

## **APPENDIX E**

**Existing  
Level of Service Calculations**

**Intersection Settings**

Located in CBD	no
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

**Intersection Level Of Service Report**

#1: I-215 Northbound Ramps (NS) / Fair Isle Drive-Box Springs Road (EW)  
 Signalized  
 HCM2010  
 15 minutes  
 Delay (sec / veh): 36.7  
 Level Of Service: D  
 Volume to Capacity (v/c): 0.788

**Intersection Setup**

Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Approach	TTL			FF			TTL					
Lane Configuration	TTL			FF			TTL					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			45.00			60.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	no	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	8	0	0	4	0	0	0	0	0	0	0	0
Auxiliary Signal Groups													
Lead / Lag	Lead												
Minimum Green [s]	7	7	0	0	7	0	0	0	0	7	0	0	0
Maximum Green [s]	30	30	0	0	30	0	0	0	0	30	0	0	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Split [s]	23	76	0	0	53	0	0	0	0	19	0	0	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	10	0	0	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
Minimum Recall	no	no			no					no			
Maximum Recall	no	no			no					no			
Pedestrian Recall	no	no			no					no			
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Volumes**

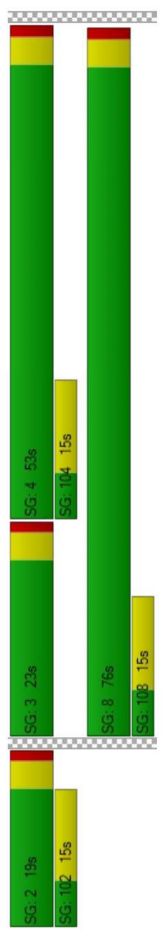
Name	547	132	0	446	898	86	15	2	0	0	0
Base Volume Input [veh/h]	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Base Volume Adjustment Factor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Vehicles Percentage [%]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Rate	0	0	0	0	0	0	0	0	0	0	0
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	547	132	0	446	898	86	15	2	0	0	0
Peak Hour Factor	0.8720	0.8720	0.9200	0.8720	0.3720	0.8720	0.8720	0.8720	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	157	38	0	128	257	25	4	1	0	0	0
Total Analysis Volume [veh/h]	627	151	0	511	1030	99	17	2	0	0	0
Presence of On-Street Parking	no			no				no			
On-Street Parking Maneuver Rate [ft]	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [ft]	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0	0	0	0	0	0	0	0	0	0	0
Bicycle Volume [bicycles/h]	0	0	0	0	0	0	0	0	0	0	0

**Movement, Approach, & Intersection Results**

d.M. Delay for Movement [s/veh]	42.03	3.37	0.00	0.00	33.68	40.01	34.59	34.57	34.57	0.00	0.00	0.00
Movement LOS	D	A			C	D	C	C	C			
d.A. Approach Delay [s/veh]	34.52											
Approach LOS	C											
d.I. Intersection Delay [s/veh]	36.67											
Intersection LOS	D											
Intersection V/C	0.788											

**Sequence**

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-
Ring 2	-	-	8	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-



**Lane Group Calculations**

Lane Group	L	C	C	R	L	C
L. Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1.p. Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2. Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g.I. Effective Green Time [s]	19	70	47	47	17	17
g / C. Green / Cycle	0.20	0.74	0.50	0.50	0.18	0.18
(v / s).I Volume / Saturation Flow Rate	0.18	0.04	0.45	0.48	0.03	0.03
s. saturation flow rate [veh/h]	3514	3618	1700	1615	1810	1827
c. Capacity [veh/h]	693	2678	850	808	319	322
d1. Uniform Delay [s]	37.25	3.36	21.70	22.69	33.33	33.32
k. delay calibration	0.11	0.11	0.38	0.41	0.50	0.50
l. Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2. Incremental Delay [s]	4.78	0.01	11.98	19.46	1.28	1.25
d3. Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp. platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF. progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X. volume / capacity	0.90	0.06	0.91	0.95	0.18	0.18
d. Delay for Lane Group [s/veh]	42.03	3.37	33.68	42.15	34.60	34.57
Lane Group LOS	D	A	C	D	C	C
Critical Lane Group	yes	no	no	yes	yes	no
50th-Percentile Queue Length [veh]	7.19	0.27	16.41	18.56	1.18	1.18
50th-Percentile Queue Length [ft]	179.64	6.63	410.19	464.08	29.40	29.49
95th-Percentile Queue Length [veh]	11.58	0.48	23.05	25.63	2.12	2.12
95th-Percentile Queue Length [ft]	289.55	11.94	576.27	640.73	52.93	53.09

**Intersection Level Of Service Report**

**#2: Sycamore Canyon Boulevard (NS) / Fair Isle Drive (EW)**

Signalized  
HCM2010  
15 minutes  
Control Type: Delay (sec / veh): 25.6  
Analysis Method: Level Of Service: C  
Analysis Period: Volume to Capacity (v/c): 0.764

**Intersection Setup**

Name	Northeastbound		Southwestbound		Northwestbound		Southeastbound		
Approach	TTL		TTL		TTL		TTL		
Lane Configuration	TTL		TTL		TTL		TTL		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Grade [%]	0.00		0.00		0.00		0.00		
Crosswalk	yes		yes		yes		no		

**Volumes**

Name	36	92	107	117	62	358	112	1239	563	42	127	15
Base Volume Input [veh/h]	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Base Volume Adjustment Factor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverged Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	42	0	0	117	0	0	0
Total Hourly Volume [veh/h]	36	92	107	117	62	316	112	1239	446	42	127	15
Peak Hour Factor	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	24	28	31	16	83	30	327	118	11	33	4
Total Analysis Volume [veh/h]	38	97	113	123	65	333	118	1307	470	44	134	16
Presence of On-Street Parking	no	no	no	no	no	no	no	no	no	no	no	no
On-Street Parking Maneuver Rate [1/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [1/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0	0	0	0	0	0	0	0	0	0	0	0
Bicycle Volume [bicycles/h]	0	0	0	0	0	0	0	0	0	0	0	0

**Intersection Settings**

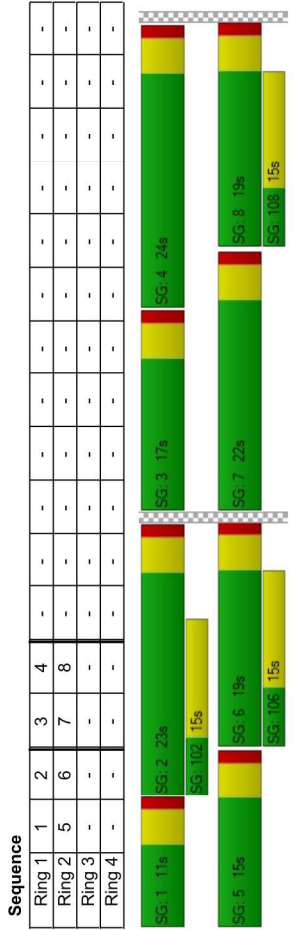
Located in CBD	no
Signal Coordination Group	-
Cycle Length [s]	75
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss		
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Lead / Lag	7	7	0	7	7	0	7	7	0	7	7	0
Minimum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Maximum Green [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Amber [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
All red [s]	17	19	0	22	24	0	15	23	0	11	19	0
Split [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Vehicle Extension [s]	0	5	0	0	5	0	0	5	0	0	5	0
Walk [s]	0	10	0	0	10	0	0	10	0	0	10	0
Pedestrian Clearance [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	no	no	no	no	no	no	no	no	no	no	no	no
Minimum Recall	no	no	no	no	no	no	no	no	no	no	no	no
Maximum Recall	no	no	no	no	no	no	no	no	no	no	no	no
Pedestrian Recall	no	no	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Movement, Approach, & Intersection Results**

	37.20	25.68	26.49	40.79	22.31	33.85	40.94	23.03	21.18	34.38	14.64	14.64
d, M, Delay for Movement [s/veh]												
Movement LOS	D	C	C	D	C	C	D	C	C	C	B	B
d, A, Approach Delay [s/veh]	27.81											
Approach LOS	C											
d, I, Intersection Delay [s/veh]	25.62											
Intersection LOS	C											
Intersection V/C	0.764											



**Lane Group Calculations**

	L	C	C	L	C	R	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l, p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g, I, Effective Green Time [s]	4	15	15	7	18	18	6	33	33	4	31	31	4	31
g / C, Green / Cycle	0.05	0.20	0.20	0.09	0.24	0.24	0.09	0.44	0.44	0.06	0.41	0.41	0.06	0.41
(v / s), Volume / Saturation Flow Rate	0.02	0.05	0.07	0.07	0.02	0.21	0.07	0.36	0.29	0.01	0.08	0.08	0.01	0.08
s, saturation flow rate [veh/h]	1810	1900	1615	1810	3618	1615	1810	3618	1615	1615	3514	1865	1615	1865
c, Capacity [veh/h]	94	379	322	161	855	382	155	1599	714	198	769	769	198	769
d1, Uniform Delay [s]	34.42	25.32	25.84	33.41	22.27	27.55	33.53	18.28	16.46	33.82	14.07	14.07	33.82	14.07
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.77	0.35	0.65	7.39	0.04	6.29	7.41	4.76	4.71	0.56	0.57	0.57	0.56	0.57
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

	L	C	C	L	C	R	L	C	R	L	C	R	L	C
X, volume / capacity	0.40	0.26	0.35	0.77	0.08	0.87	0.76	0.82	0.66	0.22	0.19	0.19	0.22	0.19
d, Delay for Lane Group [s/veh]	37.20	25.68	26.49	40.79	22.31	33.85	40.94	23.03	21.18	34.38	14.64	14.64	34.38	14.64
Lane Group LOS	D	C	C	D	C	C	D	C	C	C	B	B	C	B
Critical Lane Group	yes	no	no	no	no	yes	no	yes	no	yes	no	no	yes	no
50th-Percentile Queue Length [veh]	0.70	1.38	1.65	2.37	0.41	5.85	2.27	9.29	6.27	0.37	1.53	1.53	0.37	1.53
50th-Percentile Queue Length [ft]	17.53	34.44	41.28	59.14	10.32	146.14	56.86	232.23	156.71	9.35	38.33	38.33	9.35	38.33
95th-Percentile Queue Length [veh]	1.26	2.48	2.97	4.26	0.74	9.81	4.09	14.29	10.37	0.67	2.76	2.76	0.67	2.76
95th-Percentile Queue Length [ft]	31.55	61.98	74.31	106.45	18.58	245.27	102.35	357.19	259.37	16.83	69.00	69.00	16.83	69.00

**Intersection Settings**

Located in CBD	no
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

**Intersection Level Of Service Report**

**#3: Sycamore Canyon Boulevard (NS) / I-215 Southbound Ramps (EW)**  
 Signalized Delay (sec / veh): 17.5  
 HCM2010 Level Of Service: B  
 15 minutes Volume to Capacity (v/c): 0.705

**Phasing & Timing**

Control Type	Split	Permissive	Protected	Permissive
Signal Group	8	2	0	0
Auxiliary Signal Groups				
Lead / Lag	Lead	-	Lead	-
Minimum Green [s]	7	7	0	7
Maximum Green [s]	30	30	0	30
Amber [s]	3.0	3.0	0.0	3.0
All red [s]	1.0	1.0	0.0	1.0
Split [s]	21	33	0	11
Vehicle Extension [s]	3.0	3.0	0.0	3.0
Walk [s]	5	5	0	5
Pedestrian Clearance [s]	10	10	0	10
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0
Minimum Recall	no	no	no	no
Maximum Recall	no	no	no	no
Pedestrian Recall	no	no	no	no
Detector Location [ft]	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00

Name	Southwestbound	Northwestbound	Southbound
Approach	TT	III	TTT
Lane Configuration			
Turning Movement			
Lane Width [ft]	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0
Pocket Length [ft]	100.00	100.00	100.00
Speed [mph]	45.00	45.00	45.00
Grade [%]	0.00	0.00	0.00
Crosswalk	yes	yes	no

**Volumes**

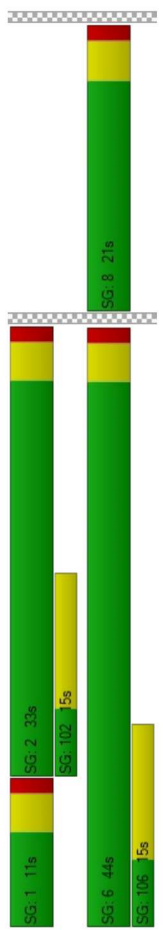
Name	347	133	1688	30	13c	239
Base Volume Input [veh/h]	1,000	1,000	1,000	1,000	1,000	1,000
Base Volume Adjustment Factor	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Vehicles Percentage [%]	1.00	1.00	1.00	1.00	1.00	1.00
Growth Rate	0	0	0	0	0	0
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	69	0	0	0	0
Total Hourly Volume [veh/h]	347	64	1688	30	13c	239
Peak Hour Factor	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	91	17	443	8	3c	63
Total Analysis Volume [veh/h]	364	67	1771	31	14c	251
Presence of On-Street Parking	no	no	no	no	no	no
On-Street Parking Maneuver Rate [ft]	0	0	0	0	0	0
Local Bus Stopping Rate [ft]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0	0	0	0	0	0
Bicycle Volume [bicycles/h]	0	0	0	0	0	0

**Movement, Approach, & Intersection Results**

d, M, Delay for Movement [s/veh]	28.42	19.95	16.00	16.89	28.25	4.94
Movement LOS	C	B	B	B	C	A
d, A, Approach Delay [s/veh]	27.10	16.01	16.01	16.01	13.51	13.51
Approach LOS	C	B	B	B	B	B
d, I, Intersection Delay [s/veh]	17.45					
Intersection LOS	B					
Intersection V/C	0.705					

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-



**Lane Group Calculations**

Lane Group	C	R	C	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g, I, Effective Green Time [s]	15	15	31	6	42
g / C, Green / Cycle	0.24	0.24	0.48	0.10	0.64
(v / s)_I Volume / Saturation Flow Rate	0.20	0.04	0.33	0.04	0.13
s, saturation flow rate [veh/h]	1810	1615	3618	1883	1900
c, Capacity [veh/h]	429	383	1730	900	1216
d1, Uniform Delay [s]	23.68	19.73	13.25	12.99	27.47
k, delay calibration	0.11	0.11	0.50	0.50	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.74	0.22	2.32	3.90	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.85	0.17	0.69	0.67	0.42	0.21
d, Delay for Lane Group [s/veh]	28.42	19.95	15.57	16.89	28.25	4.94
Lane Group LOS	C	B	B	B	C	A
Critical Lane Group	yes	no	yes	no	yes	no
50th-Percentile Queue Length [veh]	5.22	0.74	5.82	6.14	1.00	0.88
50th-Percentile Queue Length [ft]	130.43	18.41	146.59	153.51	25.11	21.95
95th-Percentile Queue Length [veh]	8.96	1.33	9.76	10.20	1.81	1.56
95th-Percentile Queue Length [ft]	224.07	33.14	244.54	255.11	45.20	39.50



**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			no
Number of Storage Spaces in Median	0	0	0

**Intersection Level Of Service Report**

#4: Sycamore Canyon Boulevard (NS) / Dan Kipper Drive (EW)

Control Type: Two-way stop  
 Analysis Method: HCM2010  
 Analysis Period: 15 minutes

Delay (sec / veh): 12.2  
 Level Of Service: B  
 Volume to Capacity (v/c): 0.004

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.01	0.02	0.01	0.00	0.00	0.00
d_L, Delay for Movement [s/veh]	8.77	0.00	0.00	0.00	0.00	12.20
Movement LOS	A	A	A	A	A	B
95th-Percentile Queue Length [veh]	128.42	128.42	0.00	0.00	0.00	0.01
95th-Percentile Queue Length [ft]	3210.47	3210.47	0.00	0.00	0.00	0.30
d_A, Approach Delay [s/veh]		0.04				12.20
Approach LOS		F			A	B
d_I, Intersection Delay [s/veh]					0.04	
Intersection LOS					B	

**Intersection Setup**

Name	Northbound	Southbound	Eastbound
Approach	T	TT	F
Lane Configuration			
Turning Movement	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0
Pocket Length [ft]	100.00	100.00	100.00
Speed [mph]	45.00	45.00	45.00
Grade [%]	0.00	0.00	0.00
Crosswalk	no	no	no

**Volumes**

Name	9	1767	531	39	0	2
Base Volume Input [veh/h]	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Base Volume Adjustment Factor	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Vehicles Percentage [%]	1.00	1.00	1.00	1.00	1.00	1.00
Growth Rate	0	0	0	0	0	0
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	1767	531	39	0	2
Peak Hour Factor	0.9120	0.9120	0.9120	0.9120	0.9200	0.9120
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	484	146	11	0	1
Total Analysis Volume [veh/h]	10	1938	582	43	0	2
Pedestrian Volume [ped/h]						

**Volumes**

Name	9	1767	531	39	0	2
Base Volume Input [veh/h]	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Base Volume Adjustment Factor	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Vehicles Percentage [%]	1.00	1.00	1.00	1.00	1.00	1.00
Growth Rate	0	0	0	0	0	0
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	1767	531	39	0	2
Peak Hour Factor	0.9120	0.9120	0.9120	0.9120	0.9200	0.9120
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	484	146	11	0	1
Total Analysis Volume [veh/h]	10	1938	582	43	0	2
Pedestrian Volume [ped/h]						

**Intersection Settings**

Located in CBD	no
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

**Intersection Level Of Service Report**

#5: Sycamore Canyon Boulevard (NS) / Box Spring Boulevard (EW)

Signalized  
 HCM2010  
 15 minutes

Control Type: 14.2  
 Analysis Method: B  
 Analysis Period: 0.738

Level Of Service:  
 Volume to Capacity (v/c):

**Phasing & Timing**

Control Type	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss
Signal Group	5	2	0	1	6	0	0	8	0	0	4	0	0	0
Auxiliary Signal Groups														
Lead / Lag	Lead			Lead										
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0	0	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0	0	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0
Split [s]	11	36	0	15	40	0	0	19	0	0	19	0	0	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0	0	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0
Minimum Recall	no	no		no	no		no	no		no	no		no	no
Maximum Recall	no	no		no	no		no	no		no	no		no	no
Pedestrian Recall	no	no		no	no		no	no		no	no		no	no
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Intersection Setup**

Name	Northbound	Southbound	Eastbound	Westbound
Approach	⊖	⊖	+	⊖
Lane Configuration	⊖	⊖	+	⊖
Turning Movement	Left Thru Right	Left Thru Right	Left Thru Right	Left Thru Right
Lane Width [ft]	12.00 12.00 12.00	12.00 12.00 12.00	12.00 12.00 12.00	12.00 12.00 12.00
No. of Lanes in Pocket	0 0 0	0 0 0	0 0 0	0 0 0
Pocket Length [ft]	100.00 100.00 100.00	100.00 100.00 100.00	100.00 100.00 100.00	100.00 100.00 100.00
Speed [mph]	45.00	45.00	45.00	45.00
Grade [%]	0.00	0.00	0.00	0.00
Crosswalk	no	yes	yes	yes

**Volumes**

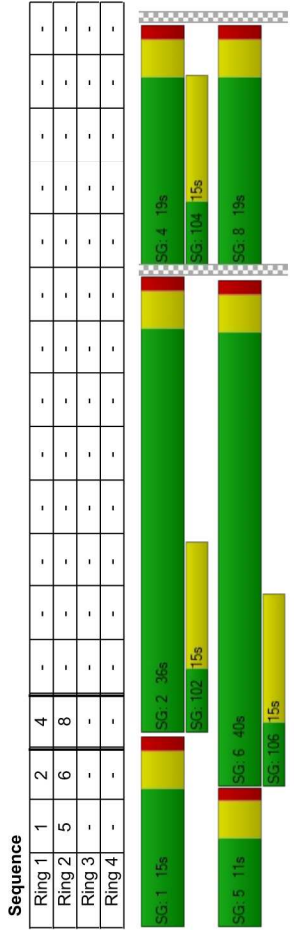
Name	0	1514	34	142	361	0	0	0	0	20	0	245
Base Volume Input [veh/h]	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Base Volume Adjustment Factor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Vehicles Percentage [%]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Rate	0	0	0	0	0	0	0	0	0	0	0	0
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1514	34	142	361	0	0	0	0	20	0	103
Peak Hour Factor	0.9030	0.9030	0.9030	0.9030	0.9030	0.9030	0.9030	0.9030	0.9030	0.9030	0.9030	0.9030
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	419	9	39	100	0	0	0	0	6	0	29
Total Analysis Volume [veh/h]	0	1677	38	157	400	0	0	0	0	22	0	114
Presence of On-Street Parking	no	no	no	no	no	no	no	no	no	no	no	no
On-Street Parking Maneuver Rate [ft]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [ft]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0	0	0	0	0	0	0	0	0	0	0	0
Bicycle Volume [bicycles/h]	0	0	0	0	0	0	0	0	0	0	0	0

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Albert A. Webb Associates

**Movement, Approach, & Intersection Results**

d, M, Delay for Movement [s/veh]	0.00	12.85	12.91	37.46	2.98	2.98	0.00	0.00	0.00	0.00	0.00	31.07	0.00	38.23
Movement LOS	A	E	B	D	A	A	A	A	A	A	A	C	A	D
d, A, Approach Delay [s/veh]	12.85													
Approach LOS	E													
d, I, Intersection Delay [s/veh]	14.19													
Intersection LOS	B													
Intersection V/C	0.738													



**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1, p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g, I, Effective Green Time [s]	0	44	44	8	51	51	7	7	7
g / C, Green / Cycle	0.00	0.63	0.63	0.11	0.73	0.73	0.09	0.09	0.09
(v / s), Volume / Saturation Flow Rate	0.00	0.45	0.45	0.09	0.11	0.11	0.02	0.02	0.07
s, saturation flow rate [veh/h]	1810	1900	1885	1810	1900	1900	1440	1900	1615
c, Capacity [veh/h]	1	1188	1179	198	1394	1394	202	178	152
d1, Uniform Delay [s]	0.00	8.96	8.99	30.41	2.77	2.77	30.84	0.00	30.92
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	3.83	3.92	7.05	0.22	0.22	0.24	0.00	7.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.00	0.72	0.73	0.79	0.14	0.14	0.11	0.00	0.75
d, Delay for Lane Group [s/veh]	0.00	12.79	12.91	37.46	2.98	2.98	31.07	0.00	38.23
Lane Group LOS	A	B	B	D	A	A	C	A	D
Critical Lane Group	no	no	yes	yes	no	no	no	no	yes
50th-Percentile Queue Length [veh]	0.00	7.07	7.10	2.75	0.44	0.44	0.34	0.00	2.03
50th-Percentile Queue Length [ft]	0.00	176.85	177.41	68.81	10.98	10.98	8.46	0.00	50.82
95th-Percentile Queue Length [veh]	0.00	11.44	11.46	4.95	0.79	0.79	0.61	0.00	3.66
95th-Percentile Queue Length [ft]	0.00	285.89	286.62	123.85	19.77	19.77	15.23	0.00	91.48

**Intersection Settings**

Located in CBD	no
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

**Intersection Level Of Service Report**

#6: Sycamore Canyon Boulevard (NS) / Sierra Ridge Drive (EW)  
 Signalized  
 HCM2010  
 15 minutes  
 Delay (sec / veh): 10.3  
 Level Of Service: B  
 Volume to Capacity (v/c): 0.581

**Intersection Setup**

Name	Northbound	Southbound	Eastbound
Approach	TT	TT	TT
Lane Configuration			
Turning Movement			
Lane Width [ft]	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0
Pocket Length [ft]	100.00	100.00	100.00
Speed [mph]	45.00	45.00	45.00
Grade [%]	0.00	0.00	0.00
Crosswalk	yes	no	yes

**Phasing & Timing**

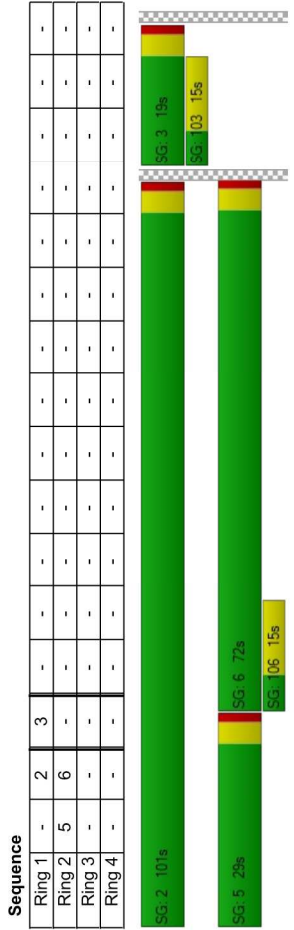
Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	0	0	3	0
Auxiliary Signal Groups							
Lead / Lag	Lead	-	-	-	-	Lead	-
Minimum Green [s]	7	7	7	0	0	7	0
Maximum Green [s]	30	30	30	0	0	30	0
Amber [s]	3.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	29	101	72	0	0	19	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	5	0	0	5	0
Pedestrian Clearance [s]	0	10	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	no	no	no	no	no	no	no
Maximum Recall	no	no	no	no	no	no	no
Pedestrian Recall	no	no	no	no	no	no	no
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Volumes**

Name	151	1604	332	70	30	24
Base Volume Input [veh/h]	151	1604	332	70	30	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	151
Total Hourly Volume [veh/h]	151	1604	332	70	30	24
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	43	456	94	20	9	0
Total Analysis Volume [veh/h]	172	1823	377	80	34	0
Presence of On-Street Parking	no	no	no	no	no	no
On-Street Parking Maneuver Rate [1/h]	0	0	0	0	0	0
Local Bus Stopping Rate [1/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0	0	0	0	0	0
Bicycle Volume [bicycles/h]	0	0	0	0	0	0

**Movement, Approach, & Intersection Results**

	45.50	5.46	13.33	13.43	48.22	0.00
d.M. Delay for Movement [s/veh]	D	A	B	B	D	A
Movement LOS						
d.A. Approach Delay [s/veh]	8.91		13.34		48.22	
Approach LOS	A		B		D	
d.I. Intersection Delay [s/veh]	10.26					
Intersection LOS	B					
Intersection V/C	0.581					



**Lane Group Calculations**

Lane Group	L	C	C	C	C	L	R
L. Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1.p. Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2. Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g.I. Effective Green Time [s]	25	97	68	68	15	15	15
g / C. Green / Cycle	0.21	0.81	0.57	0.57	0.13	0.13	0.13
(v / s).I Volume / Saturation Flow Rate	0.10	0.50	0.12	0.13	0.02	0.02	0.00
s. saturation flow rate [veh/h]	1810	3618	1900	1789	1810	1810	1615
c. Capacity [veh/h]	377	2924	1077	1014	226	202	202
d1. Uniform Delay [s]	41.55	4.44	12.81	12.92	46.82	0.00	0.00
k. delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l. Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2. Incremental Delay [s]	3.94	1.01	0.45	0.52	1.40	0.00	0.00
d3. Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp. platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF. progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

	L	C	C	C	C	L	R
X. volume / capacity	0.46	0.62	0.21	0.23	0.15	0.15	0.00
d. Delay for Lane Group [s/veh]	45.50	5.46	13.26	13.43	48.22	48.22	0.00
Lane Group LOS	D	A	B	B	D	D	A
Critical Lane Group	no	yes	no	no	yes	no	no
50th-Percentile Queue Length [veh]	4.75	5.60	2.96	3.00	0.98	0.98	0.00
50th-Percentile Queue Length [ft]	118.77	140.00	74.01	74.88	24.38	24.38	0.00
95th-Percentile Queue Length [veh]	8.33	9.48	5.33	5.39	1.76	1.76	0.00
95th-Percentile Queue Length [ft]	208.14	237.02	133.21	134.78	43.89	43.89	0.00

**Intersection Settings**

Located in CBD	no
Signal Coordination Group	-
Cycle Length [s]	75
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

**Intersection Level Of Service Report**

#7: Sycamore Canyon Boulevard (NS) / Eastridge Avenue (EW)

Signalized  
 HCM2010  
 15 minutes

Control Type: Delay (sec / veh): 32.6  
 C  
 Analysis Method: Level Of Service: C  
 HCM2010  
 15 minutes  
 Analysis Period: Volume to Capacity (v/c): 0.616

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal Group	5	2	2	1	6	6	3	8	0	7	4	4
Auxiliary Signal Groups	Lead	-	2.7	Lead	-	3.6	Lead	-	Lead	-	1.4	-
Lead / Lag	7	7	7	7	7	7	7	7	7	7	7	7
Minimum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Maximum Green [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Amber [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
All red [s]	19	23	23	15	19	19	11	19	0	18	26	26
Split [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Vehicle Extension [s]	0	5	5	0	5	5	0	5	0	5	5	5
Walk [s]	0	10	10	0	10	10	0	10	0	10	10	10
Pedestrian Clearance [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	no	no	no	no	no	no	no	no	no	no	no	no
Minimum Recall	no	no	no	no	no	no	no	no	no	no	no	no
Maximum Recall	no	no	no	no	no	no	no	no	no	no	no	no
Pedestrian Recall	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Intersection Setup**

Name	Northbound	Southbound	Eastbound	Westbound
Approach	זארה	זארה	זארה	זארה
Lane Configuration	Left Thru Right	Left Thru Right	Left Thru Right	Left Thru Right
Turning Movement	12.00 12.00 12.00	12.00 12.00 12.00	12.00 12.00 12.00	12.00 12.00 12.00
Lane Width [ft]	0 0 0	0 0 0	0 0 0	0 0 0
No. of Lanes in Pocket	100.00 100.00 100.00	100.00 100.00 100.00	100.00 100.00 100.00	100.00 100.00 100.00
Pocket Length [ft]	45.00	45.00	45.00	45.00
Speed [mph]	0.00	0.00	0.00	0.00
Grade [%]	yes	yes	yes	no
Crosswalk	yes	yes	yes	no

**Volumes**

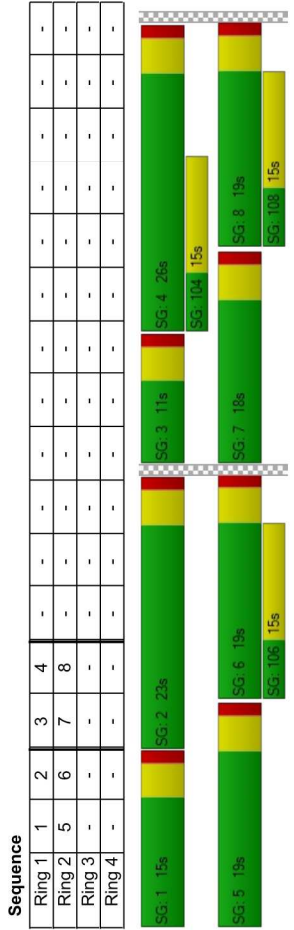
Name	1125	137	77	123	44	60	94	30	136	182	556
Base Volume Input [veh/h]	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Base Volume Adjustment Factor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Vehicles Percentage [%]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Rate	0	0	0	0	0	0	0	0	0	0	0
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0
Diverged Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	68	0	0	30	0	0	30	0	0	38
Total Hourly Volume [veh/h]	155	1125	69	77	123	14	60	94	0	136	182
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	43	313	19	21	34	4	17	26	0	38	51
Total Analysis Volume [veh/h]	172	1250	77	86	137	16	67	104	0	151	202
Presence of On-Street Parking	no	no	no	no	no	no	no	no	no	no	no
On-Street Parking Maneuver Rate [ft]	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [ft]	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0	0	0	0	0	0	0	0	0	0	0
Bicycle Volume [bicycles/h]	0	0	0	0	0	0	0	0	0	0	0

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**Movement, Approach, & Intersection Results**

d, I, Delay for Movement [s/veh]	33.82	32.52	9.01	28.14	12.59	7.19	33.04	26.67	0.00	33.15	26.76	44.86
Movement LOS	C	C	A	C	B	A	C	C	A	C	C	D
d, A, Approach Delay [s/veh]	31.46											
Approach LOS	C											
d, I, Intersection Delay [s/veh]	32.65											
Intersection LOS	C											
Intersection V/C	0.616											



**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l, p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g, I, Effective Green Time [s]	7	29	39	11	33	42	6	13	13	7	14	29
g / C, Green / Cycle	0.09	0.38	0.53	0.15	0.44	0.57	0.08	0.17	0.17	0.09	0.18	0.38
(v / s), Volume / Saturation Flow Rate	0.05	0.35	0.05	0.02	0.04	0.01	0.02	0.02	0.00	0.04	0.06	0.36
s, saturation flow rate [veh/h]	3514	3618	1615	3514	3618	1615	3514	5176	1615	3514	3618	1615
c, Capacity [veh/h]	325	1374	851	515	1570	912	271	860	268	330	662	619
d1, Uniform Delay [s]	32.48	22.04	8.80	27.99	12.48	7.19	32.57	26.61	0.00	32.16	26.50	22.18
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.34	10.48	0.21	0.15	0.11	0.01	0.47	0.06	0.00	0.89	0.26	22.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.53	0.91	0.09	0.17	0.09	0.02	0.25	0.12	0.00	0.46	0.30	0.93
d, Delay for Lane Group [s/veh]	33.82	32.52	9.01	28.14	12.59	7.19	33.04	26.67	0.00	33.15	26.76	44.86
Lane Group LOS	C	C	A	C	B	A	C	C	A	C	C	D
Critical Lane Group	no	yes	no	no	no	no	yes	no	no	no	no	yes
50th-Percentile Queue Length [veh]	1.45	10.93	0.56	0.64	0.61	0.09	0.55	0.49	0.00	1.25	1.46	12.21
50th-Percentile Queue Length [ft]	36.23	273.26	13.97	15.93	15.20	2.27	13.82	12.32	0.00	31.36	36.57	305.33
95th-Percentile Queue Length [veh]	2.61	16.35	1.01	1.15	1.09	0.16	0.99	0.89	0.00	2.26	2.63	17.94
95th-Percentile Queue Length [ft]	65.22	406.81	25.15	28.68	27.36	4.08	24.87	22.18	0.00	56.44	65.83	448.61

**Intersection Settings**

Located in CBD	no
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

**Intersection Level Of Service Report**

#8: Box Springs Boulevard (NS) / Eastridge Avenue (EW)

Signalized  
 HCM2010  
 15 minutes

Control Type: 31.3  
 Analysis Method: C  
 Analysis Period: 0.537

Level Of Service:  
 Volume to Capacity (v/c):

**Phasing & Timing**

Control Type	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss
Signal Group	5	2	0	1	6	0	3	8
Auxiliary Signal Groups								
Lead / Lag	Lead			Lead			Lead	
Minimum Green [s]	7	7	0	7	7	0	7	7
Maximum Green [s]	30	30	0	30	30	0	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0
Split [s]	11	19	0	11	19	0	11	39
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0
Minimum Recall	no	no		no	no		no	no
Maximum Recall	no	no		no	no		no	no
Pedestrian Recall	no	no		no	no		no	no
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Volumes**

Name	11	7	40	5	6	62	272	9	52	817	377
Base Volume Input [veh/h]	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Base Volume Adjustment Factor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Vehicles Percentage [%]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Rate	0	0	0	0	0	0	0	0	0	0	0
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	52	0	0	0	0	0	11	0	0	0
Total Hourly Volume [veh/h]	11	11	40	5	6	62	272	0	52	817	377
Peak Hour Factor	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	3	11	1	2	17	74	0	14	222	102
Total Analysis Volume [veh/h]	12	12	43	5	7	67	295	0	56	886	409
Presence of On-Street Parking	no	no	no	no	no	no	no	no	no	no	no
On-Street Parking Maneuver Rate [1/h]	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [1/h]	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0	0	0	0	0	0	0	0	0	0	0
Bicycle Volume [bicycles/h]	0	0	0	0	0	0	0	0	0	0	0





**Intersection Settings**

Located in CBD	no
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

**Intersection Level Of Service Report**

**#8: I-215 Ramps (NS) / Eastridge Avenue-Eucalyptus Avenue (EW)**

Signalized Delay (sec / veh): 24.1  
 HCM2010 Level Of Service: C  
 15 minutes Volume to Capacity (v/c): 0.556

**Phasing & Timing**

Control Type	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss
Signal Group	3	0	0	0	7	0	0	0
Auxiliary Signal Groups	Lead	-	-	-	Lead	-	-	-
Lead / Lag	7	0	0	0	7	0	0	7
Minimum Green [s]	30	0	0	0	30	0	0	30
Maximum Green [s]	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0
Amber [s]	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0
All red [s]	22	0	0	0	22	0	0	22
Split [s]	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0
Vehicle Extension [s]	5	0	0	0	5	0	0	5
Walk [s]	10	0	0	0	10	0	0	10
Pedestrian Clearance [s]	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0
I2, Clearance Lost Time [s]	no				no			no
Minimum Recall	no				no			no
Maximum Recall	no				no			no
Pedestrian Recall	no				no			no
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Intersection Setup**

Name	Northbound	Southbound	Eastbound	Westbound
Approach	⬅️	➡️	⬅️	➡️
Lane Configuration	Left 12.00 Thru 12.00 Right 12.00	Left 12.00 Thru 12.00 Right 12.00	Left 12.00 Thru 12.00 Right 12.00	Left 12.00 Thru 12.00 Right 12.00
Turning Movement	0 0 0	0 0 0	0 0 0	0 0 0
Lane Width [ft]	100.00	100.00	100.00	100.00
No. of Lanes in Pocket	45.00	45.00	45.00	45.00
Pocket Length [ft]	0.00	0.00	0.00	0.00
Speed [mph]	no	no	no	no
Grade [%]	no	no	no	no
Crosswalk	no	no	no	no

**Volumes**

Name	472	0	205	160	0	304	134	108	90	311	493	280
Base Volume Input [veh/h]	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Base Volume Adjustment Factor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Vehicles Percentage [%]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Rate	0	0	0	0	0	0	0	0	0	0	0	0
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	155	0	0	134	0	0	90	0	0	280
Total Hourly Volume [veh/h]	472	0	50	160	0	170	134	108	0	311	493	0
Peak Hour Factor	0.9300	0.9200	0.9300	0.9300	0.9200	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	127	0	13	43	0	46	36	29	0	84	133	0
Total Analysis Volume [veh/h]	508	0	54	172	0	183	144	116	0	334	530	0
Presence of On-Street Parking	no	no	no	no	no	no	no	no	no	no	no	no
On-Street Parking Maneuver Rate [hr]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [hr]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0	0	0	0	0	0	0	0	0	0	0	0
Bicycle Volume [bicycles/h]	0	0	0	0	0	0	0	0	0	0	0	0

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Albert A. Webb Associates

**Movement, Approach, & Intersection Results**

d, I, M, Delay for Movement [s/veh]	23.82	0.00	17.18	19.84	0.00	13.75	31.72	22.11	0.00	26.33	24.84	0.00
Movement LOS	C		B	B		B	C	C	A	C	C	A
d, A, Approach Delay [s/veh]	23.18											
Approach LOS	C											
d, I, Intersection Delay [s/veh]	19.79											
Intersection Delay	B											
Intersection LOS	C											
Intersection V/C	0.556											

**Sequence**

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**Lane Group Calculations**

Lane Group	L	R	L	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
I, p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g, I, Effective Green Time [s]	15	15	15	15	10	10	10	8	11	11
g / C, Green / Cycle	0.25	0.25	0.25	0.25	0.16	0.16	0.16	0.14	0.19	0.19
(v / s), Volume / Saturation Flow Rate	0.18	0.02	0.06	0.11	0.08	0.03	0.00	0.10	0.15	0.00
s, saturation flow rate [veh/h]	2796	2859	2796	1615	1810	3618	1615	3514	3618	1615
c, Capacity [veh/h]	723	718	723	406	193	574	256	487	690	308
d1, Uniform Delay [s]	22.56	17.14	19.67	18.96	26.02	21.93	0.00	24.60	23.01	0.00
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.26	0.04	0.17	0.78	5.69	0.17	0.00	1.72	1.83	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.70	0.08	0.24	0.45	0.75	0.20	0.00	0.69	0.77	0.00
d, Delay for Lane Group [s/veh]	23.82	17.18	19.84	19.75	31.72	22.11	0.00	26.33	24.84	0.00
Lane Group LOS	C	B	B	B	C	C	A	C	C	A
Critical Lane Group	yes	no	no	no	yes	no	no	no	yes	no
50th-Percentile Queue Length [veh]	3.07	0.25	0.89	1.83	2.08	0.64	0.00	2.11	3.26	0.00
50th-Percentile Queue Length [ft]	76.84	6.23	22.17	48.13	51.93	16.01	0.00	52.72	81.40	0.00
95th-Percentile Queue Length [veh]	5.53	0.45	1.60	3.47	3.74	1.15	0.00	3.80	5.86	0.00
95th-Percentile Queue Length [ft]	138.32	11.22	39.91	86.63	93.48	28.81	0.00	94.89	146.52	0.00

**Intersection Settings**

Located in CBD	no
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	8	0	0	4	0	0	0	2	0	0
Auxiliary Signal Groups											
Lead / Lag	Lead										
Minimum Green [s]	7	7	0	0	7	0	0	0	7	0	0
Maximum Green [s]	30	30	0	0	30	0	0	0	30	0	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	19	41	0	0	22	0	0	0	19	0	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	10	0	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall	no	no			no				no		
Maximum Recall	no	no			no				no		
Pedestrian Recall	no	no			no				no		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Intersection Level Of Service Report**  
 #1: I-215 Northbound Ramps (NS) / Fair Isle Drive-Box Springs Road (EW)  
 Control Type: Signalized  
 Analysis Method: HCM2010  
 Analysis Period: 15 minutes  
 Delay (sec / veh): 19.7  
 Level Of Service: B  
 Volume to Capacity (v/c): 0.374

**Intersection Setup**

Name	Northwestbound	Southwestbound	Northwestbound	Southwestbound
Approach	TTTT	TTTT	TTTT	TTTT
Lane Configuration				
Turning Movement	Left 12.00 Thru 12.00 Right 12.00	Left 12.00 Thru 12.00 Right 12.00	Left 12.00 Thru 12.00 Right 12.00	Left 12.00 Thru 12.00 Right 12.00
Lane Width [ft]	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00
Speed [mph]	45.00	45.00	60.00	45.00
Grade [%]	0.00	0.00	0.00	0.00
Crosswalk	no	yes	yes	yes

**Volumes**

Name	659	171	284	83	6	3	0	0
Base Volume Input [veh/h]	431	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	431	659	171	284	83	6	3	0
Peak Hour Factor	0.9650	0.9200	0.9200	0.9650	0.9650	0.9650	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	112	171	44	74	22	2	1	0
Total Analysis Volume [veh/h]	447	683	177	294	86	6	3	0
Presence of On-Street Parking	no		no		no			
On-Street Parking Maneuver Rate [ft]	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [ft]	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0	0	0	0	0	0	0	0
Bicycle Volume [bicycles/h]	0	0	0	0	0	0	0	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	25	11	11	27	27
g / C, Green / Cycle	0.17	0.42	0.19	0.19	0.44	0.44
(v / s)_l, Volume / Saturation Flow Rate	0.13	0.19	0.14	0.15	0.03	0.03
s, saturation flow rate [veh/h]	3514	3618	1711	1615	1810	1807
c, Capacity [veh/h]	590	1536	325	307	800	799
d1, Uniform Delay [s]	23.80	12.24	22.81	23.03	9.59	9.59
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.03	0.20	3.05	4.01	0.14	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.76	0.44	0.72	0.77	0.06	0.06
d, Delay for Lane Group [s/veh]	25.83	12.45	25.87	27.04	9.73	9.73
Lane Group LOS	C	B	C	C	A	A
Critical Lane Group	yes	no	no	yes	no	yes
50th-Percentile Queue Length [veh]	2.81	2.59	2.99	3.08	0.28	0.28
50th-Percentile Queue Length [ft]	70.20	64.73	74.79	77.09	6.92	6.92
95th-Percentile Queue Length [veh]	5.05	4.66	5.38	5.55	0.50	0.50
95th-Percentile Queue Length [ft]	126.36	116.52	134.62	138.77	12.46	12.45

**Movement, Approach, & Intersection Results**

d, M, Delay for Movement [s/veh]	25.83	12.45	0.00	0.00	25.87	23.81	9.73	9.73	9.73	9.73	0.00	0.00
Movement LOS	C	E			C	C	A	A	A	A	A	
d_A, Approach Delay [s/veh]		17.74			26.46		9.73				0.00	
Approach LOS		E			C		A				A	
d_l, Intersection Delay [s/veh]						19.71						
Intersection LOS						B						
Intersection V/C						0.374						

**Sequence**

Ring 1	2	3	4									
Ring 1	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-

The sequence diagram shows a series of signal phases represented by colored bars. From left to right: a green bar for SG 2 19s, a yellow bar for SG 102 7s, a red bar for SG 3 19s, a yellow bar for SG 4 22s, a red bar for SG 4 22s, a yellow bar for SG 104 7s, a green bar for SG 8 41s, and a yellow bar for SG 103 7s. The bars are arranged in a sequence that suggests a specific timing and priority for each phase.

**#2: Sycamore Canyon Boulevard (NS) / Fair Isle Drive (EW)**  
Signalized  
HCM2010  
15 minutes  
Control Type: Delay (sec / veh): 25.6  
Analysis Method: Level Of Service: C  
Analysis Period: Volume to Capacity (v/c): 0.758

**Intersection Setup**

Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Approach	TTL											
Lane Configuration	TTL											
Turning Movement	TTL											
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Grade [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crosswalk	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	no

**Volumes**

Name	22	85	95	104	80	71	214	204	649	323	341	35
Base Volume Input [veh/h]	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Base Volume Adjustment Factor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverged Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	85	95	104	80	71	214	204	649	323	341	35
Peak Hour Factor	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	23	25	28	21	0	57	55	146	87	91	9
Total Analysis Volume [veh/h]	24	91	102	111	86	0	229	219	584	346	365	38
Presence of On-Street Parking	no	no	no	no	no	no	no	no	no	no	no	no
On-Street Parking Maneuver Rate [1/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [1/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0	0	0	0	0	0	0	0	0	0	0	0
Bicycle Volume [bicycles/h]	0	0	0	0	0	0	0	0	0	0	0	0

**Intersection Settings**

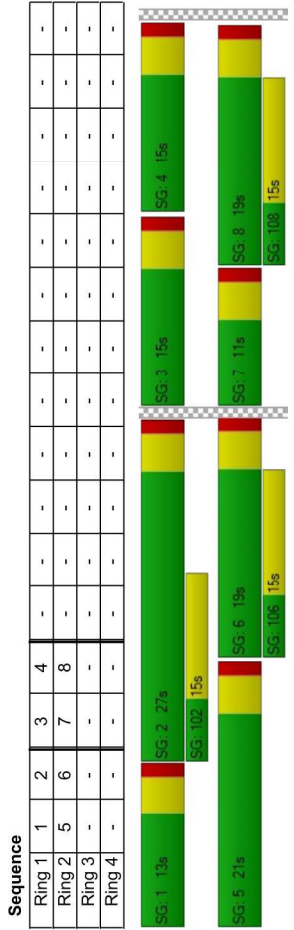
Located in CBD	no
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Lead / Lag	7	7	0	7	7	0	7	7	0	7	7	0
Minimum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Maximum Green [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Amber [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
All red [s]	15	19	0	11	15	0	21	27	0	13	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	no	no		no	no		no	no		no	no	
Maximum Recall	no	no		no	no		no	no		no	no	
Pedestrian Recall	no	no		no	no		no	no		no	no	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Movement, Approach, & Intersection Results**

	d, M, Delay for Movement [s/veh]	35.53	31.71	34.40	36.22	26.10	0.00	34.71	11.08	24.38	32.88	16.76	16.76
Movement LOS			D	C	C	D	C	A	B	C	C	B	B
d, A, Approach Delay [s/veh]			33.40			31.81			23.85			24.26	
Approach LOS			C			C			C			C	
d, I, Intersection Delay [s/veh]							25.65						
Intersection LOS							C						
Intersection V/C							0.758						



**Lane Group Calculations**

Lane Group	L	C	C	L	C	R	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
I, p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g, I, Effective Green Time [s]	3	7	7	6	10	10	11	32	32	9	30	30	30	30
g / C, Green / Cycle	0.04	0.10	0.10	0.09	0.15	0.15	0.15	0.46	0.46	0.12	0.43	0.43	0.43	0.43
(v / s), Volume / Saturation Flow Rate	0.01	0.05	0.06	0.06	0.02	0.00	0.13	0.06	0.36	0.10	0.22	0.22	0.22	0.22
s, saturation flow rate [veh/h]	1810	1900	1615	1810	3618	1615	1810	3618	1615	3514	1869	1869	1869	1869
c, Capacity [veh/h]	71	189	161	160	539	241	278	1659	741	438	803	803	803	803
d1, Uniform Delay [s]	32.75	29.81	30.30	30.97	25.97	0.00	26.69	10.92	16.06	29.75	14.53	14.53	14.53	14.53
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.78	1.90	4.11	5.25	0.14	0.00	6.02	0.16	8.32	3.23	2.24	2.24	2.24	2.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.34	0.48	0.63	0.69	0.16	0.00	0.82	0.13	0.79	0.79	0.79	0.79	0.50
d, Delay for Lane Group [s/veh]	35.53	31.71	34.40	36.22	26.10	0.00	34.71	11.08	24.38	32.88	16.76	16.76	16.76
Lane Group LOS		D	C	C	D	C	A	C	B	C	C	C	B
Critical Lane Group		no	no	yes	yes	no	no	no	no	yes	yes	yes	no
50th-Percentile Queue Length [veh]	0.42	1.43	1.70	1.91	0.58	0.00	3.85	0.85	8.06	2.78	4.35	4.35	4.35
50th-Percentile Queue Length [ft]	10.57	35.85	42.59	47.71	14.35	0.00	96.15	21.17	201.53	69.47	108.85	108.85	108.85
95th-Percentile Queue Length [veh]	0.76	2.56	3.07	3.43	1.05	0.00	6.92	1.52	12.72	5.00	7.78	7.78	7.78
95th-Percentile Queue Length [ft]	19.03	64.53	76.66	85.87	26.20	0.00	173.07	38.11	317.94	125.05	194.41	194.41	194.41

**Intersection Settings**

Located in CBD	no
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

**Intersection Level Of Service Report**

**#3: Sycamore Canyon Boulevard (NS) / I-215 Southbound Ramps (EW)**  
 Signalized Delay (sec / veh): 12.2  
 HCM2010 Level Of Service: B  
 15 minutes Volume to Capacity (v/c): 0.425

**Phasing & Timing**

Control Type	Split	Permissive	Protected	Permissive
Signal Group	8	2	0	0
Auxiliary Signal Groups				
Lead / Lag	Lead	-	Lead	-
Minimum Green [s]	7	7	0	7
Maximum Green [s]	30	30	0	30
Amber [s]	3.0	3.0	0.0	3.0
All red [s]	1.0	1.0	0.0	1.0
Split [s]	30	19	0	11
Vehicle Extension [s]	3.0	3.0	0.0	3.0
Walk [s]	5	5	0	5
Pedestrian Clearance [s]	10	10	0	10
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0
Minimum Recall	no	no	no	no
Maximum Recall	no	no	no	no
Pedestrian Recall	no	no	no	no
Detector Location [ft]	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00

Name	Southwestbound	Northwestbound	Southbound
Approach	TT	III	rrr
Lane Configuration			
Turning Movement			
Lane Width [ft]	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0
Pocket Length [ft]	100.00	100.00	100.00
Speed [mph]	45.00	45.00	45.00
Grade [%]	0.00	0.00	0.00
Crosswalk	yes	yes	no

**Volumes**

Name	151	236	777	146	156	380
Base Volume Input [veh/h]	1,000	1,000	1,000	1,000	1,000	1,000
Base Volume Adjustment Factor	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Vehicles Percentage [%]	1.00	1.00	1.00	1.00	1.00	1.00
Growth Rate	0	0	0	0	0	0
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	69	0	0	0	0
Total Hourly Volume [veh/h]	151	167	777	146	156	380
Peak Hour Factor	0.9250	0.9250	0.9250	0.9250	0.9250	0.9250
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	41	45	210	39	43	103
Total Analysis Volume [veh/h]	163	181	840	159	171	411
Presence of On-Street Parking	no	no	no	no	no	no
On-Street Parking Maneuver Rate [ft]	0	0	0	0	0	0
Local Bus Stopping Rate [ft]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0	0	0	0	0	0
Bicycle Volume [bicycles/h]	0	0	0	0	0	0

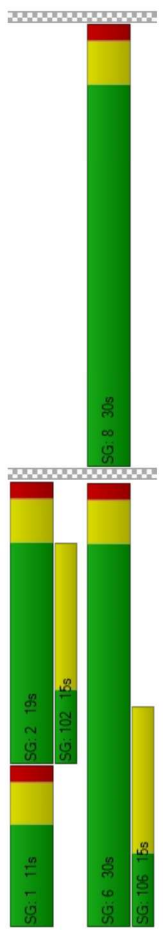


**Movement, Approach, & Intersection Results**

	27.95	28.41	8.14	8.61	25.78	3.05
d.M. Delay for Movement [s/veh]	C	C	A	A	C	A
Movement LOS						
d.A. Approach Delay [s/veh]	28.18		8.21			9.73
Approach LOS	C		A			A
d.I. Intersection Delay [s/veh]			12.24			
Intersection LOS			B			
Intersection V/C			0.425			

**Sequence**

Ring	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Ring 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Lane Group Calculations**

	C	R	C	C	L	C
Lane Group						
L. Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p. Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2. Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g.L. Effective Green Time [s]	9	9	33	33	7	43
g / C. Green / Cycle	0.14	0.14	0.55	0.55	0.11	0.72
(v / s).I Volume / Saturation Flow Rate	0.10	0.10	0.18	0.19	0.05	0.22
s. saturation flow rate [veh/h]	1789	1615	3618	1753	3514	1900
c. Capacity [veh/h]	257	232	1977	958	386	1374
d1. Uniform Delay [s]	24.47	24.50	7.56	7.61	24.98	2.83
k. delay calibration	0.11	0.11	0.50	0.50	0.11	0.11
l. Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2. Incremental Delay [s]	3.48	3.94	0.46	1.00	0.80	0.12
d3. Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp. platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF. progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X. volume / capacity	0.70	0.71	0.34	0.35	0.44	0.30
d. Delay for Lane Group [s/veh]	27.95	28.44	8.02	8.61	25.78	3.05
Lane Group LOS	C	C	A	A	C	A
Critical Lane Group	no	yes	no	yes	yes	no
50th-Percentile Queue Length [veh]	2.39	2.21	1.75	1.90	1.06	0.59
50th-Percentile Queue Length [ft]	59.84	55.20	43.80	47.55	26.39	14.84
95th-Percentile Queue Length [veh]	4.31	3.97	3.15	3.42	1.90	1.07
95th-Percentile Queue Length [ft]	107.72	99.35	78.84	85.59	47.50	26.71

**Intersection Level Of Service Report**

**#4: Sycamore Canyon Boulevard (NS) / Dan Kipper Drive (EW)**

Control Type: Two-way stop  
 Analysis Method: HCM2010  
 Analysis Period: 15 minutes

Delay (sec / veh): 12.0  
 Level Of Service: B  
 Volume to Capacity (v/c): 0.002

**Intersection Setup**

Name	Northbound	Southbound	Eastbound
Approach	T	TT	F
Lane Configuration			
Turning Movement	Left 12.00	Thru 12.00	Right 12.00
Lane Width [ft]	0	0	0
No. of Lanes in Pocket	100.00	100.00	100.00
Pocket Length [ft]	45.00	45.00	45.00
Speed [mph]	0.00	0.00	0.00
Grade [%]	no	no	no
Crosswalk			

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			no
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	d_L, Delay for Movement [s/veh]	d_A, Approach Delay [s/veh]	d_I, Intersection Delay [s/veh]	Intersection LOS
0.00	8.61	0.01	0.00	0.00
A	A	A	0.00	0.00
25.81	25.81	25.81	0.00	0.00
645.21	645.21	645.21	0.00	0.00
0.01	0.01	0.01	0.00	12.01
F	F	F	A	B
0.01	0.01	0.01	0.01	0.01
B	B	B	B	B

**Volumes**

Name	1	899	486	3	0	1
Base Volume Input [veh/h]	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
Base Volume Adjustment Factor	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Vehicles Percentage [%]	1.00	1.00	1.00	1.00	1.00	1.00
Growth Rate	0	0	0	0	0	0
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	899	486	3	0	1
Peak Hour Factor	0.8340	0.8340	0.8340	0.8340	0.8340	0.8340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	269	146	1	0	0
Total Analysis Volume [veh/h]	1	1078	583	4	0	1
Pedestrian Volume [ped/h]						

**Report File:** G:\...\E-PM.pdf

Albert A. Webb Associates

**Report File:** G:\...\E-PM.pdf

Albert A. Webb Associates

**Intersection Settings**

Located in CBD	no
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

**Intersection Level Of Service Report**

#5: Sycamore Canyon Boulevard (NS) / Box Spring Boulevard (EW)

Signalized  
 HCM2010  
 15 minutes

Control Type: 12.1  
 Analysis Method: B  
 Analysis Period: 0.447

Level Of Service:  
 Volume to Capacity (v/c):

**Phasing & Timing**

Control Type	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss
Signal Group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead			Lead								
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	21	0	11	21	0	0	28	0	0	28	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	no	no		no	no		no	no		no	no	
Maximum Recall	no	no		no	no		no	no		no	no	
Pedestrian Recall	no	no		no	no		no	no		no	no	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Intersection Setup**

Name	Northbound	Southbound	Eastbound	Westbound
Approach				
Lane Configuration				
Turning Movement				
Lane Width [ft]	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00
Speed [mph]	45.00	45.00	45.00	45.00
Grade [%]	0.00	0.00	0.00	0.00
Crosswalk	no	yes	yes	yes

**Volumes**

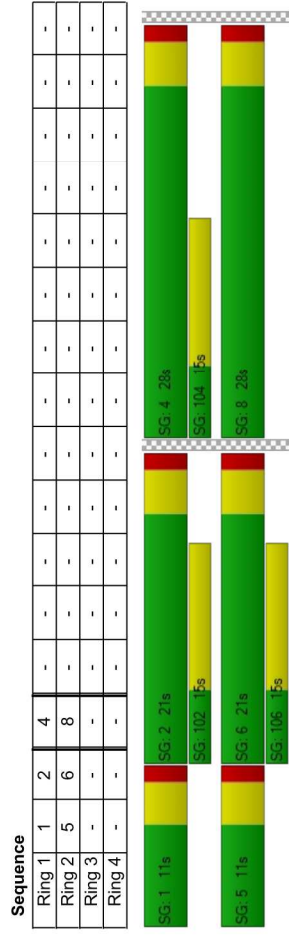
Name	1	572	7	54	437	0	45	1	17	17	0	247
Base Volume Input [veh/h]	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Base Volume Adjustment Factor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Vehicles Percentage [%]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Rate	0	0	0	0	0	0	0	0	0	0	0	0
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	54
Total Hourly Volume [veh/h]	1	572	7	54	437	0	45	1	17	17	0	193
Peak Hour Factor	0.8450	0.8450	0.8450	0.8450	0.8450	0.8450	0.8450	0.8450	0.8450	0.8450	0.8450	0.8450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	169	2	16	129	0	13	0	5	5	0	57
Total Analysis Volume [veh/h]	1	677	8	64	517	0	53	1	20	20	0	228
Presence of On-Street Parking	no	no	no	no	no	no	no	no	no	no	no	no
On-Street Parking Maneuver Rate [ft]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [ft]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0	0	0	0	0	0	0	0	0	0	0	0
Bicycle Volume [bicycles/h]	0	0	0	0	0	0	0	0	0	0	0	0

**Phasing & Timing**

Control Type	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss
Signal Group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead			Lead								
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	21	0	11	21	0	0	28	0	0	28	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	no	no		no	no		no	no		no	no	
Maximum Recall	no	no		no	no		no	no		no	no	
Pedestrian Recall	no	no		no	no		no	no		no	no	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Movement, Approach, & Intersection Results**

Movement	d, M, Delay for Movement [s/veh]	39.62	8.37	8.38	28.82	5.44	5.44	22.06	22.06	22.06	22.06	22.06	24.40	0.00	28.95
d, A, Approach Delay [s/veh]	8.42	A	A	A	C	A	A	C	C	C	C	C	C	A	C
d, I, Intersection Delay [s/veh]		A				8.01								28.58	C
Intersection LOS															
Intersection V/C															



**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1, p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g, l, Effective Green Time [s]	0	33	33	5	37	37	11	11	11	11
g / C, Green / Cycle	0.00	0.55	0.55	0.08	0.62	0.62	0.18	0.18	0.18	0.18
(v / s), Volume / Saturation Flow Rate	0.00	0.18	0.18	0.04	0.14	0.14	0.05	0.01	0.00	0.14
s, saturation flow rate [veh/h]	1810	1900	1892	1810	1900	1900	1398	1413	1900	1615
c, Capacity [veh/h]	7	1039	1035	140	1178	1178	349	271	334	284
d1, Uniform Delay [s]	29.79	7.52	7.52	26.49	5.01	5.01	21.76	24.29	0.00	23.72
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.82	0.85	0.86	2.34	0.43	0.43	0.30	0.11	0.00	5.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.15	0.33	0.33	0.46	0.22	0.22	0.21	0.07	0.00	0.80
d, Delay for Lane Group [s/veh]	39.62	8.37	8.38	28.82	5.44	5.44	22.06	24.40	0.00	28.95
Lane Group LOS	D	A	A	C	A	A	C	C	A	C
Critical Lane Group	no	no	yes	yes	no	no	no	no	no	yes
50th-Percentile Queue Length [veh]	0.03	1.91	1.90	0.87	0.96	0.96	0.84	0.24	0.00	3.12
50th-Percentile Queue Length [ft]	0.79	47.72	47.57	21.87	23.98	23.98	20.89	5.96	0.00	77.89
95th-Percentile Queue Length [veh]	0.06	3.44	3.43	1.57	1.73	1.73	1.50	0.43	0.00	5.61
95th-Percentile Queue Length [ft]	1.41	85.90	85.63	39.37	43.17	43.17	37.60	10.74	0.00	140.20

**Intersection Settings**

Located in CBD	no
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

**Intersection Level Of Service Report**

**#6: Sycamore Canyon Boulevard (NS) / Sierra Ridge Drive (EW)**  
 Signalized  
 HCM2010  
 15 minutes  
 Delay (sec / veh): 11.1  
 Level Of Service: B  
 Volume to Capacity (v/c): 0.295

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	0	0	3	0
Auxiliary Signal Groups							
Lead / Lag	Lead	-	-	-	-	Lead	-
Minimum Green [s]	7	7	7	0	0	7	0
Maximum Green [s]	30	30	30	0	0	30	0
Amber [s]	3.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	12	41	29	0	0	19	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	5	0	0	5	0
Pedestrian Clearance [s]	0	10	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	no	no	no	no	no	no	no
Maximum Recall	no	no	no	no	no	no	no
Pedestrian Recall	no	no	no	no	no	no	no
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Name	Northbound	Southbound	Eastbound
Approach	TT	TT	TT
Lane Configuration			
Turning Movement			
Lane Width [ft]	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0
Pocket Length [ft]	100.00	100.00	100.00
Speed [mph]	45.00	45.00	45.00
Grade [%]	0.00	0.00	0.00
Crosswalk	yes	no	yes

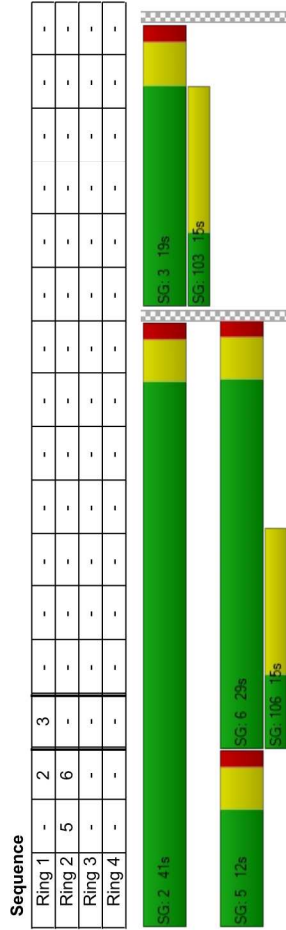
Name	Northbound	Southbound	Eastbound
Base Volume Input [veh/h]	78	461	96
Base Volume Adjustment Factor	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0
Site-Generated Trips [veh/h]	0	0	0
Diverted Trips [veh/h]	0	0	0
Pass-by Trips [veh/h]	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0
Other Volume [veh/h]	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	78
Total Hourly Volume [veh/h]	78	461	18
Peak Hour Factor	0.9040	0.9040	0.9040
Other Adjustment Factor	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	127	5
Total Analysis Volume [veh/h]	86	510	20
Presence of On-Street Parking	no	no	no
On-Street Parking Maneuver Rate [1/h]	0	0	0
Local Bus Stopping Rate [1/h]	0	0	0
Pedestrian Volume [ped/h]	0	0	0
Bicycle Volume [bicycles/h]	0	0	0

Name	Northbound	Southbound	Eastbound
Base Volume Input [veh/h]	78	461	96
Base Volume Adjustment Factor	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0
Site-Generated Trips [veh/h]	0	0	0
Diverted Trips [veh/h]	0	0	0
Pass-by Trips [veh/h]	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0
Other Volume [veh/h]	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	78
Total Hourly Volume [veh/h]	78	461	18
Peak Hour Factor	0.9040	0.9040	0.9040
Other Adjustment Factor	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	127	5
Total Analysis Volume [veh/h]	86	510	20
Presence of On-Street Parking	no	no	no
On-Street Parking Maneuver Rate [1/h]	0	0	0
Local Bus Stopping Rate [1/h]	0	0	0
Pedestrian Volume [ped/h]	0	0	0
Bicycle Volume [bicycles/h]	0	0	0

Name	Northbound	Southbound	Eastbound
Base Volume Input [veh/h]	78	461	96
Base Volume Adjustment Factor	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0
Site-Generated Trips [veh/h]	0	0	0
Diverted Trips [veh/h]	0	0	0
Pass-by Trips [veh/h]	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0
Other Volume [veh/h]	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	78
Total Hourly Volume [veh/h]	78	461	18
Peak Hour Factor	0.9040	0.9040	0.9040
Other Adjustment Factor	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	127	5
Total Analysis Volume [veh/h]	86	510	20
Presence of On-Street Parking	no	no	no
On-Street Parking Maneuver Rate [1/h]	0	0	0
Local Bus Stopping Rate [1/h]	0	0	0
Pedestrian Volume [ped/h]	0	0	0
Bicycle Volume [bicycles/h]	0	0	0

**Movement, Approach, & Intersection Results**

d, M, Delay for Movement [s/veh]	27.73	5.55	13.13	13.19	18.44	17.32
Movement LOS	C	A	B	B	B	B
d, A, Approach Delay [s/veh]	8.38		13.14		18.21	
Approach LOS	A		B		B	
d, I, Intersection Delay [s/veh]			11.07			
Intersection LOS			B			
Intersection V/C			0.295			



**Lane Group Calculations**

Lane Group	L	C	C	C	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1, p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g, I, Effective Green Time [s]	8	37	25	25	15	15	15
g / C, Green / Cycle	0.13	0.62	0.42	0.42	0.25	0.25	0.25
(v / s), I Volume / Saturation Flow Rate	0.05	0.16	0.14	0.15	0.04	0.04	0.01
s, saturation flow rate [veh/h]	1810	3618	1900	1861	1810	1810	1615
c, Capacity [veh/h]	241	2231	792	776	452	404	404
d1, Uniform Delay [s]	23.66	5.26	11.91	11.95	17.62	17.09	17.09
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.07	0.29	1.18	1.24	0.81	0.23	0.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.36	0.26	0.34	0.35	0.17	0.05
d, Delay for Lane Group [s/veh]	27.73	5.55	13.09	13.19	18.44	17.32
Lane Group LOS	C	A	B	B	B	B
Critical Lane Group	yes	no	no	yes	yes	no
50th-Percentile Queue Length [veh]	1.26	1.08	2.21	2.22	0.82	0.21
50th-Percentile Queue Length [ft]	31.39	27.02	55.13	55.51	20.52	5.17
95th-Percentile Queue Length [veh]	2.26	1.95	3.97	4.00	1.48	0.37
95th-Percentile Queue Length [ft]	56.49	48.63	98.24	98.92	36.94	9.31

**Intersection Settings**

Located in CBD	no
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

**Intersection Level Of Service Report**

#7: Sycamore Canyon Boulevard (NS) / Eastridge Avenue (EW)

Signalized  
 HCM2010  
 15 minutes

Control Type: Delay (sec / veh): 23.7  
 C  
 Analysis Method: Level Of Service: C  
 Analysis Period: Volume to Capacity (v/c): 0.508

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal Group	5	2	2	1	6	6	3	8	0	7	4	4
Auxiliary Signal Groups	Lead	-	2.7	Lead	-	3.6	Lead	-	Lead	-	1.4	-
Lead / Lag	7	7	7	7	7	7	7	7	7	7	7	7
Minimum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Maximum Green [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Amber [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
All red [s]	11	15	15	15	19	19	11	19	0	16	24	24
Split [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Vehicle Extension [s]	0	5	5	0	5	5	0	5	0	5	5	5
Walk [s]	0	10	10	0	10	10	0	10	0	10	10	10
Pedestrian Clearance [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	no	no	no	no	no	no	no	no	no	no	no	no
Minimum Recall	no	no	no	no	no	no	no	no	no	no	no	no
Maximum Recall	no	no	no	no	no	no	no	no	no	no	no	no
Pedestrian Recall	no	no	no	no	no	no	no	no	no	no	no	no
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Intersection Setup**

Name	Northbound	Southbound	Eastbound	Westbound
Approach	זארה	זארה	זארה	זארה
Lane Configuration	Left Thru Right	Left Thru Right	Left Thru Right	Left Thru Right
Turning Movement	12.00 12.00 12.00	12.00 12.00 12.00	12.00 12.00 12.00	12.00 12.00 12.00
Lane Width [ft]	0 0 0	0 0 0	0 0 0	0 0 0
No. of Lanes in Pocket	100.00 100.00 100.00	100.00 100.00 100.00	100.00 100.00 100.00	100.00 100.00 100.00
Pocket Length [ft]	45.00	45.00	45.00	45.00
Speed [mph]	0.00	0.00	0.00	0.00
Grade [%]	yes	yes	yes	no
Crosswalk	yes	yes	yes	no

**Volumes**

Name	42	228	153	317	353	22	83	177	72	481	100	225
Base Volume Input [veh/h]	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Base Volume Adjustment Factor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Vehicles Percentage [%]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Rate	0	0	0	0	0	0	0	0	0	0	0	0
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverged Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	240	0	41	0	0	0	72	0	0	158
Total Hourly Volume [veh/h]	42	228	317	353	22	83	177	72	481	100	67	225
Peak Hour Factor	0.8470	0.8470	0.8470	0.8470	0.8470	0.8470	0.8470	0.8470	0.8470	0.8470	0.8470	0.8470
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	67	94	104	0	24	52	0	142	30	20	79
Total Analysis Volume [veh/h]	50	269	374	417	0	98	209	0	568	118	79	20
Presence of On-Street Parking	no	no	no	no	no	no	no	no	no	no	no	no
On-Street Parking Maneuver Rate [ft]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [ft]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0	0	0	0	0	0	0	0	0	0	0	0
Bicycle Volume [bicycles/h]	0	0	0	0	0	0	0	0	0	0	0	0

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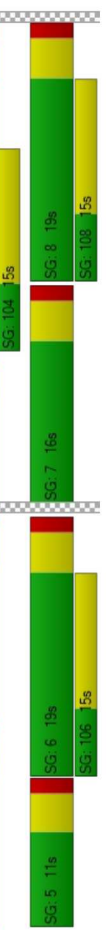
Albert A. Webb Associates

**Movement, Approach, & Intersection Results**

Movement LOS	29.32					16.55					0.00					29.50					13.85					0.00					28.26					27.42					0.00					29.71					21.49					12.27																																												
	C	C	C	C	C	E	E	E	E	E	A	A	A	A	A	C	C	C	C	C	B	B	B	B	B	C	C	C	C	C	A	A	A	A	A	C	C	C	C	C	A	A	A	A	A	C	C	C	C	C	B	B	B	B	B																																													
d_A, Approach Delay [s/veh]	18.55																									21.25																									27.69																									26.64																								
d_I, Intersection Delay [s/veh]	E																									C																									C																									C																								
d_I, Intersection Delay [s/veh]	23.65																									C																									0.508																																																	

**Sequence**

Ring	1	2	3	4	5	6	7	8
Ring 1	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-



**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R	L	C	R	L	C	R	L	C	R		
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_l, Effective Green Time [s]	4	21	37	9	26	36	6	7	7	7	12	13	26	26	26	26	26	26	26	26	26	26	26
g/C, Green / Cycle	0.06	0.32	0.57	0.14	0.40	0.55	0.09	0.11	0.11	0.18	0.18	0.20	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
(v/s)_l, Volume / Saturation Flow Rate	0.01	0.07	0.00	0.11	0.12	0.00	0.03	0.04	0.00	0.16	0.16	0.03	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
s, saturation flow rate [veh/h]	3514	3618	1615	3514	3618	1615	3514	5176	1615	3514	3514	3618	1615	1615	1615	1615	1615	1615	1615	1615	1615	1615	1615
c, Capacity [veh/h]	227	1169	919	489	1437	886	315	555	173	649	731	650	650	650	650	650	650	650	650	650	650	650	650
d1, Uniform Delay [s]	28.84	16.09	0.00	26.96	13.34	0.00	27.71	27.00	0.00	25.77	21.38	12.19	12.19	12.19	12.19	12.19	12.19	12.19	12.19	12.19	12.19	12.19	12.19
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.48	0.46	0.00	2.54	0.51	0.00	0.56	0.42	0.00	3.84	0.10	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.22	0.23	0.00	0.77	0.29	0.00	0.31	0.38	0.00	0.88	0.16	0.12
d, Delay for Lane Group [s/veh]	29.32	16.55	0.00	29.50	13.85	0.00	28.26	27.42	0.00	29.71	21.49	12.27
Lane Group LOS	C	B	A	C	B	A	C	C	A	C	C	B
Critical Lane Group	no	yes	no	yes	no	no	no	yes	no	yes	no	no
50th-Percentile Queue Length [veh]	0.35	1.33	0.00	2.68	1.82	0.00	0.67	0.93	0.00	4.13	0.67	0.62
50th-Percentile Queue Length [ft]	8.33	33.25	0.00	66.99	45.51	0.00	16.83	23.36	0.00	103.36	16.81	15.40
95th-Percentile Queue Length [veh]	0.64	2.39	0.00	4.82	3.28	0.00	1.21	1.68	0.00	7.44	1.21	1.11
95th-Percentile Queue Length [ft]	15.89	59.84	0.00	120.59	81.93	0.00	30.30	42.05	0.00	186.05	30.26	27.72



**Intersection Level Of Service Report**

**#8: Box Springs Boulevard (NS) / Eastridge Avenue (EW)**

Control Type: Signalized  
Analysis Method: HCM2010  
Analysis Period: 15 minutes  
Delay (sec / veh): 28.2  
Level Of Service: C  
Volume to Capacity (v/c): 0.487

**Intersection Setup**

Name	Northbound	Southbound	Eastbound	Westbound
Approach				
Lane Configuration				
Turning Movement	Left	Thru	Right	Left
Lane Width [ft]	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00
Speed [mph]	45.00	45.00	45.00	45.00
Grade [%]	0.00	0.00	0.00	0.00
Crosswalk	yes	yes	yes	yes

**Volumes**

Name	5	1	175	6	15	20	637	3	24	741	56
Base Volume Input [veh/h]	12	0	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Base Volume Adjustment Factor	1.0000	1.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	24	0	0	0	0	0	12	0	0	0
Total Hourly Volume [veh/h]	12	24	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Peak Hour Factor	0.8860	0.8860	0.8860	0.8860	0.8860	0.8860	0.8860	0.8860	0.8860	0.8860	0.8860
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	0	49	2	4	6	180	0	7	209	16
Total Analysis Volume [veh/h]	14	10	198	7	17	23	719	0	27	836	63
Presence of On-Street Parking	no	no	no	no	no	no	no	no	no	no	no
On-Street Parking Maneuver Rate [hr]	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [hr]	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/hr]	0	0	0	0	0	0	0	0	0	0	0
Bicycle Volume [bicycles/hr]	0	0	0	0	0	0	0	0	0	0	0

**Intersection Settings**

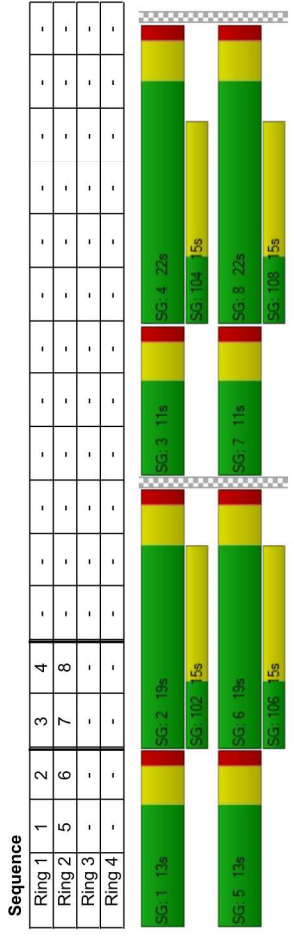
Located in CBD	no
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss
Signal Group	5	2	0	1	6	0	3	8	0	7
Auxiliary Signal Groups	Lead	-	-	-	-	-	-	-	-	-
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0
Split [s]	13	19	0	13	19	0	11	22	0	11
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	5
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	10
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0
Minimum Recall	no	no	no	no	no	no	no	no	no	no
Maximum Recall	no	no	no	no	no	no	no	no	no	no
Pedestrian Recall	no	no	no	no	no	no	no	no	no	no
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Movement, Approach, & Intersection Results**

d, I, Delay for Movement [s/veh]	34.60	15.86	0.00	40.42	11.29	11.42	33.35	22.46	0.00	32.94	30.38	30.48
Movement LOS	C	E	A	D	B	B	C	C	A	C	C	C
d, A, Approach Delay [s/veh]	26.79											
Approach LOS	C											
d, I, Intersection Delay [s/veh]	28.24											
Intersection LOS	C											
Intersection V/C	0.487											



**Lane Group Calculations**

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1, p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g, I, Effective Green Time [s]	2	20	20	9	27	27	2	18	18	3	18	18
g / C, Green / Cycle	0.02	0.30	0.30	0.13	0.41	0.41	0.04	0.27	0.27	0.04	0.28	0.28
(v / s), Volume / Saturation Flow Rate	0.01	0.01	0.00	0.11	0.00	0.01	0.01	0.20	0.00	0.01	0.24	0.24
s, saturation flow rate [veh/h]	1810	1900	1615	1810	1900	1615	1810	3618	1615	1810	1900	1854
c, Capacity [veh/h]	47	579	492	242	783	666	66	969	441	77	528	516
d1, Uniform Delay [s]	31.08	15.80	0.00	27.40	11.27	11.35	30.48	21.42	0.00	30.24	22.27	22.27
k, delay calibration	0.11	0.50	0.50	0.22	0.50	0.50	0.11	0.11	0.11	0.11	0.21	0.21
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.51	0.05	0.00	13.02	0.02	0.07	2.87	1.04	0.00	2.70	8.03	8.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.30	0.02	0.00	0.82	0.01	0.03	0.34	0.73	0.00	0.35	0.86	0.86
d, Delay for Lane Group [s/veh]	34.60	15.86	0.00	40.42	11.29	11.42	33.35	22.46	0.00	32.94	30.30	30.48
Lane Group LOS	C	B	A	D	B	B	C	C	A	C	C	C
Critical Lane Group	no	yes	no	yes	no	no	yes	no	no	no	no	yes
50th-Percentile Queue Length [veh]	0.24	0.10	0.00	3.56	0.05	0.13	0.38	4.43	0.00	0.43	6.84	6.70
50th-Percentile Queue Length [ft]	6.09	2.48	0.00	88.98	1.35	3.35	9.41	110.72	0.00	10.85	171.04	167.53
95th-Percentile Queue Length [veh]	0.44	0.18	0.00	6.41	0.10	0.24	0.68	7.88	0.00	0.78	11.13	10.95
95th-Percentile Queue Length [ft]	10.97	4.46	0.00	160.17	2.42	6.02	16.94	197.01	0.00	19.53	278.28	273.66

**Intersection Settings**

Located in CBD	no
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

**Intersection Level Of Service Report**

**#8: I-215 Ramps (NS) / Eastridge Avenue-Eucalyptus Avenue (EW)**

Control Type: Signalized  
 Analysis Method: HCM2010  
 Analysis Period: 15 minutes

Delay (sec / veh): 22.8  
 Level Of Service: C  
 Volume to Capacity (v/c): 0.643

**Phasing & Timing**

Control Type	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss
Signal Group	3	0	0	7	0	0	5	2
Auxiliary Signal Groups	Lead	-	-	Lead	-	-	Lead	-
Lead / Lag	7	0	0	7	0	0	7	0
Minimum Green [s]	30	0	0	30	0	0	30	0
Maximum Green [s]	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Amber [s]	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
All red [s]	18	0	0	18	0	0	20	17
Split [s]	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Vehicle Extension [s]	5	0	0	5	0	0	5	0
Walk [s]	10	0	0	10	0	0	10	0
Pedestrian Clearance [s]	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	no	-	-	no	-	-	no	-
Minimum Recall	no	-	-	no	-	-	no	-
Maximum Recall	no	-	-	no	-	-	no	-
Pedestrian Recall	no	-	-	no	-	-	no	-
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Intersection Setup**

Name	Northbound	Southbound	Eastbound	Westbound
Approach	右左	右	右	右
Lane Configuration	右左	右	右	右
Turning Movement	Left 12.00 Thru 12.00 Right 12.00	Left 12.00 Thru 12.00 Right 12.00	Left 12.00 Thru 12.00 Right 12.00	Left 12.00 Thru 12.00 Right 12.00
Lane Width [ft]	0 0 0	0 0 0	0 0 0	0 0 0
No. of Lanes in Pocket	100.00 100.00 100.00	100.00 100.00 100.00	100.00 100.00 100.00	100.00 100.00 100.00
Pocket Length [ft]	45.00	45.00	45.00	45.00
Speed [mph]	0.00	0.00	0.00	0.00
Grade [%]	no	no	no	no
Crosswalk	no	no	no	no

**Volumes**

Name	125	0	472	0	456	374	220	616	250	327
Base Volume Input [veh/h]	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Base Volume Adjustment Factor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Vehicles Percentage [%]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Rate	0	0	0	0	0	0	0	0	0	0
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	125	0	472	0	456	374	220	616	250	327
Peak Hour Factor	0.9490	0.9200	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	0	67	0	56	65	99	162	66	0
Total Analysis Volume [veh/h]	132	0	267	0	222	258	394	649	263	0
Presence of On-Street Parking	no	no	no	no	no	no	no	no	no	no
On-Street Parking Maneuver Rate [ft]	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [ft]	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0	0	0	0	0	0	0	0	0	0
Bicycle Volume [bicycles/h]	0	0	0	0	0	0	0	0	0	0

Report File: G:\...E-PM.pdf

Albert A. Webb Associates



Albert A. Webb Associates  
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 Phone: (951) 686-1070 Fax: (951) 788-1256  
 E-mail:

Diverge Analysis

Analyst: Albert A. Webb Associates  
 Agency/Co.: 9/30/2015  
 Date performed: AM Peak Hour  
 Analysis time period: I-215 NB  
 Freeway/Dir of Travel: Eastridge Off  
 Junction: Existing  
 Jurisdiction: Existing  
 Analysis Year: Existing  
 Description:

Freeway Data

Type of analysis Diverge  
 Number of lanes in freeway 3  
 Free-flow speed on freeway 65.3 mph  
 Volume on freeway 4569 vph

Off Ramp Data

Side of freeway Right  
 Number of lanes in ramp 1  
 Free-flow speed on ramp 50.0 mph  
 Volume on ramp 642 vph  
 Length of first accel/decel lane 190 ft  
 Length of second accel/decel lane

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist? Yes  
 Volume on adjacent ramp 331 vph  
 Position of adjacent ramp Downstream  
 Type of adjacent ramp On  
 Distance to adjacent ramp 2900 ft

Conversion to pc/h under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp
Volume, V (vph)	4569	642	331
Peak-hour factor, PHF	0.95	0.95	0.95
Peak 15-min volume, V15	1202	169	87
Trucks and buses	7	7	7
Recreational vehicles	0	0	0
Terrain type:	Level	Level	Level
Grade	0.00 %	0.00 %	0.00 %
Length	0.00 mi	0.00 mi	0.00 mi
Trucks and buses PCE, ET	1.5	1.5	1.5
Recreational vehicle PCE, ER	1.2	1.2	1.2
Heavy vehicle adjustment, FHV	0.966	0.966	0.966
Driver population factor, FP	1.00	1.00	1.00

Estimation of V12 Diverge Areas

$L =$  (Equation 13-12 or 13-13)  
 $P =$  0.603 Using Equation 5  
 $V = v + (v - v) P = 3281$  pc/h  
 12 R F R FD

Capacity Checks

V	F	R	Actual	Maximum	LOS	F?
12			4978	7059	No	
	12		4279	7059	No	
		12	699	2100	No	
			1697			(Equation 13-14 or 13-17)
Is $v$ or $v$	$av_{34}$	$av_{34}$			No	
Is $v$ or $v$	$av_{34}$	$av_{34}$			No	
Is $v$ or $v$	$av_{34}$	$av_{34}$			No	
If yes, $v$	$av_{34}$	$av_{34}$			No	(Equation 13-15, 13-16, 13-18, or 13-19)
					No	

Flow Entering Diverge Influence Area

Actual 3281  
 Max Desirable 4400  
 Violation? No

Level of service determination (if not F)

Density,  $D = 4.252 + 0.0086 \frac{V}{L} - 0.009 \frac{L}{D} = 30.8$  pc/mi/ln  
 Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,  $D = 0.296$   
 Space mean speed in ramp influence area,  $S = 58.4$  mph  
 Space mean speed in outer lanes,  $S = 68.9$  mph  
 Space mean speed for all vehicles,  $S = 61.6$  mph

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 E-mail:

Diverge Analysis

Analyst: Albert A. Webb Associates  
 Agency/Co.: 9/30/2015  
 Date performed: PM Peak Hour  
 Analysis time period: I-215 NB  
 Freeway/Dir of Travel: Eastridge Off  
 Junction: Existing  
 Jurisdiction: Existing  
 Analysis Year: Existing  
 Description:

Freeway Data

Type of analysis Diverge  
 Number of lanes in freeway 3  
 Free-flow speed on freeway 65.3 mph  
 Volume on freeway 5313 vph

Off Ramp Data

Side of freeway Right  
 Number of lanes in ramp 1  
 Free-flow speed on ramp 50.0 mph  
 Volume on ramp 660 vph  
 Length of first accel/decel lane 190 ft  
 Length of second accel/decel lane

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist? Yes  
 Volume on adjacent ramp 509 vph  
 Position of adjacent ramp Downstream  
 Type of adjacent ramp On  
 Distance to adjacent ramp 2900 ft

Conversion to pc/h under base conditions

Junction Components	Freeway	Ramp	Adjacent Ramp
Volume, V (vph)	5313	660	509
Peak-hour factor, PHF	0.95	0.95	0.95
Peak 15-min volume, V15	1398	174	134
Trucks and buses	7	7	7
Recreational vehicles	0	0	0
Terrain type:	Level	Level	Level
Grade	0.00 %	0.00 %	0.00 %
Length	0.00 mi	0.00 mi	0.00 mi
Trucks and buses PCE, ET	1.5	1.5	1.5
Recreational vehicle PCE, ER	1.2	1.2	1.2
Heavy vehicle adjustment, FHV	0.966	0.966	0.966
Driver population factor, FP	1.00	1.00	1.00

Estimation of V12 Diverge Areas

$L =$  (Equation 13-12 or 13-13)  
 $P = 0.582$  Using Equation 5  
 $V = v + (v - v) P = 3670$  pc/h  
 12 R F R FD

Capacity Checks

V	F	R	Actual	Maximum	LOS	F?
$V = v$	$F$	$R$	5788	7059	No	
$V = v - v$	$F$	$R$	5069	7059	No	
$V$	$F$	$R$	719	2100	No	
$V$ or $v$	$v$	$v$	2118 pc/h	(Equation 13-14 or 13-17)		
$I_3$ or $v$	$v$	$v$	> 2700 pc/h?	No		
$I_3$ or $v$	$v$	$v$	> 1.5 v / 2	No		
$I_3$ or $v$	$v$	$v$	> 12	(Equation 13-15, 13-16, 13-18, or 13-19)		

If yes, v = 3670  
 12A

Flow Entering Diverge Influence Area

Actual 3670  
 Max Desirable 4400  
 Violation? No

Level of service determination (if not F)

Density,  $D = 4.252 + 0.0086 \frac{V}{L} - 0.009 \frac{L}{D} = 34.1$  pc/mi/ln  
 Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,  $D = 0.298$   
 Space mean speed in ramp influence area,  $S = 58.4$  mph  
 Space mean speed in outer lanes,  $S = 67.3$  mph  
 Space mean speed for all vehicles,  $S = 61.3$  mph

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Merge Analysis

Analyst: Albert A. Webb Associates  
Agency/Co.: 9/25/2015  
Date performed: AM Peak Hour  
Analysis time period: I-215 NB  
Freeway/Dir of Travel: Eastridge on  
Junction: Existing  
Jurisdiction: Existing  
Analysis Year:  
Description:

Freeway Data

Type of analysis Merge  
Number of lanes in freeway 3  
Free-flow speed on freeway 65.3 mph  
Volume on freeway 3927 vph

On Ramp Data

Side of freeway Right  
Number of lanes in ramp 1  
Free-flow speed on ramp 50.0 mph  
Volume on ramp 331 vph  
Length of first accel/decel lane 530 ft  
Length of second accel/decel lane

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist? Yes  
Volume on adjacent Ramp 642 vph  
Position of adjacent Ramp Upstream  
Type of adjacent Ramp Off  
Distance to adjacent Ramp 2900 ft

Conversion to pc/h under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp
Volume, V (vph)	3927	331	642
Peak-hour factor, PHF	0.95	0.95	0.95
Peak 15-min volume, v15	1033	87	169
Trucks and buses	7	7	7
Recreational vehicles	0	0	0
Terrain type:	Level	Level	Level
Grade	%	%	%
Length	mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5
Recreational vehicle PCE, ER	1.2	1.2	1.2
Heavy vehicle adjustment, FHV	0.966	0.966	0.966
Driver population factor, FP	1.00	1.00	1.00

Flow rate, vp

Estimation of V12 Merge Areas  
L = 1441.07 (Equation 13-6 or 13-7)  
EQ = 0.592 Using Equation 1  
FM = v (P) = 2534 pc/h  
12 F FM

Capacity Checks

V	FO	Actual	Maximum	LOS	F?
V <sub>3</sub> or V <sub>3</sub>	av34	1744 pc/h	7059	No	
IS	V <sub>3</sub> or V <sub>3</sub>	> 2700 pc/h?	(Equation 13-14 or 13-17)		
IS	V <sub>3</sub> or V <sub>3</sub>	> 1.5 v <sub>3</sub> /2	No		
IF yes, v <sub>12A</sub>	av34	= 2534	Yes		
			(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Inflow Area

V	12A	Actual	Max Desirable	Violation?
Density, D <sub>R</sub>	= 5.475 + 0.00734 v <sub>R</sub>	+ 0.0078 v <sub>12</sub>	- 0.00627 L <sub>A</sub>	= 24.6 pc/mi/ln
Level of service for ramp-freeflow junction areas of influence	C			

Speed Estimation

Intermediate speed variable, M = 0.339  
Space mean speed in ramp influence area, S<sub>R</sub> = 57.4 mph  
Space mean speed in outer lanes, S<sub>0</sub> = 60.8 mph  
Space mean speed for all vehicles, S = 58.6 mph

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Estimation of V12 Merge Areas

$L = 1651.86$  (Equation 13-6 or 13-7)  
 $P = 0.592$  Using Equation 1  
 $V = v \text{ (P)} = 3003$  pc/h  
 12 F FM

Capacity Checks

V	FO	Actual	Maximum	LOS	F?
3	or v	2066 pc/h	7059	No	
3	or v	> 2700 pc/h?			(Equation 13-14 or 13-17)
3	or v	> 1.5 v / 2		Yes	
3	or v	> 1.5 v / 2		Yes	
12A					(Equation 13-15, 13-16, 13-18, or 13-19)

Flow Entering Merge Inflow Area

V	Actual	Max Desirable	Violation?
12A	3558	4600	No

Density,  $D = 5.475 + 0.00734 v + 0.0078 v_{12} - 0.00627 L_A = 29.6$  pc/mi/ln  
 Level of service for ramp-freeflow junction areas of influence D

Speed Estimation

Intermediate speed variable,  $M = 0.405$   
 Space mean speed in ramp influence area,  $S = 55.9$  mph  
 Space mean speed in outer lanes,  $S = 59.7$  mph  
 Space mean speed for all vehicles,  $S = 57.2$  mph

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Merge Analysis

Analyst: Albert A. Webb Associates  
 Agency/Co.: 9/25/2015  
 Date performed: PM Peak Hour  
 Analysis time period: I-215 NB  
 Freeway/Dir of Travel: Eastridge on  
 Junction: Existing  
 Jurisdiction: Existing  
 Analysis Year: Existing  
 Description:

Freeway Data

Type of analysis	Merge	Volume on freeway
Number of lanes in freeway	3	65.3 mph
Free-flow speed on freeway	4653	vph
Volume on freeway		

On Ramp Data

Side of freeway	Right	Volume on ramp	Length of first accel/decel lane	Length of second accel/decel lane
Number of lanes in ramp	1	50.0 mph		
Free-flow speed on ramp	509	ft		
Volume on ramp	530	ft		

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	Volume on adjacent Ramp	Position of adjacent Ramp	Type of adjacent Ramp	Distance to adjacent Ramp
	660	660 vph	Upstream	Off	2900 ft

Conversion to pc/h under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp
Volume, V (vph)	4653	509	660 vph
Peak-hour factor, PHF	0.95	0.95	0.95
Peak 15-min volume, V15	1224	134	174 v
Trucks and buses	7	7	7 %
Recreational vehicles	0	0	0 %
Terrain type:	Level	Level	Level
Grade	%	%	%
Length	mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5
Recreational vehicle PCE, ER	1.2	1.2	1.2
Heavy vehicle adjustment, FHV	0.966	0.966	0.966
Driver population factor, FP	1.00	1.00	1.00



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Merge Analysis

Analyst: Albert A. Webb Associates  
 Agency/Co.: 9/25/2015  
 Date performed: AM Peak Hour  
 Analysis time period: I-215 NB  
 Freeway/Dir of Travel: Fair Isle on  
 Junction: Existing  
 Jurisdiction: Existing  
 Analysis Year:  
 Description:

Freeway Data

Type of analysis Merge  
 Number of lanes in freeway 4  
 Free-flow speed on freeway 66.8 mph  
 Volume on freeway 5802 vph

On Ramp Data

Side of freeway Right  
 Number of lanes in ramp 1  
 Free-flow speed on ramp 50.0 mph  
 Volume on ramp 1334 vph  
 Length of first accel/decel lane 510 ft  
 Length of second accel/decel lane

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist? Yes  
 Volume on adjacent Ramp 101 vph  
 Position of adjacent Ramp Upstream  
 Type of adjacent Ramp Off  
 Distance to adjacent Ramp 2900 ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp
Volume, V (vph)	5802	1334	101
Peak-hour factor, PHF	0.95	0.95	0.95
Peak 15-min volume, V15	1527	351	27
Trucks and buses	7	7	7
Recreational vehicles	0	0	0
Terrain type:	Level	Level	Level
Grade	%	%	%
Length	mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5
Recreational vehicle PCE, ER	1.2	1.2	1.2
Heavy vehicle adjustment, FHV	0.966	0.966	0.966
Driver population factor, FP	1.00	1.00	1.00

Estimation of V12 Merge Areas

$L =$  (Equation 13-6 or 13-7)  
 $P = 0.036$  Using Equation 4  
 $F = v$  (P) = 229 pc/h  
 $F = v$  (P) = 229 pc/h

Capacity Checks

Actual Maximum LOS F?  
 7774 9472 No  
 $v_3$  or  $v_{av34}$  > 2700 pc/h? Yes  
 3046 pc/h (Equation 13-14 or 13-17)  
 $v_3$  or  $v_{av34}$  > 1.5  $v_3/2$  Yes  
 12 (Equation 13-15, 13-16, 13-18, or 13-19)  
 IF yes,  $v_{12A} = 2528$

Flow Entering Merge Influence Area Violation?  
 Actual Max Desirable No  
 3981 4600

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 32.7$  pc/mi/ln  
 Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,  $M = 0.479$   
 Space mean speed in ramp influence area,  $S_R = 54.9$  mph  
 Space mean speed in outer lanes,  $S_0 = 61.8$  mph  
 Space mean speed for all vehicles,  $S = 58.1$  mph

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Merge Analysis

Analyst: Albert A. Webb Associates  
 Agency/Co.: 9/25/2015  
 Date performed: PM Peak Hour  
 Analysis time period: I-215 NB  
 Freeway/Dir of Travel: Fair Isle on  
 Junction: Existing  
 Jurisdiction: Existing  
 Analysis Year:  
 Description:

Freeway Data

Type of analysis Merge  
 Number of lanes in freeway 4  
 Free-flow speed on freeway 66.8 mph  
 Volume on freeway 6856 vph

On Ramp Data

Side of freeway Right  
 Number of lanes in ramp 1  
 Free-flow speed on ramp 50.0 mph  
 Volume on ramp 674 vph  
 Length of first accel/decel lane 510 ft  
 Length of second accel/decel lane

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist? Yes  
 Volume on adjacent Ramp 91 vph  
 Position of adjacent Ramp Upstream  
 Type of adjacent Ramp Off  
 Distance to adjacent Ramp 2900 ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp
Volume, V (vph)	6856	674	91 vph
Peak-hour factor, PHF	0.95	0.95	0.95
Peak 15-min volume, V15	1804	177	24 v
Trucks and buses	7	7	7 %
Recreational vehicles	0	0	0 %
Terrain type:	Level	Level	Level
Grade	%	%	%
Length	mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5
Recreational vehicle PCE, ER	1.2	1.2	1.2
Heavy vehicle adjustment, FHV	0.966	0.966	0.966
Driver population factor, FP	1.00	1.00	1.00

Estimation of V12 Merge Areas

$L =$  (Equation 13-6 or 13-7)  
 $P = 0.126$  Using Equation 4  
 $V = v \text{ (P)} = 941$  pc/h  
 12 F FM

Capacity Checks

Actual Maximum LOS F?  
 8203 9472 No  
 $V_{FO} = 3264$  pc/h (Equation 13-14 or 13-17)  
 $V_3 \text{ or } V_{av34} > 2700$  pc/h? Yes  
 $V_3 \text{ or } V_{av34} > 1.5 \text{ } V_{12} / 2$  No  
 IF yes,  $V_{12A} = 2069$  (Equation 13-15, 13-16, 13-18, or 13-19)

Flow Entering Merge Influence Area Violation?

Actual Max Desirable No  
 2803 4600

Level of Service Determination (if not F)

Density,  $D = 5.475 + 0.00734 V_R + 0.0078 V_{12} - 0.00627 L_A = 23.8$  pc/mi/ln  
 Level of service for ramp-freeflow junction areas of influence C

Speed Estimation

Intermediate speed variable,  $M = 0.334$   
 Space mean speed in ramp influence area,  $S_R = 58.5$  mph  
 Space mean speed in outer lanes,  $S_0 = 57.9$  mph  
 Space mean speed for all vehicles,  $S = 58.1$  mph

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Operational Analysis

Analyst: Albert A. Webb Associates  
 Agency or Company: 9/25/2015  
 Date Performed: AM Peak Hour  
 Analysis Time Period: I-215 SB  
 Freeway/Direction: Sycamore Off  
 From/To: Existing  
 Jurisdiction: Existing  
 Analysis Year: Existing  
 Description:

Flow Inputs and Adjustments

Volume, V	4496	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	1183	V
Trucks and buses	7	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	1.5	mi
Trucks and buses, PCE, ET	1.2	
Recreational vehicle PCE, ER	0.966	
Heavy vehicle adjustment, FHV	1.00	
Driver population factor, fp	980	pc/h/ln
Flow rate, vp		

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	0.83	ramps/mi
Number of lanes, N	5	
Free-flow speed:		
Base	75.4	mi/h
FFS or BFFS	0.0	mi/h
Lane width adjustment, flw	0.0	mi/h
Lateral clearance adjustment, flc	0.0	mi/h
TRD adjustment	2.8	mi/h
Free-flow speed, FFS	72.6	mi/h

LOS and Performance Measures

Flow rate, vp	980	pc/h/ln
Free-flow speed, FFS	72.6	mi/h
Average passenger-car speed, S	75.0	mi/h
Number of lanes, N	5	
Density, D	13.1	pc/mi/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 55 mph.

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Operational Analysis

Analyst: Albert A. Webb Associates  
 Agency or Company: 9/25/2015  
 Date Performed: PM Peak Hour  
 Analysis Time Period: I-215 SB  
 Freeway/Direction: Sycamore Off  
 From/To: Existing  
 Jurisdiction: Existing  
 Analysis Year: Existing  
 Description:

Flow Inputs and Adjustments

Volume, V	6749	veh/h
Peak-hour factor, PHF	0.95	V
Peak 15-min volume, v15	1776	%
Trucks and buses	7	%
Recreational vehicles	0	Level
Terrain type:	-	%
Grade	-	mi
Segment length	1.5	
Trucks and buses, PCE, ET	1.2	
Recreational vehicle PCE, ER	0.966	
Heavy vehicle adjustment, FHV	1.00	
Driver population factor, fp	1.471	pc/h/ln
Flow rate, vp		

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	6.0	ft
Total ramp density, TRD	0.83	ramps/mi
Number of lanes, N	5	
Free-flow speed:		
Base	75.4	mi/h
FFS or BFFS	0.0	mi/h
Lane width adjustment, flw	0.0	mi/h
Lateral clearance adjustment, flc	0.0	mi/h
TRD adjustment	2.8	mi/h
Free-flow speed, FFS	72.6	mi/h

LOS and Performance Measures

Flow rate, vp	1471	pc/h/ln
Free-flow speed, FFS	72.6	mi/h
Average passenger-car speed, S	72.5	mi/h
Number of lanes, N	5	
Density, D	20.3	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

Phone:  
E-mail:

Operational Analysis

Analyst: Albert A. Webb Associates  
 Date Performed: 7/14/2015  
 Analysis Time Period: AM Peak Hour  
 Freeway/Dir of Travel: I-215 SB  
 Weaving Location: N of Eastridge Off  
 Analysis Year: Existing  
 Description:

Inputs

Segment Type Freeway  
 Weaving Configuration One-Sided  
 Number of Lanes, N 5  
 Weaving Segment Length, LS 1000 ft  
 Freeway Free-Flow Speed, FFS 64 mi/h  
 Minimum Segment Speed, SMIN 15 mi/h  
 Freeway Maximum Capacity, CFWL 2350 pc/h/ln  
 Terrain type Level  
 Grade 0.00 %  
 Length 0.00 mi

Conversion to pc/h Under Base Conditions

Volume Components	VFF	VRF	VFR	VRR
Volume, V	4263	976	299	68
Peak Hour Factor, PHF	0.95	0.95	0.95	0.95
Peak 15-min Volume, V15	1122	257	79	18
Trucks and buses	7	7	7	7
Recreational vehicles	0	0	0	0
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2
Heavy vehicle adjustment, FHV	0.966	0.966	0.966	0.966
Driver population adjustment, FP	1.00	1.00	1.00	1.00
Flow rate, V	4644	1063	326	74
Volume ratio, VR	0.227			

Configuration Characteristics

Configuration Characteristics	ln
Number of maneuver lanes, NML	3
Interchange density, ID	5.0
Minimum RR lane changes, LCRF	1
Minimum FR lane changes, LCFR	0
Minimum RR lane changes, LCRR	1c/pc
Minimum FR lane changes, LCFR	1c/pc
Minimum weaving lane changes, LCMIN	1063
Weaving lane changes, LCW	2145
Non-weaving vehicle index, INW	2359
Non-weaving lane change, LCNW	2741
Total lane changes, LCALL	4886

Weaving and Non-weaving Speeds

Weaving intensity factor, W	0.790
Average weaving speed, SW	42.4 mi/h
Average non-weaving speed, SNW	50.5 mi/h

Weaving segment speed, S 48.4 mi/h  
 Weaving segment density, D 25.2 pc/mi/ln  
 Level of service, LOS C  
 Weaving segment v/c ratio 0.561  
 Weaving segment flow rate, v 5902 veh/h  
 Weaving segment capacity, cw 10522 veh/h

Limitations on Weaving Segments

If limit reached, see note.

Weaving length (ft)	Minimum	Maximum	Actual	Note
Density-based capacity, CIWL (pc/h/ln)	300	3253	1000	a,b
v/c ratio		Maximum 2350	Analyzed 2178	c
		Maximum 1.00	Analyzed 0.561	d

- Notes:
- In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
  - Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
  - The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
  - Volumes exceed the weaving segment capacity. The level of service is F.

Phone:  
E-mail:

Operational Analysis

Analyst: Albert A. Webb Associates  
 Agency/Co.: 7/14/2015  
 Date Performed: PM Peak Hour  
 Analysis Time Period: I-215 SB  
 Freeway/Dir of Travel: N of Eastridge Off  
 Weaving Location: Existing  
 Analysts Year: Existing  
 Description:

Inputs

Segment Type Freeway  
 Weaving configuration One-Sided  
 Number of lanes, N 5  
 Weaving segment length, LS 1000 ft  
 Freeway free-flow speed, FFS 64 mi/h  
 Minimum segment speed, SMIN 15 mi/h  
 Freeway maximum capacity, CIFL 2350 pc/h/ln  
 Terrain type Level  
 Grade 0.00 %  
 Length 0.00 mi

Conversion to pc/h Under Base Conditions

Volume, V	VFF	VFF	VFR	VRR
Peak hour factor, PHF	0.95	0.95	0.95	0.95
Peak 15-min volume, V15	1222	243	193	38
Trucks and buses	7	7	7	7
Recreational vehicles	0	0	0	0
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2
Heavy vehicle adjustment, FHV	0.966	0.966	0.966	0.966
Driver population adjustment, FP	1.00	1.00	1.00	1.00
Flow rate, v	5058	1007	797	158
Volume ratio, VR	0.257			

Configuration Characteristics

Number of maneuver lanes, NML	Interchange density, ID	Minimum RR lane changes, LCRF	Minimum FR lane changes, LCFR	Minimum RR lane changes, LCRR	Minimum weaving lane changes, LCMN	Weaving lane changes, LCW	Non-weaving vehicle index, INW	Non-weaving lane change, LCNW	Total lane changes, LCALL
3	5.0	1	0	1007	2089	2608	2852	4941	

Weaving and Non-weaving Speeds

Weaving intensity factor, W	Average weaving speed, SW	Average non-weaving speed, SNW
0.797	42.3 mi/h	50.0 mi/h

Weaving segment speed, S 47.8 mi/h  
 Weaving segment density, D 29.4 pc/mi/ln  
 Level of service, LOS D  
 Weaving segment v/c ratio 0.652  
 Weaving segment flow rate, v 6784 veh/h  
 Weaving segment capacity, cw 10406 veh/h

Limitations on Weaving Segments

If limit reached, see note.

Weaving length (ft)	Minimum	Maximum	Actual	Note
Density-based capacity, CIWL (pc/h/ln)	300	3561	1000	a,b
v/c ratio		2350	2154	c
		Maximum 1.00	Analyzed 0.652	d

- Notes:
- In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
  - Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
  - The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
  - Volumes exceed the weaving segment capacity. The level of service is F.

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Merge Analysis

Analyst: Albert A. Webb Associates  
Agency/Co.: 9/25/2015  
Date performed: AM Peak Hour  
Analysis time period: I-215 SB  
Freeway/Dir of Travel: Eastridge on  
Junction: Existing  
Jurisdiction: Existing  
Analysis Year: Existing  
Description:

Freeway Data

Type of analysis Merge  
Number of lanes in freeway 3  
Free-flow speed on freeway 66.8 mph  
Volume on freeway 4195 vph

On Ramp Data

Side of freeway Right  
Number of lanes in ramp 1  
Free-flow speed on ramp 50.0 mph  
Volume on ramp 374 vph  
Length of first accel/decel lane 880 ft  
Length of second accel/decel lane

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist? Yes  
Volume on adjacent Ramp 367 vph  
Position of adjacent Ramp Upstream  
Type of adjacent Ramp Off  
Distance to adjacent Ramp 3100 ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp
Volume, V (vph)	4195	374	367 vph
Peak-hour factor, PHF	0.95	0.95	0.95
Peak 15-min volume, V15	1104	98	97 v
Trucks and buses	7	7	7 %
Recreational vehicles	0	0	0 %
Terrain type:	Level	Level	Level
Grade	%	%	%
Length	mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5
Recreational vehicle PCE, ER	1.2	1.2	1.2
Heavy vehicle adjustment, FHV	0.966	0.966	0.966
Driver population factor, FP	1.00	1.00	1.00

Flow rate, vp

Estimation of V12 Merge Areas  
L = 1668.80 (Equation 13-6 or 13-7)  
EQ  
P = 0.602 Using Equation 1  
FM  
v = v (P ) = 2752 pc/h  
12 F FM

Capacity Checks

v	FO	Actual	Maximum	LOS	F?
v <sub>3</sub> or v <sub>3</sub>	av <sub>34</sub>	1818 pc/h	7104	No	
IS	v <sub>3</sub> or v <sub>3</sub>	> 2700 pc/h?	(Equation 13-14 or 13-17)		
IS	v <sub>3</sub> or v <sub>3</sub>	> 1.5 v <sub>3</sub> /2	No		
IF yes, v <sub>12A</sub>	av <sub>34</sub>	12	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Inflow Area

v	Actual	Max Desirable	Violation?
v <sub>R12</sub>	3159	4600	No

Level of Service Determination (if not F)

Density,  $D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 24.4$  pc/mi/ln  
Level of service for ramp-freeflow junction areas of influence C

Speed Estimation

Intermediate speed variable,  $M = 0.325$   
Space mean speed in ramp influence area,  $S_R = 58.7$  mph  
Space mean speed in outer lanes,  $S_0 = 62.1$  mph  
Space mean speed for all vehicles,  $S = 59.9$  mph

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Merger Analysis

Analyst: Albert A. Webb Associates  
Agency/Co.: 9/25/2015  
Date performed: PM Peak Hour  
Analysis time period: I-215 SB  
Freeway/Dir of Travel: Eastridge on  
Junction: Existing  
Jurisdiction: Existing  
Analysis Year:  
Description:

Freeway Data

Type of analysis	Merge
Number of lanes in freeway	3
Free-flow speed on freeway	66.8 mph
Volume on freeway	4498 vph

On Ramp Data

Side of freeway	Right
Number of lanes in ramp	1
Free-flow speed on ramp	50.0 mph
Volume on ramp	815 vph
Length of first accel/decel lane	880 ft
Length of second accel/decel lane	

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes
Volume on adjacent Ramp	877 vph
Position of adjacent Ramp	Upstream
Type of adjacent Ramp	Off
Distance to adjacent Ramp	3100 ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp
Volume, V (vph)	4498	815	877
Peak-hour factor, PHF	0.95	0.95	0.95
Peak 15-min volume, V15	1184	214	231
Trucks and buses	7	7	7
Recreational vehicles	0	0	0
Terrain type:	Level	Level	Level
Grade	%	%	%
Length	mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5
Recreational vehicle PCE, ER	1.2	1.2	1.2
Heavy vehicle adjustment, FHV	0.966	0.966	0.966
Driver population factor, FP	1.00	1.00	1.00

Flow rate, vp

Estimation of V12 Merge Areas  
L = 1842.35 (Equation 13-6 or 13-7)  
EQ = 0.602 Using Equation 1  
FM = 2950 pc/h  
v = v (P) = 2950 pc/h  
12 F FM

Capacity Checks

v	FO	Actual	Maximum	LOS	F?
v <sub>3</sub> or v <sub>3</sub>	v <sub>3</sub> or v <sub>3</sub>	1950 pc/h	7104	No	
IS	v <sub>3</sub> or v <sub>3</sub>	> 2700 pc/h?	(Equation 13-14 or 13-17)		
IS	v <sub>3</sub> or v <sub>3</sub>	> 1.5 v <sub>3</sub> /2	No		
IF yes, v <sub>12A</sub>	v <sub>12A</sub>	= 2950	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

v	Actual	Max Desirable	Violation?
R12	3838	4600	No

Level of Service Determination (if not F)

Density, D = 5.475 + 0.00734 v<sub>R</sub> + 0.0078 v<sub>R</sub><sup>12</sup> - 0.00627 L<sub>A</sub> = 29.5 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, M = 0.414  
Space mean speed in ramp influence area, S<sub>R</sub> = 56.5 mph  
Space mean speed in outer lanes, S<sub>O</sub> = 61.6 mph  
Space mean speed for all vehicles, S = 58.1 mph