synchro 8. The HCM 2010/HCM6 computation does not support custom phasing.

(d) LOS calculations are based on the methodology outlined in the *2010 Highway Capacity Manual* (HCM) and performed using Synchro 10.

Table 2 – Original Analysis Optimized Using HCM 2010 and Synchro 8

#	Intersection	Traffic Control	Peak Hour	Cycle Length	Opening Year (2019)		Opening Year (2019) with Project			Δ Delay sec/veh	Significance
					Original Analysis Optimized		Cycle Length	Original Analysis Optimized			
					Delay (a) sec/veh	LOS (d)		Delay (a) sec/veh	LOS (d)		
1	I-805 SB Ramps / Carroll Canyon Rd & Sorrento Valley Rd	Signal	AM	145	43.9	D	145	44.0	D	0.1	No
			PM	145	32.8	C	145	33.0	C	0.2	No
5	Vista Sorrento Pkwy / I-805 NB Off-Ramp & Mira Mesa Blvd (c)	Signal	AM	150	**97.4**	**F**	150	**97.5**	**F**	0.1	No
			PM	120	30.1	C	120	30.4	C	0.3	No

Notes:

a) Delays are reported as the average control delay for the entire intersection at signalized intersections and the worst movement at unsignalized intersections.

b) LOS calculations are based on the methodology outlined in the *2010 Highway Capacity Manual* (HCM) and performed using Synchro 8.

c) LOS calculations are based on the methodology outlined in the *2000 Highway Capacity Manual* (HCM) and performed using Synchro 8. The HCM 2010/HCM6 computation does not support custom phasing.

d) LOS calculations are based on the methodology outlined in the *2010 Highway Capacity Manual* (HCM) and performed using Synchro 10.

Table 3 – Analysis Based on HCM 6

#	Intersection	Traffic Control	Peak Hour	Cycle Length	Opening Year (2019)		Opening Year (2019) w/Proj		Δ Delay sec/veh	Significance
					HCM 6		HCM 6			
					Delay (a) sec/veh	LOS (b)	Delay (a) sec/veh	LOS (b)		
1	I-805 SB Ramps / Carroll Canyon Rd & Sorrento Valley Rd	Signal	AM	218.2	49.4	D	49.6	D	0.2	No
			PM	198.2	45.5	D	45.7	D	0.2	No
5	Vista Sorrento Pkwy / I-805 NB Off-Ramp & Mira Mesa Blvd [c]	Signal	AM	214.9	n/a (c)		n/a (c)		n/a (c)	No
			PM	260.9					n/a (c)	No

a) Delays are reported as the average control delay for the entire intersection at signalized intersections and the worst movement at unsignalized intersections.

b) LOS calculations are based on the methodology outlined in the *2010 Highway Capacity Manual* (HCM) and performed using Synchro 8.

c) LOS calculations are based on the methodology outlined in the *2000 Highway Capacity Manual* (HCM) and performed using Synchro 8. The HCM 2010/HCM6 computation does not support custom phasing.

d) LOS calculations are based on the methodology outlined in the *2010 Highway Capacity Manual* (HCM) and performed using Synchro 10.

Table 4 – Optimized Analysis Using HCM 6

#	Intersection	Traffic Control	Peak Hour	Cycle Length	Opening Year (2019)		Opening Year (2019) w/Proj		Δ Delay sec/veh	Significance
					HCM 6		HCM 6			
					Delay (a) sec/veh	LOS (b)	Delay (a) sec/veh	LOS (b)		
1	I-805 SB Ramps / Carroll Canyon Rd & Sorrento Valley Rd	Signal	AM	145	43.3	D	43.4	D	0.1	No
			PM	145	32.7	C	32.9	C	0.2	No
5	Vista Sorrento Pkwy / I-805 NB Off-Ramp & Mira Mesa Blvd [c]	Signal	AM	150	n/a (c)		n/a (c)		n/a (c)	No
			PM	120					n/a (c)	No

a) Delays are reported as the average control delay for the entire intersection at signalized intersections and the worst movement at unsignalized intersections.

b) LOS calculations are based on the methodology outlined in the *2010 Highway Capacity Manual* (HCM) and performed using Synchro 8.

c) LOS calculations are based on the methodology outlined in the *2000 Highway Capacity Manual* (HCM) and performed using Synchro 8. The HCM 2010/HCM6 computation does not support custom phasing.

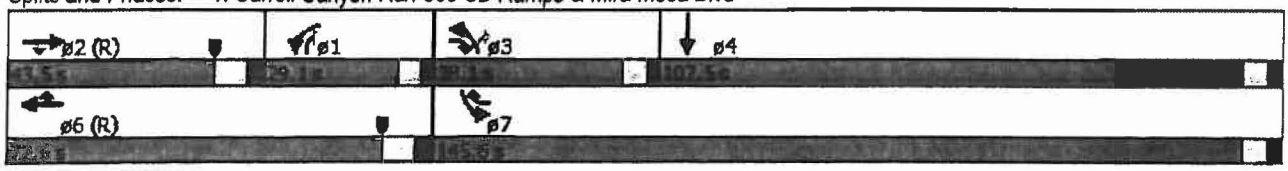
d) LOS calculations are based on the methodology outlined in the *2010 Highway Capacity Manual* (HCM) and performed using Synchro 10.



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBT
Lane Configurations									
Volume (vph)	584	152	20	335	628	37	171	1714	464
Turn Type	NA	pm+ov	Prot	NA	pm+ov	Prot	pm+ov	Prot	NA
Protected Phases	2	3	1	6	7	3	1	7	4
Permitted Phases		2			6		3		
Detector Phase	2	3	1	6	7	3	1	7	4
Switch Phase									
Minimum Initial (s)	20.0	17.0	13.0	20.0	5.0	17.0	13.0	5.0	5.0
Minimum Split (s)	28.5	23.1	19.1	62.5	12.5	23.1	19.1	12.5	55.5
Total Split (s)	43.5	38.1	29.1	72.6	145.6	38.1	29.1	145.6	107.5
Total Split (%)	19.9%	17.5%	13.3%	33.3%	66.7%	17.5%	13.3%	66.7%	49.3%
Yellow Time (s)	5.5	4.1	4.1	5.5	4.5	4.1	4.1	4.5	4.5
All-Red Time (s)	3.0	2.0	2.0	3.0	3.0	2.0	2.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	8.5	6.1	6.1	8.5	7.5	6.1	6.1	7.5	7.5
Lead/Lag	Lead	Lead	Lag			Lead	Lag		Lag
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	Yes		Yes
Recall Mode	C-Max	None	None	C-Max	None	None	None	None	None

Intersection Summary
Cycle Length: 218.2
Actuated Cycle Length: 218.2
Offset: 35 (16%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 145
Control Type: Actuated-Coordinated

Splits and Phases: 1: Carroll Canyon Rd/I-805 SB Ramps & Mira Mesa Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	
Lane Configurations												
Volume (veh/h)	0	584	152	20	335	628	37	0	171	1741	484	66
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1863	1863	1863	0	1863	1863	1863	1900
Adj Flow Rate, veh/h	0	621	162	21	356	668	39	0	182	1823	494	91
Adj No. of Lanes	0	3	1	1	2	2	2	0	2	2	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	2	2	2	2	2	2	0	2	2	2	2
Cap, veh/h	0	966	427	198	1232	2545	274	0	0	1945	1351	248
Arrive On Green	0.00	0.19	0.19	0.11	0.35	0.35	0.08	0.00	0.00	0.57	0.45	0.45
Sat Flow, veh/h	0	5253	1583	1774	3539	2787	3442	39		3442	2988	548
Grp Volume(v), veh/h	0	621	162	21	356	668	39	79.1		1823	292	293
Grp Sat Flow(s),veh/h/ln	0	1695	1583	1774	1770	1393	1721	E		1721	1770	1766
Q Serve(g_s), s	0.0	20.8	10.3	2.0	13.4	5.0	1.9			90.2	19.9	20.1
Cycle Q Clear(g_c), s	0.0	20.8	10.3	2.0	13.4	5.0	1.9			90.2	19.9	20.1
Prop In Lane	0.00		1.00	1.00		1.00	1.00			1.00		0.31
Lane Grp Cap(c), veh/h	0	966	427	198	1232	2545	274			1945	800	799
V/C Ratio(X)	0.00	0.64	0.38	0.11	0.29	0.26	0.14			0.94	0.36	0.37
Avail Cap(c_a), veh/h	0	966	427	198	1232	2545	598			2581	961	959
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.97	0.97	0.97	1.00			1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	68.8	27.5	73.5	43.5	0.9	78.9			37.0	33.1	33.1
Incr Delay (d2), s/veh	0.0	3.3	2.6	0.2	0.6	0.2	10.2			8.1	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	10.0	5.0	1.0	6.7	1.9	0.9			44.1	9.8	9.8
LnGrp Delay(d),s/veh	0.0	72.1	30.0	73.7	44.1	1.2	79.1			43.2	33.4	33.4
LnGrp LOS		E	C	E	D	A	E			D	C	C
Approach Vol, veh/h		783			1045						2408	
Approach Delay, s/veh		63.4			17.2						40.8	
Approach LOS		E			B						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4		6	7	
Phs Duration (G+Y+Rc), s	62.9	43.5	20.8	80.8		106.4	111.6	
Change Period (Y+Rc), s	8.5	* 8.5	6.1	7.5		8.5	7.5	
Max Green Setting (Gmax), s	20.6	* 35	32.0	100.0		64.1	138.1	
Max Q Clear Time (g_c+I1), s	4.0	22.8	3.9	22.1		15.4	92.2	
Green Ext Time (p_c), s	5.0	3.9	0.1	4.1		6.2	11.9	

Intersection Summary	
HCM 2010 Ctrl Delay	39.5
HCM 2010 LOS	D

Notes

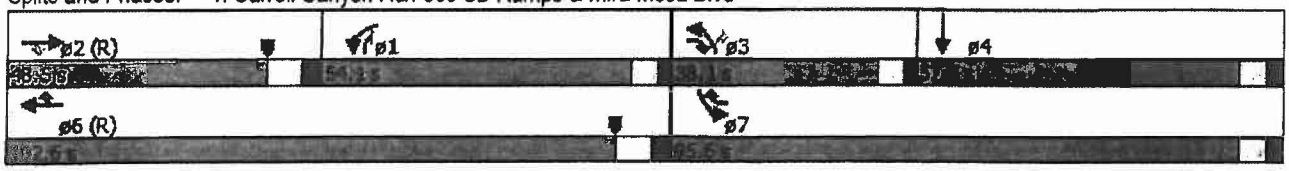
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBT
Lane Configurations									
Volume (vph)	844	99	84	361	1520	122	1362	932	175
Turn Type	NA	pm+ov	Prot	NA	pm+ov	Prot	pm+ov	Prot	NA
Protected Phases	2	3	1	6	7	3	1	7	4
Permitted Phases		2			6		3		
Detector Phase	2	3	1	6	7	3	1	7	4
Switch Phase									
Minimum Initial (s)	20.0	17.0	13.0	20.0	5.0	17.0	13.0	5.0	5.0
Minimum Split (s)	28.5	23.1	19.1	62.5	12.5	23.1	19.1	12.5	55.5
Total Split (s)	48.5	38.1	54.1	102.6	95.6	38.1	54.1	95.6	57.5
Total Split (%)	24.5%	19.2%	27.3%	51.8%	48.2%	19.2%	27.3%	48.2%	29.0%
Yellow Time (s)	5.5	4.1	4.1	5.5	4.5	4.1	4.1	4.5	4.5
All-Red Time (s)	3.0	2.0	2.0	3.0	3.0	2.0	2.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	8.5	6.1	6.1	8.5	7.5	6.1	6.1	7.5	7.5
Lead/Lag	Lead	Lead	Lag			Lead	Lag		Lag
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	Yes		Yes
Recall Mode	C-Max	None	None	C-Max	None	None	None	None	None

Intersection Summary

Cycle Length: 198.2
Actuated Cycle Length: 198.2
Offset: 35 (18%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 145
Control Type: Actuated-Coordinated

Splits and Phases: 1: Carroll Canyon Rd/I-805 SB Ramps & Mira Mesa Blvd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	
Lane Configurations		↑↑↑	↱	↰	↑↑	↱↱	↰↰		↱↱	↰↰	↑↑↱	
Volume (veh/h)	0	844	99	84	361	1520	122	0	1362	932	175	49
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1863	1863	1863	0	1863	1863	1863	1900
Adj Flow Rate, veh/h	0	970	114	97	415	1747	140	0	1566	1071	201	56
Adj No. of Lanes	0	3	1	1	2	2	2	0	2	2	2	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	0	2	2	2	2	2	2	0	2	2	2	2
Cap, veh/h	0	1220	541	485	1998	2519	350	0	0	1169	554	150
Arrive On Green	0.00	0.24	0.24	0.27	0.56	0.56	0.10	0.00	0.00	0.34	0.20	0.20
Sat Flow, veh/h	0	5253	1583	1774	3539	2787	3442	140		3442	2752	748
Grp Volume(v), veh/h	0	970	114	97	415	1747	140	70.8		1071	127	130
Grp Sat Flow(s),veh/h/ln	0	1695	1583	1774	1770	1393	1721	E		1721	1770	1731
Q Serve(g_s), s	0.0	29.9	3.2	7.0	9.6	26.9	6.3			49.7	10.3	10.8
Cycle Q Clear(g_c), s	0.0	29.9	3.2	7.0	9.6	26.9	6.3			49.7	10.3	10.8
Prop In Lane	0.00		1.00	1.00		1.00	1.00			1.00		0.43
Lane Grp Cap(c), veh/h	0	1220	541	485	1998	2519	350			1169	554	548
V/C Ratio(X)	0.00	0.79	0.21	0.20	0.21	0.69	0.40			0.92	0.36	0.37
Avail Cap(c_a), veh/h	0	1220	541	485	1998	2519	661			1819	531	519
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.82	0.82	0.82	0.92			1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	59.5	14.9	46.5	17.9	2.1	70.1			52.8	57.3	57.5
Incr Delay (d2), s/veh	0.0	5.4	0.9	0.2	0.2	1.3	0.7			5.9	0.6	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	14.6	2.0	3.5	4.8	10.4	3.1			24.5	5.1	5.2
LnGrp Delay(d),s/veh	0.0	64.9	15.8	46.7	18.1	3.4	70.8			58.1	57.9	58.2
LnGrp LOS		E	B	D	B	A	E			E	E	E
Approach Vol, veh/h		1084			2259						1328	
Approach Delay, s/veh		59.7			7.9						58.1	
Approach LOS		E			A						E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4		6	7	
Phs Duration (G+Y+Rc), s	85.4	48.5	23.1	41.0		133.9	64.1	
Change Period (Y+Rc), s	8.5	* 8.5	6.1	7.5		8.5	7.5	
Max Green Setting (Gmax), s	45.6	* 40	32.0	50.0		94.1	88.1	
Max Q Clear Time (g_c+I1), s	9.0	31.9	8.3	12.8		28.9	51.7	
Green Ext Time (p_c), s	17.8	4.3	0.4	1.6		21.6	4.9	

Intersection Summary	
HCM 2010 Ctrl Delay	35.3
HCM 2010 LOS	D

Notes

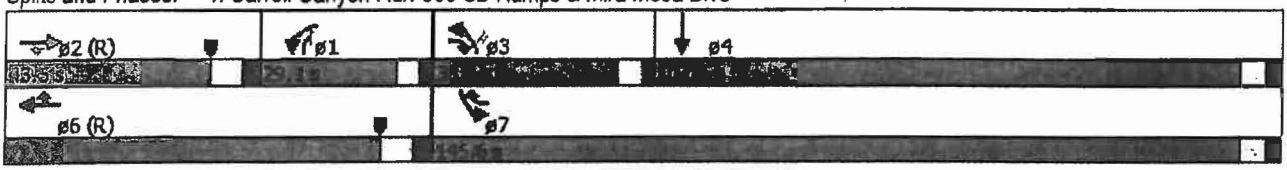
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	EBR	WBL	WBT	NBR	NBL	NBR	SBL	SBT
Lane Configurations									
Volume (vph)	584	157	36	335	628	42	196	1714	473
Turn Type	NA	pm+ov	Prot	NA	pm+ov	Prot	pm+ov	Prot	NA
Protected Phases	2	3	1	6	7	3	1	7	4
Permitted Phases		2			6		3		
Detector Phase	2	3	1	6	7	3	1	7	4
Switch Phase									
Minimum Initial (s)	20.0	17.0	13.0	20.0	5.0	17.0	13.0	5.0	5.0
Minimum Split (s)	28.5	23.1	19.1	62.5	12.5	23.1	19.1	12.5	55.5
Total Split (s)	43.5	38.1	29.1	72.6	145.6	38.1	29.1	145.6	107.5
Total Split (%)	19.9%	17.5%	13.3%	33.3%	66.7%	17.5%	13.3%	66.7%	49.3%
Yellow Time (s)	5.5	4.1	4.1	5.5	4.5	4.1	4.1	4.5	4.5
All-Red Time (s)	3.0	2.0	2.0	3.0	3.0	2.0	2.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	8.5	6.1	6.1	8.5	7.5	6.1	6.1	7.5	7.5
Lead/Lag	Lead	Lead	Lag			Lead	Lag		Lag
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	Yes		Yes
Recall Mode	C-Max	None	None	C-Max	None	None	None	None	None

Intersection Summary

Cycle Length: 218.2
Actuated Cycle Length: 218.2
Offset: 35 (16%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 145
Control Type: Actuated-Coordinated

Splits and Phases: 1: Carroll Canyon Rd/I-805 SB Ramps & Mira Mesa Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	
Lane Configurations		↑↑↑	↱	↰	↑↑	↱↱	↰↰		↱↱	↰↰	↑↑↱	
Volume (veh/h)	0	584	157	36	335	628	42	0	196	1714	473	86
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1863	1863	1863	0	1863	1863	1863	1900
Adj Flow Rate, veh/h	0	621	167	38	356	668	45	0	209	1823	503	91
Adj No. of Lanes	0	3	1	1	2	2	2	0	2	2	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	2	2	2	2	2	2	0	2	2	2	2
Cap, veh/h	0	966	432	198	1232	2545	286	0	0	1945	1346	242
Arrive On Green	0.00	0.19	0.19	0.11	0.35	0.35	0.08	0.00	0.00	0.57	0.45	0.45
Sat Flow, veh/h	0	5253	1583	1774	3539	2787	3442	45		3442	2997	540
Grp Volume(v), veh/h	0	621	167	38	356	668	45	78.7		1823	296	298
Grp Sat Flow(s),veh/h/ln	0	1695	1583	1774	1770	1393	1721	E		1721	1770	1767
Q Serve(g_s), s	0.0	20.8	10.6	3.6	13.4	5.0	2.2			90.2	20.4	20.6
Cycle Q Clear(g_c), s	0.0	20.8	10.6	3.6	13.4	5.0	2.2			90.2	20.4	20.6
Prop In Lane	0.00		1.00	1.00		1.00	1.00			1.00		0.31
Lane Grp Cap(c), veh/h	0	966	432	198	1232	2545	286			1945	794	793
V/C Ratio(X)	0.00	0.64	0.39	0.19	0.29	0.26	0.16			0.94	0.37	0.38
Avail Cap(c_a), veh/h	0	966	432	198	1232	2545	598			2581	961	960
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.97	0.97	0.97	1.00			1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	68.8	27.2	74.2	43.5	0.9	78.5			37.0	33.6	33.6
Incr Delay (d2), s/veh	0.0	3.3	2.8	0.4	0.6	0.2	0.3			6.1	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	10.0	5.1	1.8	6.7	1.9	1.1			44.4	10.0	10.1
LnGrp Delay(d),s/veh	0.0	72.1	29.8	74.7	44.1	1.2	78.7			43.2	33.9	33.9
LnGrp LOS		E	C	E	D	A	E			D	C	C
Approach Vol, veh/h		788			1062						2417	
Approach Delay, s/veh		63.1			18.2						40.9	
Approach LOS		E			B						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4		6	7	
Phs Duration (G+Y+Rc), s	62.9	43.5	21.4	90.2		106.4	111.6	
Change Period (Y+Rc), s	8.5	* 8.5	6.1	7.5		8.5	7.5	
Max Green Setting (Gmax), s	20.6	* 35	32.0	100.0		64.1	138.1	
Max Q Clear Time (g_c+I1), s	5.6	22.8	4.2	22.6		15.4	92.2	
Green Ext Time (p_c), s	4.8	3.0	0.1	4.2		6.3	11.9	

Intersection Summary	
HCM 2010 Ctrl Delay	39.8
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	EBR	WBL	WBT	NBR	NBL	NBR	SBL	SBT
Lane Configurations									
Volume (vph)	844	107	112	361	1520	130	1406	932	191
Turn Type	NA	pm+ov	Prot	NA	pm+ov	Prot	pm+ov	Prot	NA
Protected Phases	2	3	1	6	7	3	1	7	4
Permitted Phases		2			6		3		
Detector Phase	2	3	1	6	7	3	1	7	4
Switch Phase									
Minimum Initial (s)	20.0	17.0	13.0	20.0	5.0	17.0	13.0	5.0	5.0
Minimum Split (s)	28.5	23.1	19.1	62.5	12.5	23.1	19.1	12.5	55.5
Total Split (s)	48.5	38.1	54.1	102.6	95.6	38.1	54.1	95.6	57.5
Total Split (%)	24.5%	19.2%	27.3%	51.8%	48.2%	19.2%	27.3%	48.2%	29.0%
Yellow Time (s)	5.5	4.1	4.1	5.5	4.5	4.1	4.1	4.5	4.5
All-Red Time (s)	3.0	2.0	2.0	3.0	3.0	2.0	2.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	8.5	6.1	6.1	8.5	7.5	6.1	6.1	7.5	7.5
Lead/Lag	Lead	Lead	Lag			Lead	Lag		Lag
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	Yes		Yes
Recall Mode	C-Max	None	None	C-Max	None	None	None	None	None

Intersection Summary

Cycle Length: 198.2
Actuated Cycle Length: 198.2
Offset: 35 (18%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 145
Control Type: Actuated-Coordinated

Splits and Phases: 1: Carroll Canyon Rd/I-805 SB Ramps & Mira Mesa Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	
Lane Configurations		↑↑↑	↱	↰	↑↑	↱↱	↰↰		↱↱	↰↰	↑↑	
Volume (veh/h)	0	844	107	112	361	1520	130	0	1406	932	191	49
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1863	1863	1863	0	1863	1863	1863	1900
Adj Flow Rate, veh/h	0	970	123	129	415	1747	149	0	1616	1071	220	56
Adj No. of Lanes	0	3	1	1	2	2	2	0	2	2	2	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	0	2	2	2	2	2	2	0	2	2	2	2
Cap, veh/h	0	1220	541	485	1998	2519	351	0	0	1169	565	141
Arrive On Green	0.00	0.24	0.24	0.27	0.56	0.56	0.10	0.00	0.00	0.34	0.20	0.20
Sat Flow, veh/h	0	5253	1583	1774	3539	2787	3442	149		3442	2809	700
Grp Volume(v), veh/h	0	970	123	129	415	1747	149	70.9		1071	137	139
Grp Sat Flow(s),veh/h/ln	0	1695	1583	1774	1770	1393	1721	E		1721	1770	1739
Q Serve(g_s), s	0.0	29.9	3.5	9.5	9.6	26.9	6.8			49.7	11.2	11.6
Cycle Q Clear(g_c), s	0.0	29.9	3.5	9.5	9.6	26.9	6.8			49.7	11.2	11.6
Prop In Lane	0.00		1.00	1.00		1.00	1.00			1.00		0.40
Lane Grp Cap(c), veh/h	0	1220	541	485	1998	2519	351			1169	356	350
V/C Ratio(X)	0.00	0.79	0.23	0.27	0.21	0.69	0.42			0.92	0.38	0.40
Avail Cap(c_a), veh/h	0	1220	541	485	1998	2519	351			1819	531	522
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.81	0.81	0.81	0.71			1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	59.5	15.0	47.4	17.9	2.1	70.3			52.8	57.7	57.8
Incr Delay (d2), s/veh	0.0	5.4	1.0	0.2	0.2	1.3	0.6			5.3	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	14.6	2.1	4.7	4.8	10.4	3.3			24.5	5.5	5.6
LnGrp Delay(d),s/veh	0.0	64.9	16.0	47.7	18.1	3.4	70.9			58.1	58.3	58.6
LnGrp LOS		E	B	D	B	A	E			E	E	E
Approach Vol, veh/h		1093			2291						1347	
Approach Delay, s/veh		59.4			8.5						58.3	
Approach LOS		E			A						E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4		6	7	
Phs Duration (G+Y+Rc), s	85.4	48.5	23.1	41.0		133.9	64.1	
Change Period (Y+Rc), s	8.5	* 8.5	6.1	7.5		8.5	7.5	
Max Green Setting (Gmax), s	45.6	* 40	32.0	50.0		94.1	88.1	
Max Q Clear Time (g_c+I1), s	11.5	31.9	8.8	13.6		28.9	51.7	
Green Ext Time (p_c), s	17.4	4.3	0.5	1.7		22.0	4.9	

Intersection Summary	
HCM 2010 Ctrl Delay	35.5
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	584	152	20	335	628	37	0	171	1714	464	86
Future Volume (veh/h)	0	584	152	20	335	628	37	0	171	1714	464	86
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	1870	1870	0	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	621	162	21	356	668	39	0	182	1823	494	91
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	2	2	2	2	2	2	0	2	2	2	2
Cap, veh/h	0	820	366	307	1322	2585	244	0	0	1916	1367	251
Arrive On Green	0.00	0.16	0.16	0.17	0.37	0.37	0.07	0.00	0.00	0.55	0.46	0.46
Sat Flow, veh/h	0	5274	1585	1781	3554	2790	3456	39		3456	2999	550
Grp Volume(v), veh/h	0	621	162	21	356	668	39	95.5		1823	292	293
Grp Sat Flow(s),veh/h/ln	0	1702	1585	1781	1777	1395	1728	F		1728	1777	1771
Q Serve(g_s), s	0.0	25.3	12.2	2.2	15.2	5.0	2.3			108.4	23.3	23.5
Cycle Q Clear(g_c), s	0.0	25.3	12.2	2.2	15.2	5.0	2.3			108.4	23.3	23.5
Prop In Lane	0.00		1.00	1.00		1.00	1.00			1.00		0.31
Lane Grp Cap(c), veh/h	0	820	366	307	1322	2585	244			1916	810	808
V/C Ratio(X)	0.00	0.76	0.44	0.07	0.27	0.26	0.16			0.95	0.36	0.36
Avail Cap(c_a), veh/h	0	820	366	307	1322	2585	507			2189	815	813
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.97	0.97	0.97	1.00			1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	87.4	34.6	75.5	47.8	0.8	95.2			45.8	38.6	38.7
Incr Delay (d2), s/veh	0.0	6.5	3.8	0.1	0.5	0.2	0.3			9.5	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	11.8	5.2	1.0	7.0	0.8	1.1			49.0	10.6	10.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	93.9	38.5	75.6	48.2	1.0	95.5			55.2	38.9	38.9
LnGrp LOS	A	F	D	E	D	A	F			E	D	D
Approach Vol, veh/h		783			1045						2408	
Approach Delay, s/veh		82.4			18.6						51.3	
Approach LOS		F			B						D	

Timer - Assigned Phs	1	2	3	4		6	7
Phs Duration (G+Y+Rc), s	46.1	43.5	21.5	106.9		89.6	128.4
Change Period (Y+Rc), s	8.5	* 8.5	6.1	7.5		8.5	7.5
Max Green Setting (Gmax), s	23.0	* 35	32.0	100.0		64.1	138.1
Max Q Clear Time (g_c+I1), s	4.2	27.3	4.3	25.5		17.2	110.4
Green Ext Time (p_c), s	0.0	2.9	0.1	4.1		6.1	10.5

Intersection Summary	
HCM 6th Ctrl Delay	49.4
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	844	99	84	361	1520	122	0	1362	932	175	49
Future Volume (veh/h)	0	844	99	84	361	1520	122	0	1362	932	175	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	1870	1870	0	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	970	114	97	415	1747	140	0	1566	1071	201	56
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	0	2	2	2	2	2	2	0	2	2	2	2
Cap, veh/h	0	1032	456	607	2082	2564	297	0	0	1152	598	163
Arrive On Green	0.00	0.20	0.20	0.34	0.59	0.59	0.09	0.00	0.00	0.33	0.22	0.22
Sat Flow, veh/h	0	5274	1585	1781	3554	2790	3456	140		3456	2762	750
Grp Volume(v), veh/h	0	970	114	97	415	1747	140	87.3		1071	127	130
Grp Sat Flow(s),veh/h/ln	0	1702	1585	1781	1777	1395	1728	F		1728	1777	1735
Q Serve(g_s), s	0.0	37.1	3.9	7.5	10.8	26.8	7.6			59.3	12.0	12.5
Cycle Q Clear(g_c), s	0.0	37.1	3.9	7.5	10.8	26.8	7.6			59.3	12.0	12.5
Prop In Lane	0.00		1.00	1.00		1.00	1.00			1.00		0.43
Lane Grp Cap(c), veh/h	0	1032	456	607	2082	2564	297			1152	385	376
V/C Ratio(X)	0.00	0.94	0.25	0.16	0.20	0.68	0.47			0.93	0.33	0.34
Avail Cap(c_a), veh/h	0	1032	456	607	2082	2564	558			1538	449	438
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.82	0.82	0.82	0.92			1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	77.8	22.6	45.5	19.2	1.7	86.2			63.8	65.4	65.7
Incr Delay (d2), s/veh	0.0	16.9	1.3	0.1	0.2	1.2	1.1			8.6	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	18.0	2.4	3.4	4.7	4.1	3.5			27.6	5.6	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	94.7	23.9	45.6	19.4	2.9	87.3			72.3	65.9	66.2
LnGrp LOS	A	F	C	D	B	A	F			E	E	E
Approach Vol, veh/h		1084			2259						1328	
Approach Delay, s/veh		87.3			7.8						71.1	
Approach LOS		F			A						E	

Timer - Assigned Phs	1	2	3	4		6	7
Phs Duration (G+Y+Rc), s	76.0	48.5	23.1	50.4		124.5	73.5
Change Period (Y+Rc), s	8.5	* 8.5	6.1	7.5		8.5	7.5
Max Green Setting (Gmax), s	48.0	* 40	32.0	50.0		94.1	88.1
Max Q Clear Time (g_c+I1), s	9.5	39.1	9.6	14.5		28.8	61.3
Green Ext Time (p_c), s	0.3	0.6	0.4	1.6		20.7	4.7

Intersection Summary	
HCM 6th Ctrl Delay	45.5
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	584	152	20	335	628	37	0	171	1714	464	86
Future Volume (veh/h)	0	584	152	20	335	628	37	0	171	1714	464	86
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	1870	1870	0	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	621	162	21	356	668	39	0	182	1823	494	91
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	2	2	2	2	2	2	0	2	2	2	2
Cap, veh/h	0	1247	534	130	1336	2482	321	0	0	1776	1136	208
Arrive On Green	0.00	0.24	0.24	0.07	0.38	0.38	0.09	0.00	0.00	0.51	0.38	0.38
Sat Flow, veh/h	0	5274	1585	1781	3554	2790	3456	39		3456	2999	550
Grp Volume(v), veh/h	0	621	162	21	356	668	39	60.5		1823	292	293
Grp Sat Flow(s),veh/h/ln	0	1702	1585	1781	1777	1395	1728	E		1728	1777	1771
Q Serve(g_s), s	0.0	15.2	7.1	1.6	10.1	5.0	1.5			74.5	17.7	17.9
Cycle Q Clear(g_c), s	0.0	15.2	7.1	1.6	10.1	5.0	1.5			74.5	17.7	17.9
Prop In Lane	0.00		1.00	1.00		1.00	1.00			1.00		0.31
Lane Grp Cap(c), veh/h	0	1247	534	130	1336	2482	321			1776	673	671
V/C Ratio(X)	0.00	0.50	0.30	0.16	0.27	0.27	0.12			1.03	0.43	0.44
Avail Cap(c_a), veh/h	0	1247	534	160	1336	2482	405			1776	673	671
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.97	0.97	0.97	1.00			1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	47.2	16.4	63.0	31.4	1.2	60.3			35.3	33.5	33.5
Incr Delay (d2), s/veh	0.0	1.4	1.5	0.6	0.5	0.3	0.2			28.5	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	6.7	2.8	0.8	4.5	0.8	0.7			37.5	7.8	7.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	48.6	17.8	63.6	31.9	1.4	60.5			63.7	33.9	34.0
LnGrp LOS	A	D	B	E	C	A	E			F	C	C
Approach Vol, veh/h		783			1045						2408	
Approach Delay, s/veh		42.2			13.0						56.5	
Approach LOS		D			B						E	

Timer - Assigned Phs	1	2	3	4		6	7
Phs Duration (G+Y+Rc), s	19.1	43.9	19.6	62.4		63.0	82.0
Change Period (Y+Rc), s	8.5	* 8.5	6.1	7.5		8.5	7.5
Max Green Setting (Gmax), s	13.0	* 35	17.0	51.4		54.5	74.5
Max Q Clear Time (g_c+I1), s	3.6	17.2	3.5	19.9		12.1	76.5
Green Ext Time (p_c), s	0.0	4.6	0.1	3.9		6.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	43.3
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	584	152	20	335	628	37	0	171	1714	464	86
Future Volume (veh/h)	0	584	152	20	335	628	37	0	171	1714	464	86
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1863	1863	1863	0	1863	1863	1863	1900
Adj Flow Rate, veh/h	0	621	162	21	356	668	39	0	182	1823	494	91
Adj No. of Lanes	0	3	1	1	2	2	2	0	2	2	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	2	2	2	2	2	2	0	2	2	2	2
Cap, veh/h	0	1242	534	130	1330	2479	320	0	0	1768	1132	208
Arrive On Green	0.00	0.24	0.24	0.07	0.38	0.38	0.09	0.00	0.00	0.51	0.38	0.38
Sat Flow, veh/h	0	5253	1583	1774	3539	2787	3442	39		3442	2988	548
Grp Volume(v), veh/h	0	621	162	21	356	668	39	60.5		1823	292	293
Grp Sat Flow(s),veh/h/ln	0	1695	1583	1774	1770	1393	1721	E		1721	1770	1766
Q Serve(g_s), s	0.0	15.2	7.1	1.6	10.1	5.0	1.5			74.5	17.8	17.9
Cycle Q Clear(g_c), s	0.0	15.2	7.1	1.6	10.1	5.0	1.5			74.5	17.8	17.9
Prop In Lane	0.00		1.00	1.00		1.00	1.00			1.00		0.31
Lane Grp Cap(c), veh/h	0	1242	534	130	1330	2479	320			1768	670	669
V/C Ratio(X)	0.00	0.50	0.30	0.16	0.27	0.27	0.12			1.03	0.43	0.44
Avail Cap(c_a), veh/h	0	1242	534	159	1330	2479	404			1768	670	669
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.97	0.97	0.97	1.00			1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	47.2	16.4	63.0	31.4	1.2	60.3			35.2	33.5	33.5
Incr Delay (d2), s/veh	0.0	1.4	1.5	0.6	0.5	0.3	0.2			29.8	0.4	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.3	3.6	0.8	5.0	1.9	0.7			42.4	8.7	8.8
LnGrp Delay(d),s/veh	0.0	48.6	17.8	63.6	31.9	1.4	60.5			65.0	33.9	34.0
LnGrp LOS		D	B	E	C	A	E			F	C	C
Approach Vol, veh/h		783			1045						2408	
Approach Delay, s/veh		42.3			13.0						57.5	
Approach LOS		D			B						E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4		6	7	
Phs Duration (G+Y+Rc), s	19.1	43.9	19.6	62.4		63.0	82.0	
Change Period (Y+Rc), s	8.5	* 8.5	6.1	7.5		8.5	7.5	
Max Green Setting (Gmax), s	13.0	* 35	17.0	51.4		54.5	74.5	
Max Q Clear Time (g_c+I1), s	3.6	17.2	3.5	19.9		12.1	76.5	
Green Ext Time (p_c), s	0.0	4.6	0.1	3.9		6.1	0.0	

Intersection Summary	
HCM 2010 Ctrl Delay	43.9
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	426	1463	0	0	679	464	0	181	2190	47	0	395
Future Volume (vph)	426	1463	0	0	679	464	0	181	2190	47	0	395
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	7.0			7.0	6.1		6.1	4.7	6.1		4.7
Lane Util. Factor	0.97	0.91			0.86	1.00		1.00	0.76	1.00		0.88
Frt	1.00	1.00			1.00	0.85		1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	5085			6408	1583		1863	3610	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	5085			6408	1583		1863	3610	1770		2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	435	1493	0	0	693	473	0	185	2235	48	0	403
RTOR Reduction (vph)	0	0	0	0	0	32	0	0	256	0	0	290
Lane Group Flow (vph)	435	1493	0	0	693	441	0	185	1979	48	0	113
Turn Type	Prot	NA			NA	pm+ov		NA	custom	Prot		pm+ov
Protected Phases	5	2			6	7		8	1	7		5
Permitted Phases						6			8			7
Actuated Green, G (s)	24.1	41.6			67.2	85.2		16.8	66.5	18.0		42.1
Effective Green, g (s)	24.1	41.6			67.2	85.2		16.8	66.5	18.0		42.1
Actuated g/C Ratio	0.16	0.28			0.45	0.57		0.11	0.44	0.12		0.28
Clearance Time (s)	4.7	7.0			7.0	6.1		6.1	4.7	6.1		4.7
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	551	1410			2870	899		208	1600	212		782
v/s Ratio Prot	0.13	c0.29			0.11	c0.06		0.10	c0.41	0.03		0.02
v/s Ratio Perm						0.22			0.14			0.02
v/c Ratio	0.79	1.06			0.24	0.49		0.89	1.24	0.23		0.14
Uniform Delay, d1	60.5	54.2			25.6	19.4		65.7	41.8	59.7		40.5
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2	7.4	41.2			0.2	0.4		33.6	112.2	0.5		0.1
Delay (s)	67.9	95.4			25.8	19.8		99.3	153.9	60.2		40.5
Level of Service	E	F			C	B		F	F	E		D
Approach Delay (s)		89.2			23.4			149.7			42.6	
Approach LOS		F			C			F			D	

Intersection Summary			
HCM 2000 Control Delay	97.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	23.9
Intersection Capacity Utilization	95.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	844	99	84	361	1520	122	0	1362	932	175	49
Future Volume (veh/h)	0	844	99	84	361	1520	122	0	1362	932	175	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	1870	1870	0	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	970	114	97	415	1747	140	0	1566	1071	201	56
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	0	2	2	2	2	2	2	0	2	2	2	2
Cap, veh/h	0	1123	534	480	1947	2482	404	0	0	1181	505	137
Arrive On Green	0.00	0.22	0.22	0.27	0.55	0.55	0.12	0.00	0.00	0.34	0.18	0.18
Sat Flow, veh/h	0	5274	1585	1781	3554	2790	3456	140		3456	2762	750
Grp Volume(v), veh/h	0	970	114	97	415	1747	140	59.4		1071	127	130
Grp Sat Flow(s),veh/h/ln	0	1702	1585	1781	1777	1395	1728	E		1728	1777	1735
Q Serve(g_s), s	0.0	26.5	2.6	6.1	8.7	26.8	5.4			42.9	9.2	9.6
Cycle Q Clear(g_c), s	0.0	26.5	2.6	6.1	8.7	26.8	5.4			42.9	9.2	9.6
Prop In Lane	0.00		1.00	1.00		1.00	1.00			1.00		0.43
Lane Grp Cap(c), veh/h	0	1123	534	480	1947	2482	404			1181	325	317
V/C Ratio(X)	0.00	0.86	0.21	0.20	0.21	0.70	0.35			0.91	0.39	0.41
Avail Cap(c_a), veh/h	0	1123	534	480	1947	2482	405			1694	588	574
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.85	0.85	0.85	0.92			1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	54.5	12.7	40.9	16.8	2.4	58.9			45.5	52.2	52.3
Incr Delay (d2), s/veh	0.0	8.9	0.9	0.2	0.2	1.4	0.5			5.5	0.8	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	12.3	1.4	2.7	3.7	4.1	2.4			19.3	4.2	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	63.3	13.6	41.1	17.0	3.8	59.4			51.1	52.9	53.2
LnGrp LOS	A	E	B	D	B	A	E			D	D	D
Approach Vol, veh/h		1084			2259						1328	
Approach Delay, s/veh		58.1			7.8						51.5	
Approach LOS		E			A						D	

Timer - Assigned Phs	1	2	3	4	6	7
Phs Duration (G+Y+Rc), s	47.5	40.4	23.0	34.0	87.9	57.1
Change Period (Y+Rc), s	8.5	* 8.5	6.1	7.5	8.5	7.5
Max Green Setting (Gmax), s	19.9	* 32	17.0	48.0	57.9	71.1
Max Q Clear Time (g_c+I1), s	8.1	28.5	7.4	11.6	28.8	44.9
Green Ext Time (p_c), s	0.2	2.1	0.3	1.6	15.5	4.7

Intersection Summary	
HCM 6th Ctrl Delay	32.7
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	844	99	84	361	1520	122	0	1362	932	175	49
Future Volume (veh/h)	0	844	99	84	361	1520	122	0	1362	932	175	49
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1863	1863	1863	0	1863	1863	1863	1900
Adj Flow Rate, veh/h	0	970	114	97	415	1747	140	0	1566	1071	201	56
Adj No. of Lanes	0	3	1	1	2	2	2	0	2	2	2	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	0	2	2	2	2	2	2	0	2	2	2	2
Cap, veh/h	0	1119	533	476	1935	2479	402	0	0	1180	507	138
Arrive On Green	0.00	0.22	0.22	0.27	0.55	0.55	0.12	0.00	0.00	0.34	0.18	0.18
Sat Flow, veh/h	0	5253	1583	1774	3539	2787	3442	140		3442	2752	748
Grp Volume(v), veh/h	0	970	114	97	415	1747	140	59.4		1071	127	130
Grp Sat Flow(s),veh/h/ln	0	1695	1583	1774	1770	1393	1721	E		1721	1770	1731
Q Serve(g_s), s	0.0	26.7	2.7	6.1	8.7	26.9	5.4			43.0	9.2	9.6
Cycle Q Clear(g_c), s	0.0	26.7	2.7	6.1	8.7	26.9	5.4			43.0	9.2	9.6
Prop In Lane	0.00		1.00	1.00		1.00	1.00			1.00		0.43
Lane Grp Cap(c), veh/h	0	1119	533	476	1935	2479	402			1180	326	319
V/C Ratio(X)	0.00	0.87	0.21	0.20	0.21	0.70	0.35			0.91	0.39	0.41
Avail Cap(c_a), veh/h	0	1119	533	476	1935	2479	404			1688	586	573
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.85	0.85	0.85	0.92			1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	54.5	12.7	41.1	16.9	2.4	58.9			45.4	52.0	52.2
Incr Delay (d2), s/veh	0.0	9.1	0.9	0.2	0.2	1.5	0.5			5.6	0.8	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	13.4	1.7	3.0	4.3	10.4	2.6			21.3	4.6	4.6
LnGrp Delay(d),s/veh	0.0	63.6	13.6	41.3	17.1	3.8	59.4			51.1	52.8	53.0
LnGrp LOS		E	B	D	B	A	E			D	D	D
Approach Vol, veh/h		1084			2259						1328	
Approach Delay, s/veh		58.4			7.9						51.4	
Approach LOS		E			A						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4		6	7	
Phs Duration (G+Y+Rc), s	47.4	40.4	23.0	34.2		87.8	57.2	
Change Period (Y+Rc), s	8.5	* 8.5	6.1	7.5		8.5	7.5	
Max Green Setting (Gmax), s	19.9	* 32	17.0	48.0		57.9	71.1	
Max Q Clear Time (g_c+I1), s	8.1	28.7	7.4	11.6		28.9	45.0	
Green Ext Time (p_c), s	0.2	2.0	0.3	1.6		15.4	4.7	

Intersection Summary	
HCM 2010 Ctrl Delay	32.8
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	106	520	0	0	1031	880	0	50	686	87	0	821
Future Volume (vph)	106	520	0	0	1031	880	0	50	686	87	0	821
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	7.0			7.0	6.1		6.1	4.7	6.1		4.7
Lane Util. Factor	0.97	0.91			0.86	1.00		1.00	0.76	1.00		0.88
Frt	1.00	1.00			1.00	0.85		1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	5085			6408	1583		1863	3610	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	5085			6408	1583		1863	3610	1770		2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	112	547	0	0	1085	926	0	53	722	92	0	864
RTOR Reduction (vph)	0	0	0	0	0	225	0	0	573	0	0	394
Lane Group Flow (vph)	112	547	0	0	1085	701	0	53	149	92	0	470
Turn Type	Prot	NA			NA	pm+ov		NA	custom	Prot		pm+ov
Protected Phases	5	2			6	7		8	1	7		5
Permitted Phases						6			8			7
Actuated Green, G (s)	17.0	64.2			53.4	71.4		7.7	13.9	18.0		35.0
Effective Green, g (s)	17.0	64.2			53.4	71.4		7.7	13.9	18.0		35.0
Actuated g/C Ratio	0.14	0.54			0.44	0.60		0.06	0.12	0.15		0.29
Clearance Time (s)	4.7	7.0			7.0	6.1		6.1	4.7	6.1		4.7
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	486	2720			2851	941		119	418	265		812
v/s Ratio Prot	0.03	0.11			0.17	c0.11		c0.03	0.02	0.05		c0.08
v/s Ratio Perm						0.33			0.02			0.09
v/c Ratio	0.23	0.20			0.38	0.74		0.45	0.36	0.35		0.58
Uniform Delay, d1	45.7	14.5			22.2	17.7		54.1	48.9	45.7		36.2
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2	0.2	0.2			0.4	3.2		2.6	0.5	0.8		1.0
Delay (s)	45.9	14.7			22.6	20.9		56.7	49.5	46.5		37.2
Level of Service	D	B			C	C		E	D	D		D
Approach Delay (s)		20.0			21.8			49.9			38.1	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	30.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	23.9
Intersection Capacity Utilization	86.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	584	157	36	335	628	42	0	196	1714	473	86
Future Volume (veh/h)	0	584	157	36	335	628	42	0	196	1714	473	86
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	1870	1870	0	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	621	167	38	356	668	45	0	209	1823	503	91
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	2	2	2	2	2	2	0	2	2	2	2
Cap, veh/h	0	820	370	307	1322	2585	252	0	0	1916	1365	246
Arrive On Green	0.00	0.16	0.16	0.17	0.37	0.37	0.07	0.00	0.00	0.55	0.45	0.45
Sat Flow, veh/h	0	5274	1585	1781	3554	2790	3456	45		3456	3008	542
Grp Volume(v), veh/h	0	621	167	38	356	668	45	95.3		1823	296	298
Grp Sat Flow(s),veh/h/ln	0	1702	1585	1781	1777	1395	1728	F		1728	1777	1773
Q Serve(g_s), s	0.0	25.3	12.5	3.9	15.2	5.0	2.7			108.4	23.8	24.0
Cycle Q Clear(g_c), s	0.0	25.3	12.5	3.9	15.2	5.0	2.7			108.4	23.8	24.0
Prop In Lane	0.00		1.00	1.00		1.00	1.00			1.00		0.31
Lane Grp Cap(c), veh/h	0	820	370	307	1322	2585	252			1916	806	804
V/C Ratio(X)	0.00	0.76	0.45	0.12	0.27	0.26	0.18			0.95	0.37	0.37
Avail Cap(c_a), veh/h	0	820	370	307	1322	2585	507			2189	815	813
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.97	0.97	0.97	1.00			1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	87.4	34.5	76.3	47.8	0.8	94.9			45.8	39.0	39.1
Incr Delay (d2), s/veh	0.0	6.5	3.9	0.2	0.5	0.2	0.3			9.5	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	11.8	5.4	1.8	7.0	0.8	1.2			49.0	10.8	10.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	93.9	38.4	76.4	48.2	1.0	95.3			55.2	39.3	39.4
LnGrp LOS	A	F	D	E	D	A	F			E	D	D
Approach Vol, veh/h		788			1062						2417	
Approach Delay, s/veh		82.2			19.5						51.3	
Approach LOS		F			B						D	

Timer - Assigned Phs	1	2	3	4		6	7
Phs Duration (G+Y+Rc), s	46.1	43.5	22.0	106.4		89.6	128.4
Change Period (Y+Rc), s	8.5	* 8.5	6.1	7.5		8.5	7.5
Max Green Setting (Gmax), s	23.0	* 35	32.0	100.0		64.1	138.1
Max Q Clear Time (g_c+I1), s	5.9	27.3	4.7	26.0		17.2	110.4
Green Ext Time (p_c), s	0.1	2.9	0.1	4.2		6.1	10.5

Intersection Summary	
HCM 6th Ctrl Delay	49.6
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	844	107	112	361	1520	130	0	1406	932	191	49
Future Volume (veh/h)	0	844	107	112	361	1520	130	0	1406	932	191	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	1870	1870	0	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	970	123	129	415	1747	149	0	1616	1071	220	56
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	0	2	2	2	2	2	2	0	2	2	2	2
Cap, veh/h	0	1032	456	607	2082	2564	297	0	0	1152	611	152
Arrive On Green	0.00	0.20	0.20	0.34	0.59	0.59	0.09	0.00	0.00	0.33	0.22	0.22
Sat Flow, veh/h	0	5274	1585	1781	3554	2790	3456	149		3456	2819	702
Grp Volume(v), veh/h	0	970	123	129	415	1747	149	87.4		1071	137	139
Grp Sat Flow(s),veh/h/ln	0	1702	1585	1781	1777	1395	1728	F		1728	1777	1744
Q Serve(g_s), s	0.0	37.1	4.2	10.2	10.8	26.8	8.2			59.3	12.9	13.4
Cycle Q Clear(g_c), s	0.0	37.1	4.2	10.2	10.8	26.8	8.2			59.3	12.9	13.4
Prop In Lane	0.00		1.00	1.00		1.00	1.00			1.00		0.40
Lane Grp Cap(c), veh/h	0	1032	456	607	2082	2564	297			1152	385	378
V/C Ratio(X)	0.00	0.94	0.27	0.21	0.20	0.68	0.50			0.93	0.36	0.37
Avail Cap(c_a), veh/h	0	1032	456	607	2082	2564	558			1538	449	440
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.81	0.81	0.81	0.71			1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	77.8	22.8	46.4	19.2	1.7	86.5			63.8	65.8	66.0
Incr Delay (d2), s/veh	0.0	16.9	1.4	0.1	0.2	1.2	0.9			8.6	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	18.0	2.6	4.7	4.7	4.0	3.7			27.6	6.0	6.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	94.7	24.2	46.5	19.4	2.9	87.4			72.3	66.4	66.6
LnGrp LOS	A	F	C	D	B	A	F			E	E	E
Approach Vol, veh/h		1093			2291						1347	
Approach Delay, s/veh		86.8			8.4						71.1	
Approach LOS		F			A						E	

Timer - Assigned Phs	1	2	3	4		6	7
Phs Duration (G+Y+Rc), s	76.0	48.5	23.1	50.4		124.5	73.5
Change Period (Y+Rc), s	8.5	* 8.5	6.1	7.5		8.5	7.5
Max Green Setting (Gmax), s	48.0	* 40	32.0	50.0		94.1	88.1
Max Q Clear Time (g_c+I1), s	12.2	39.1	10.2	15.4		28.8	61.3
Green Ext Time (p_c), s	0.4	0.6	0.4	1.7		20.7	4.7

Intersection Summary	
HCM 6th Ctrl Delay	45.7
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	584	157	36	335	628	42	0	196	1714	473	86
Future Volume (veh/h)	0	584	157	36	335	628	42	0	196	1714	473	86
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	1870	1870	0	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	621	167	38	356	668	45	0	209	1823	503	91
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	2	2	2	2	2	2	0	2	2	2	2
Cap, veh/h	0	1247	542	130	1336	2482	339	0	0	1776	1124	202
Arrive On Green	0.00	0.24	0.24	0.07	0.38	0.38	0.10	0.00	0.00	0.51	0.37	0.37
Sat Flow, veh/h	0	5274	1585	1781	3554	2790	3456	45		3456	3008	542
Grp Volume(v), veh/h	0	621	167	38	356	668	45	59.9		1823	296	298
Grp Sat Flow(s),veh/h/ln	0	1702	1585	1781	1777	1395	1728	E		1728	1777	1773
Q Serve(g_s), s	0.0	15.2	7.3	2.9	10.1	5.0	1.7			74.5	18.2	18.3
Cycle Q Clear(g_c), s	0.0	15.2	7.3	2.9	10.1	5.0	1.7			74.5	18.2	18.3
Prop In Lane	0.00		1.00	1.00		1.00	1.00			1.00		0.31
Lane Grp Cap(c), veh/h	0	1247	542	130	1336	2482	339			1776	664	662
V/C Ratio(X)	0.00	0.50	0.31	0.29	0.27	0.27	0.13			1.03	0.45	0.45
Avail Cap(c_a), veh/h	0	1247	542	160	1336	2482	405			1776	664	662
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.97	0.97	0.97	1.00			1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	47.2	16.1	63.6	31.4	1.2	59.8			35.3	34.1	34.2
Incr Delay (d2), s/veh	0.0	1.4	1.5	1.2	0.5	0.3	0.2			28.5	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	6.7	2.9	1.4	4.5	0.8	0.8			37.5	8.0	8.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	48.6	17.5	64.8	31.9	1.4	59.9			63.7	34.6	34.7
LnGrp LOS	A	D	B	E	C	A	E			F	C	C
Approach Vol, veh/h		788			1062						2417	
Approach Delay, s/veh		42.0			13.9						56.6	
Approach LOS		D			B						E	

Timer - Assigned Phs	1	2	3	4		6	7
Phs Duration (G+Y+Rc), s	19.1	43.9	20.3	61.7		63.0	82.0
Change Period (Y+Rc), s	8.5	* 8.5	6.1	7.5		8.5	7.5
Max Green Setting (Gmax), s	13.0	* 35	17.0	51.4		54.5	74.5
Max Q Clear Time (g_c+I1), s	4.9	17.2	3.7	20.3		12.1	76.5
Green Ext Time (p_c), s	0.0	4.7	0.1	4.0		6.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	43.4
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	584	157	36	335	628	42	0	196	1714	473	86
Future Volume (veh/h)	0	584	157	36	335	628	42	0	196	1714	473	86
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1863	1863	1863	0	1863	1863	1863	1900
Adj Flow Rate, veh/h	0	621	167	38	356	668	45	0	209	1823	503	91
Adj No. of Lanes	0	3	1	1	2	2	2	0	2	2	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	2	2	2	2	2	2	0	2	2	2	2
Cap, veh/h	0	1242	542	130	1330	2479	338	0	0	1768	1120	202
Arrive On Green	0.00	0.24	0.24	0.07	0.38	0.38	0.10	0.00	0.00	0.51	0.37	0.37
Sat Flow, veh/h	0	5253	1583	1774	3539	2787	3442	45		3442	2997	540
Grp Volume(v), veh/h	0	621	167	38	356	668	45	59.9		1823	296	298
Grp Sat Flow(s),veh/h/ln	0	1695	1583	1774	1770	1393	1721	E		1721	1770	1767
Q Serve(g_s), s	0.0	15.2	7.3	2.9	10.1	5.0	1.7			74.5	18.2	18.4
Cycle Q Clear(g_c), s	0.0	15.2	7.3	2.9	10.1	5.0	1.7			74.5	18.2	18.4
Prop In Lane	0.00		1.00	1.00		1.00	1.00			1.00		0.31
Lane Grp Cap(c), veh/h	0	1242	542	130	1330	2479	338			1768	661	660
V/C Ratio(X)	0.00	0.50	0.31	0.29	0.27	0.27	0.13			1.03	0.45	0.45
Avail Cap(c_a), veh/h	0	1242	542	159	1330	2479	404			1768	661	660
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.97	0.97	0.97	1.00			1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	47.2	16.1	63.7	31.4	1.2	59.8			35.2	34.2	34.2
Incr Delay (d2), s/veh	0.0	1.4	1.5	1.2	0.5	0.3	0.2			29.8	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.3	3.7	1.5	5.0	1.9	0.8			42.4	9.0	9.1
LnGrp Delay(d),s/veh	0.0	48.6	17.5	64.8	31.9	1.4	59.9			65.0	34.6	34.7
LnGrp LOS		D	B	E	C	A	E			F	C	C
Approach Vol, veh/h		788			1062						2417	
Approach Delay, s/veh		42.0			13.9						57.6	
Approach LOS		D			B						E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4		6	7	
Phs Duration (G+Y+Rc), s	19.1	43.9	20.3	61.7		63.0	82.0	
Change Period (Y+Rc), s	8.5	* 8.5	6.1	7.5		8.5	7.5	
Max Green Setting (Gmax), s	13.0	* 35	17.0	51.4		54.5	74.5	
Max Q Clear Time (g_c+I1), s	4.9	17.2	3.7	20.4		12.1	76.5	
Green Ext Time (p_c), s	0.0	4.7	0.1	4.0		6.1	0.0	

Intersection Summary	
HCM 2010 Ctrl Delay	44.0
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	440	1468	0	0	684	464	0	181	2190	47	0	406
Future Volume (vph)	440	1468	0	0	684	464	0	181	2190	47	0	406
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	7.0			7.0	6.1		6.1	4.7	6.1		4.7
Lane Util. Factor	0.97	0.91			0.86	1.00		1.00	0.76	1.00		0.88
Frt	1.00	1.00			1.00	0.85		1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	5085			6408	1583		1863	3610	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	5085			6408	1583		1863	3610	1770		2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	449	1498	0	0	698	473	0	185	2235	48	0	414
RTOR Reduction (vph)	0	0	0	0	0	32	0	0	256	0	0	296
Lane Group Flow (vph)	449	1498	0	0	698	441	0	185	1979	48	0	118
Turn Type	Prot	NA			NA	pm+ov		NA	custom	Prot		pm+ov
Protected Phases	5	2			6	7		8	1	7		5
Permitted Phases						6			8			7
Actuated Green, G (s)	24.8	41.6			66.5	84.5		16.8	66.5	18.0		42.8
Effective Green, g (s)	24.8	41.6			66.5	84.5		16.8	66.5	18.0		42.8
Actuated g/C Ratio	0.17	0.28			0.44	0.56		0.11	0.44	0.12		0.29
Clearance Time (s)	4.7	7.0			7.0	6.1		6.1	4.7	6.1		4.7
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	567	1410			2840	891		208	1600	212		795
v/s Ratio Prot	0.13	c0.29			0.11	c0.06		0.10	c0.41	0.03		0.02
v/s Ratio Perm						0.22			0.14			0.02
v/c Ratio	0.79	1.06			0.25	0.50		0.89	1.24	0.23		0.15
Uniform Delay, d1	60.1	54.2			26.1	19.8		65.7	41.8	59.7		40.0
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2	7.5	42.5			0.2	0.4		33.6	112.2	0.5		0.1
Delay (s)	67.6	96.7			26.3	20.3		99.3	153.9	60.2		40.1
Level of Service	E	F			C	C		F	F	E		D
Approach Delay (s)		90.0			23.9			149.7			42.2	
Approach LOS		F			C			F			D	

Intersection Summary			
HCM 2000 Control Delay	97.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	23.9
Intersection Capacity Utilization	95.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	844	107	112	361	1520	130	0	1406	932	191	49
Future Volume (veh/h)	0	844	107	112	361	1520	130	0	1406	932	191	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	1870	1870	0	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	970	123	129	415	1747	149	0	1616	1071	220	56
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	0	2	2	2	2	2	2	0	2	2	2	2
Cap, veh/h	0	1123	534	480	1947	2482	404	0	0	1181	515	128
Arrive On Green	0.00	0.22	0.22	0.27	0.55	0.55	0.12	0.00	0.00	0.34	0.18	0.18
Sat Flow, veh/h	0	5274	1585	1781	3554	2790	3456	149		3456	2819	702
Grp Volume(v), veh/h	0	970	123	129	415	1747	149	59.5		1071	137	139
Grp Sat Flow(s),veh/h/ln	0	1702	1585	1781	1777	1395	1728	E		1728	1777	1744
Q Serve(g_s), s	0.0	26.5	2.9	8.3	8.7	26.8	5.8			42.9	9.9	10.3
Cycle Q Clear(g_c), s	0.0	26.5	2.9	8.3	8.7	26.8	5.8			42.9	9.9	10.3
Prop In Lane	0.00		1.00	1.00		1.00	1.00			1.00		0.40
Lane Grp Cap(c), veh/h	0	1123	534	480	1947	2482	404			1181	325	319
V/C Ratio(X)	0.00	0.86	0.23	0.27	0.21	0.70	0.37			0.91	0.42	0.44
Avail Cap(c_a), veh/h	0	1123	534	480	1947	2482	405			1694	588	577
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.84	0.84	0.84	0.71			1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	54.5	12.8	41.7	16.8	2.4	59.1			45.5	52.5	52.6
Incr Delay (d2), s/veh	0.0	8.9	1.0	0.3	0.2	1.4	0.4			5.5	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	12.3	1.5	3.7	3.7	4.1	2.6			19.3	4.5	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	63.3	13.8	42.0	17.0	3.8	59.5			51.1	53.3	53.6
LnGrp LOS	A	E	B	D	B	A	E			D	D	D
Approach Vol, veh/h		1093			2291						1347	
Approach Delay, s/veh		57.7			8.3						51.6	
Approach LOS		E			A						D	

Timer - Assigned Phs	1	2	3	4		6	7					
Phs Duration (G+Y+Rc), s	47.5	40.4	23.1	34.0		87.9	57.1					
Change Period (Y+Rc), s	8.5	* 8.5	6.1	7.5		8.5	7.5					
Max Green Setting (Gmax), s	19.9	* 32	17.0	48.0		57.9	71.1					
Max Q Clear Time (g_c+I1), s	10.3	28.5	7.8	12.3		28.8	44.9					
Green Ext Time (p_c), s	0.2	2.1	0.3	1.7		15.5	4.7					

Intersection Summary	
HCM 6th Ctrl Delay	32.9
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	844	107	112	361	1520	130	0	1406	932	191	49
Future Volume (veh/h)	0	844	107	112	361	1520	130	0	1406	932	191	49
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1863	1863	1863	0	1863	1863	1863	1900
Adj Flow Rate, veh/h	0	970	123	129	415	1747	149	0	1616	1071	220	56
Adj No. of Lanes	0	3	1	1	2	2	2	0	2	2	2	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	0	2	2	2	2	2	2	0	2	2	2	2
Cap, veh/h	0	1119	534	476	1935	2479	403	0	0	1180	517	129
Arrive On Green	0.00	0.22	0.22	0.27	0.55	0.55	0.12	0.00	0.00	0.34	0.18	0.18
Sat Flow, veh/h	0	5253	1583	1774	3539	2787	3442	149		3442	2809	700
Grp Volume(v), veh/h	0	970	123	129	415	1747	149	59.5		1071	137	139
Grp Sat Flow(s),veh/h/ln	0	1695	1583	1774	1770	1393	1721	E		1721	1770	1739
Q Serve(g_s), s	0.0	26.7	2.9	8.3	8.7	26.9	5.8			43.0	9.9	10.3
Cycle Q Clear(g_c), s	0.0	26.7	2.9	8.3	8.7	26.9	5.8			43.0	9.9	10.3
Prop In Lane	0.00		1.00	1.00		1.00	1.00			1.00		0.40
Lane Grp Cap(c), veh/h	0	1119	534	476	1935	2479	403			1180	325	320
V/C Ratio(X)	0.00	0.87	0.23	0.27	0.21	0.70	0.37			0.91	0.42	0.44
Avail Cap(c_a), veh/h	0	1119	534	476	1935	2479	404			1688	586	576
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.84	0.84	0.84	0.71			1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	54.5	12.8	41.9	16.9	2.4	59.1			45.4	52.3	52.5
Incr Delay (d2), s/veh	0.0	9.1	1.0	0.3	0.2	1.4	0.4			5.6	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	13.4	1.9	4.1	4.3	10.4	2.8			21.3	4.9	5.0
LnGrp Delay(d),s/veh	0.0	63.6	13.8	42.1	17.1	3.8	59.5			51.1	53.2	53.4
LnGrp LOS		E	B	D	B	A	E			D	D	D
Approach Vol, veh/h		1093			2291						1347	
Approach Delay, s/veh		58.0			8.4						51.5	
Approach LOS		E			A						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4		6	7	
Phs Duration (G+Y+Rc), s	47.4	40.4	23.1	34.2		87.8	57.2	
Change Period (Y+Rc), s	8.5	* 8.5	6.1	7.5		8.5	7.5	
Max Green Setting (Gmax), s	19.9	* 32	17.0	48.0		57.9	71.1	
Max Q Clear Time (g_c+I1), s	10.3	28.7	7.8	12.3		28.9	45.0	
Green Ext Time (p_c), s	0.2	2.0	0.3	1.7		15.4	4.7	

Intersection Summary	
HCM 2010 Ctrl Delay	33.0
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	528	0	0	1039	880	0	50	686	87	0	841
Future Volume (vph)	130	528	0	0	1039	880	0	50	686	87	0	841
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	7.0			7.0	6.1		6.1	4.7	6.1		4.7
Lane Util. Factor	0.97	0.91			0.86	1.00		1.00	0.76	1.00		0.88
Frt	1.00	1.00			1.00	0.85		1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	5085			6408	1583		1863	3610	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00		1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	5085			6408	1583		1863	3610	1770		2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	137	556	0	0	1094	926	0	53	722	92	0	885
RTOR Reduction (vph)	0	0	0	0	0	211	0	0	564	0	0	393
Lane Group Flow (vph)	137	556	0	0	1094	715	0	53	158	92	0	492
Turn Type	Prot	NA			NA	pm+ov		NA	custom	Prot		pm+ov
Protected Phases	5	2			6	7		8	1	7		5
Permitted Phases						6			8			7
Actuated Green, G (s)	17.0	64.2			53.4	71.4		7.7	13.9	18.0		35.0
Effective Green, g (s)	17.0	64.2			53.4	71.4		7.7	13.9	18.0		35.0
Actuated g/C Ratio	0.14	0.54			0.44	0.60		0.06	0.12	0.15		0.29
Clearance Time (s)	4.7	7.0			7.0	6.1		6.1	4.7	6.1		4.7
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	486	2720			2851	941		119	418	265		812
v/s Ratio Prot	0.04	0.11			0.17	c0.11		c0.03	0.02	0.05		c0.09
v/s Ratio Perm						0.34			0.02			0.09
v/c Ratio	0.28	0.20			0.38	0.76		0.45	0.38	0.35		0.61
Uniform Delay, d1	46.0	14.6			22.3	18.0		54.1	49.1	45.7		36.6
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2	0.3	0.2			0.4	3.6		2.6	0.6	0.8		1.3
Delay (s)	46.4	14.7			22.7	21.5		56.7	49.6	46.5		37.8
Level of Service	D	B			C	C		E	D	D		D
Approach Delay (s)		21.0			22.2			50.1			38.7	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	30.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	23.9
Intersection Capacity Utilization	86.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

ATTACHMENT C

- October 3, 2018 Development Permit/Environmental Determination Appeal

SD	**City of San Diego** **Development Services** 1222 First Ave., MS-302 San Diego, CA 92101	**Development Permit/ Environmental Determination Appeal Application**	**FORM DS-3031** **November 2017**

In order to assure your appeal application is successfully accepted and processed, you must read and understand Information Bulletin 505, "Development Permits/Environmental Determination Appeal Procedure."

1. Type of Appeal: ☐ Appeal of the Project
☒ Appeal of the Environmental Determination

2. Appellant: *Please check one* ☐ Applicant ☐ Officially recognized Planning Committee ☒ "Interested Person" (Per M.C. Sec. 113.0103)

Name:			E-mail:	
SVRMC, LLC c/o Heather Riley			hriley@allenmatkins.com	
Address:	**City:**	**State:**	**Zip Code**	**Telephone:**
600 West Broadway, 27th Floor	San Diego	CA	92101	619-233-1155

3. Project Name:
Sorrento Valley MO CUP

4. Project Information

Permit/Environmental Determination & Permit/Document No.:	Date of Decision/Determination	City Project Manager:
Project Number 545299	09/19/18	Cherlyn Cac

Decision(Describe the permit/approval decision):
A conditional use permit (CUP) was approved, together with a Negative Declaration (ND), by the Hearing Officer for a marijuana outlet (MO) at 10150 Sorrento Valley Road, Suite 110 within the Torrey Pines Community Plan area.

5. Ground for Appeal(Please check all that apply):
☒ Factual Error
☒ Conflict with other matters
☒ Findings Not Supported
☐ New Information
☐ City-wide Significance (Process Four decisions only)

Description of Grounds for Appeal (*Please relate your description to the allowable reasons for appeal as more fully described in Chapter 11, Article 2, Division 5 of the San Diego Municipal Code. Attach additional sheets if necessary.*)

The ND should not have been approved. As stated during the hearing and demonstrated in the attached analysis - which was previously submitted to the City - the project's traffic analysis is inadequate. Based upon a subsequent review by LLG, which reanalyzed the intersection of Vista Sorrento parkway and the I-805 Northbound Off-Ramp, the project will result in a 1.8 second delay and cause a significant impact on the environment. As a result, the ND should not have been approved and the project should have been denied.



6. **Appellant's Signature:** I certify under penalty of perjury that the foregoing, including all names and addresses, is true and correct.

Signature: H Riley Date: 10/3/18

Note: Faxed appeals are not accepted.

MEMORANDUM

To:	Mr. Abhay Schweitzer Techne	Date:	August 8, 2018
From:	Chris Mendiara LLG, Engineers	LLG Ref:	3-18-2939
Subject:	10170 Sorrento Valley Road Focused Access Analysis – City Comments		

Linscott, Law & Greenspan, Engineers (LLG) has prepare this memo in response to City of San Diego (City) comments on the first draft Focused Traffic Access Analysis (Analysis) prepared for the 10170 Sorrento Valley Road Marijuana Outlet (Project) dated July 2, 2018. The City provided comments on several results that referenced comparative results from an access analysis prepared by Darnell & Associates (revised June 28, 2018) for a competing marijuana outlet project located at 10150 Sorrento Valley Road.

The revised Darnell & Associates (D&A) report was not available for public review when LLG completed the first draft analysis. However, the former has since been made public, and LLG has reviewed both documents to determine how/why some results vary between them.

Generally, there are five (5) major points of variation that would account for changes in Level of Service results as identified in the City's comments:

1. Existing Traffic Counts: LLG's counts were conducted in June of 2018. The counts used in the D&A report were conducted in March and April of 2018. While LLG's counts could be considered "summer" counts with respect to schools, the volumes are in many cases higher than the D&A volumes, resulting in a conservative analysis. One of the D&A volumes was estimated;
2. Analysis Method: LLG utilized the latest version of the Highway Capacity Manual (HCM) intersection methodology (HCM 6). D&A used two outdated versions (HCM 2000 and HCM 2010);
3. Segment Capacities: LLG and D&A used slightly different roadway capacities for two Carroll Canyon Road segments;
4. Local Roadway Project Traffic Distribution: LLG estimated that 60% of Project traffic would be oriented to local roadways; D&A assumed 45%.
5. Cumulative Projects: LLG used a growth factor over 3 years to estimate near-term growth. D&A utilized a "list of Projects" approach that included 2 other nearby MO's, including the Proposed Project. Neither of these two competing projects should be included as only 1 of the 3 MO's could be developed, based on City code.

It is LLG's opinion that the differences in approach and methodology would not result in either study's conclusions changing regarding significant impacts. An overall comparative summary of the two documents' access letter assumptions is attached to this memo with the five major points described above highlighted for reference.

cc: File

Attachments LLG vs. D&A Access Letter Assumptions Summary

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LLG v. D&A Access Analysis Assumptions

Prepared by LLG – 8/8/18

LLG	Darnell
Existing Traffic Counts	
• Tuesday June 12, 2018	• Tuesday March 20, 2018 & Tuesday April 24, 2018 (intersections) • Tuesday March 20, 2018 (segments) • *Volume on Carroll Canyon from Business Access to HOV is estimated
Existing Intersection Analysis	
• Int. 1) Correct geometry with RTOLs • Timing plans used – 145 sec cycle AM & PM • Method: HCM 6	• Int. 1) Correct geometry with RTOLs • Timing plans used, but AM cycle length optimized to 218.2 sec; PM 198.2 sec • Method: HCM 2010
• Int. 2) Correct geometry • Timing plans used – no cycle length provided, 55 sec used AM, 60 sec PM • Method: HCM 6	• Int. 2) Correct geometry • Timing plans used – no cycle length provided, 130 sec used AM & PM • Method: HCM 2000
• Int. 3) NB/SB should preclude thru movements • Timing plans used – no cycle length provided, 85 sec used AM, 95 PM • Method: HCM 6	• Int. 3) NB/SB should preclude thru movements • Int. 3) NB should be dedicated R/T • Timing plans used – no cycle length provided, 150.8 sec used AM & PM • Method: HCM 2000
• Int. 4) No issue • Method: HCM 6	• Int. 4) No issue • Method: HCM ?
• Int. 5) Correct geometry with RTOLs • Timing plans used – no cycle length provided, AM 160 sec used, PM 120 sec • Method: HCM 6	• Int. 5) Correct geometry with RTOLs • Timing plans used – no cycle length provided, AM 214.9 sec used, PM 260.9 sec • Method: HCM 2000
Existing Segment Analysis	
• Carroll Canyon Rd: Sorrento Valley Road to Business Access = 40,000 capacity • *Correct capacity could also be 30,000	• 30,000 capacity
• Carroll Canyon Rd: Business Access to HOV = 40,000 capacity • *Correct "functional" capacity should be 40,000 • (has c-to-c of 78' and raised median to reflect major road standards even tho classified as Collector)	• 30,000 capacity
• Business Access: 10,000 capacity	• Business Access: 10,000 capacity
Trip Generation	
• Daily: 250/KSF • AM: 8.7% 50:50 • PM: 15.8% 50:50	• Daily: 250/KSF • AM: 9% 50:50 • PM: 16% 50:50
Trip Distribution	
• Freeway: 40% • Local: 60%	• Freeway: 55% • Local: 45%
Near-Term Conditions	
• Growth factor for 3 years	• Individual cumulative assignments • Incorrectly includes two other MMDs that should be mutually exclusive
Existing + Project Intersection Analysis	
• All same existing timings used	• All same existing timings used
Existing + Project Segment Analysis	
• All same capacities from existing	• All same capacities from existing • Carroll Canyon: HOV to Scranton, 149 project trips, not 143 (LLG doesn't analyze this segment)
Near-Term + Project Intersection Analysis	•
• All same existing timings used	• All same existing timings used
Near-Term + Project Segment Analysis	
• All same capacities from existing	• All same capacities from existing