

Existing plus Project Level of Service Calculations

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): 36.8
Level Of Service: D
Volume to Capacity (v/c): 0.791

Intersection Setup

Name	Northeastbound				Southwestbound				Northwestbound				Southeastbound			
Approach	TTTT				TTTT				TTTT				TTTT			
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	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	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	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	547	132	0	0	446	898	86	15	2	0	0	0	0
Base Volume Input [veh/h]	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	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	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	1.00
Growth Rate	0	0	0	0	0	0	0	0	0	0	0	0	0
In-Process Volume [veh/h]	4	2	0	0	4	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	0
Diverted Trips [veh/h]	0	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	0
Existing Site Adjustment Volume [veh/h]	0	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	0
Right-Turn on Red Volume [veh/h]	551	134	0	0	450	898	86	15	2	0	0	0	0
Total Hourly Volume [veh/h]	0.8720	0.8720	0.9200	0.9200	0.8720	0.3720	0.8720	0.8720	0.8720	0.8720	0.9200	0.9200	0.9200
Peak Hour 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	1.0000
Other Adjustment Factor	158	38	0	0	129	257	25	4	1	0	0	0	0
Total 15-Minute Volume [veh/h]	632	154	0	0	516	1030	99	17	2	0	0	0	0
Total Analysis Volume [veh/h]	no				no		no		no				
Presence of On-Street Parking	0	0	0	0	0	0	0	0	0	0	0	0	0
On-Street Parking Maneuver Rate [1/h]	0	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	0
Pedestrian Volume [ped/h]	0	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	0

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

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Split	Split	Permiss	Permiss	Permiss
Signal Group	3	8	0	0	4	0	0	2	0	0
Auxiliary Signal Groups										
Lead / Lag	Lead									
Minimum Green [s]	7	7	0	0	7	0	0	7	0	0
Maximum Green [s]	30	30	0	0	30	0	0	30	0	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	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	1.0	0.0	0.0
Split [s]	23	76	0	0	53	0	0	19	0	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	10	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	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	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
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

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
I1_p, Permitted Start-Up Lost Time [s]		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
g_i, Effective Green Time [s]		19	70	48	48	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]		696	2662	862	809	315	318
d1, Uniform Delay [s]		37.23	3.32	21.67	22.67	33.47	33.47
k, delay calibration		0.11	0.11	0.38	0.41	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		4.90	0.01	12.12	19.75	1.30	1.28
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

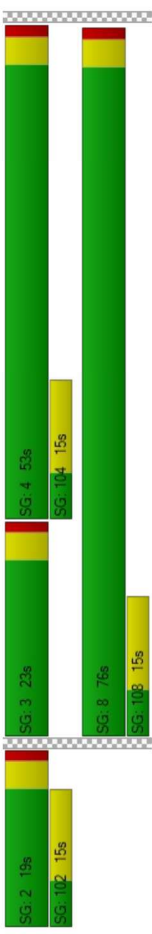
X, volume / capacity	0.91	0.06	0.91	0.96	0.19	0.19
d, Delay for Lane Group [s/veh]	42.14	3.32	33.79	42.42	34.78	34.75
Lane Group LOS	D	A	C	D	C	C
Critical Lane Group	yes	no	no	yes	yes	no
50th-Percentile Queue Length [veh]	7.26	0.27	16.49	18.69	1.18	1.18
50th-Percentile Queue Length [ft]	181.38	6.67	412.28	467.28	29.51	29.60
95th-Percentile Queue Length [veh]	11.67	0.48	23.15	25.78	2.13	2.13
95th-Percentile Queue Length [ft]	291.81	12.00	576.78	644.53	53.13	53.29

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	42.14	3.32	0.00	0.00	33.79	40.27	34.77	34.75	34.75	0.00	0.00	0.00
Movement LOS	D	A			C	D	C	C	C			
d_A, Approach Delay [s/veh]		34.53			38.10			34.76		0.00		
Approach LOS		C			D			C		A		
d_I, Intersection Delay [s/veh]						36.80						
Intersection LOS						D						
Intersection V/C						0.791						

Sequence

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



Intersection Level Of Service Report

#2: Sycamore Canyon Boulevard (NS) / Fair Isle Drive (EW)
Signalized
HCM2010
15 minutes
Control Type: Delay (sec / veh): 25.9
Analysis Method: HCM2010 C
Analysis Period: Volume to Capacity (v/c): 0.781

Intersection Setup

Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
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	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 [%]	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	4	4	0	0	2	4	6	0	8	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	42	0	0	121	0	0	0
Total Hourly Volume [veh/h]	36	92	111	121	62	316	114	1243	448	42	135	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	29	32	16	83	30	328	118	11	36	4
Total Analysis Volume [veh/h]	38	97	117	128	65	333	120	1311	473	44	142	16
Presence of On-Street Parking	no		no	no	no	no	no	no	no	no	no	no
On-Street Parking Maneuver Rate [h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]		0										
Pedestrian Volume [ped/h]		0										
Bicycle Volume [bicycles/h]		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
Signal Group	3	8	0	7	4	0	5	2	0	6
Auxiliary Signal Groups	Lead	-	-	Lead	-	-	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]	11	19	0	20	28	0	12	20	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	0
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
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	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

Lane Group Calculations

Lane Group	L	C	C	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
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
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
g_i, Effective Green Time [s]	4	14	14	6	17	17	6	30	30	4	27
g / C, Green / Cycle	0.05	0.20	0.20	0.09	0.24	0.24	0.09	0.42	0.42	0.06	0.39
(v / s)_l 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
s, saturation flow rate [veh/h]	1810	1900	1615	1810	3618	1615	1810	3618	1615	3514	1867
c, Capacity [veh/h]	96	375	319	170	863	385	164	1526	681	204	727
d1, Uniform Delay [s]	32.06	23.75	24.30	30.93	20.67	25.57	31.00	18.35	16.54	31.44	14.26
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
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
d2, Incremental Delay [s]	2.84	0.36	0.70	6.62	0.04	5.89	6.14	6.52	5.76	0.52	0.89
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
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
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

Lane Group Results

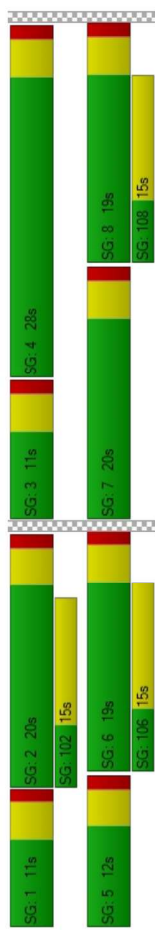
X, volume / capacity	0.40	0.26	0.37	0.75	0.08	0.86	0.73	0.86	0.69	0.22	0.22
d, Delay for Lane Group [s/veh]	34.70	24.11	25.00	37.54	20.71	31.46	37.14	24.87	22.30	31.96	14.95
Lane Group LOS	C	C	C	D	C	C	D	C	C	C	B
Critical Lane Group	yes	no	no	no	no	yes	no	yes	no	yes	no
50th-Percentile Queue Length [veh]	0.65	1.27	1.58	2.25	0.38	5.35	2.09	9.26	6.21	0.34	1.57
50th-Percentile Queue Length [ft]	16.17	31.67	39.49	56.27	9.41	133.69	52.36	231.42	155.34	8.59	39.26
95th-Percentile Queue Length [veh]	1.16	2.28	2.84	4.05	0.68	9.14	3.77	14.25	10.30	0.62	2.83
95th-Percentile Queue Length [ft]	29.11	57.01	71.07	101.29	16.95	228.50	94.26	366.16	257.54	15.46	70.67

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	34.70	24.11	25.00	37.54	20.71	31.46	37.14	24.87	22.30	31.96	14.95
Movement LOS	C	C	C	D	C	C	D	C	C	C	B
d_A, Approach Delay [s/veh]		26.12			31.61			25.00			18.65
Approach LOS		C			C			C			B
d_I, Intersection Delay [s/veh]						25.86					
Intersection LOS						C					
Intersection V/C						0.781					

Sequence

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



#3: Sycamore Canyon Boulevard (NS) / I-215 Southbound Ramps (EW)

Control Type: Signalized
Analysis Method: HCM2010
Analysis Period: 15 minutes
Delay (sec / veh): 17.7
Level Of Service: B
Volume to Capacity (v/c): 0.714

Intersection Setup

Name	Southwestbound				Northwestbound				Southeastbound			
Approach	T				I				T			
Lane Configuration												
Turning Movement	Left	Right	Thru	Right	Left	Thru	Right	Left	Left	Thru	Right	Thru
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			
Grade [%]	0.00				0.00				0.00			
Crosswalk	yes				yes				no			

Volumes

Name	347	133	1688	30	130	239
Base Volume Input [veh/h]	347	133	1688	30	130	239
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]	8	0	12	0	0	16
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]	355	64	1700	30	130	255
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]	93	17	446	8	36	67
Total Analysis Volume [veh/h]	373	67	1784	31	146	268
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

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

Phasing & Timing

Control Type	Split	Split	Permissive	Permissive	Protected	Permissive
Signal Group	8	0	2	0	1	6
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	7	0	7	0	7	7
Maximum Green [s]	30	0	30	0	30	30
Amber [s]	3.0	0.0	3.0	0.0	3.0	3.0
All red [s]	1.0	0.0	1.0	0.0	1.0	1.0
Split [s]	22	0	32	0	11	43
Vehicle Extension [s]	3.0	0.0	3.0	0.0	3.0	3.0
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	10	0	10	0	0	10
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	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
Detector Length [ft]	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

Lane Group Calculations

Lane Group		C	R	C	C	L	C
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]		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
g.I, Effective Green Time [s]		16	16	31	31	6	41
g / C, Green / Cycle		0.24	0.24	0.47	0.47	0.10	0.63
(v / s)_I Volume / Saturation Flow Rate		0.21	0.04	0.33	0.32	0.04	0.14
s, saturation flow rate [veh/h]		1810	1615	3618	1883	3514	1900
c, Capacity [veh/h]		438	391	1712	891	351	1206
d1, Uniform Delay [s]		23.52	19.48	13.55	13.29	27.47	5.05
k, delay calibration		0.11	0.11	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		4.75	0.21	2.49	4.15	0.78	0.09
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

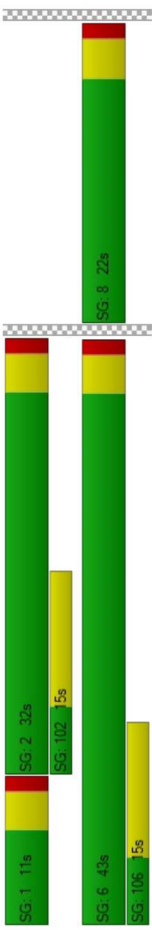
X, volume / capacity	0.85	0.17	0.71	0.68	0.42	0.22
d, Delay for Lane Group [s/veh]	28.26	19.68	16.04	17.44	28.25	5.14
Lane Group LOS	C	B	B	B	C	A
Critical Lane Group	yes	no	yes	no	yes	no
50th-Percentile Queue Length [veh]	5.33	0.73	6.00	6.33	1.00	0.98
50th-Percentile Queue Length [ft]	133.31	18.24	149.89	158.17	25.11	24.39
95th-Percentile Queue Length [veh]	9.12	1.31	10.01	10.45	1.81	1.76
95th-Percentile Queue Length [ft]	227.99	32.83	260.28	261.30	45.20	43.91

Movement, Approach, & Intersection Results

d.M, Delay for Movement [s/veh]	28.26	19.68	16.49	17.44	28.25	5.14
Movement LOS	C	B	B	B	C	A
d.A, Approach Delay [s/veh]	26.96	16.50			13.29	
Approach LOS	C	B			B	
d.I, Intersection Delay [s/veh]		17.73				
Intersection LOS		B				
Intersection V/C		0.714				

Sequence

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



Intersection Setup				
Name	Approach	Northbound	Southbound	Eastbound
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

Movement, Approach, & Intersection Results									
V/C, Movement V/C Ratio		0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.00
d.M. Delay for Movement [s/veh]		8.85	0.00	A	A	A	A	A	B
Movement LOS		A	A	A	A	A	A	A	B
95th-Percentile Queue Length [veh]		132.65	132.65	0.00	0.00	0.00	0.00	0.00	0.01
95th-Percentile Queue Length [ft]		3316.23	3316.23	0.00	0.00	0.00	0.00	0.00	0.31
d.A. Approach Delay [s/veh]		0.05		F		A		12.35	
Approach LOS								B	
d.I. Intersection Delay [s/veh]						0.04			
Intersection LOS						B			

Volumes						
Name						
	Base Volume Input [veh/h]	9	1767	531	39	0
	Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000
	Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00
	Growth Rate	1.00	1.00	1.00	1.00	1.00
	In-Process Volume [veh/h]	0	0	0	0	0
	Site-Generated Trips [veh/h]	0	12	4	20	0
	Diverted Trips [veh/h]	0	0	0	0	0
	Pass-by Trips [veh/h]	0	0	0	0	0
	Existing Site Adjustment Volume [veh/h]	0	0	0	0	0
	Other Volume [veh/h]	0	0	0	0	0
	Total Hourly Volume [veh/h]	9	1779	535	59	0
	Peak Hour Factor	0.9120	0.9120	0.9120	0.9200	0.9120
	Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000
	Total 15-Minute Volume [veh/h]	2	488	147	16	0
	Total Analysis Volume [veh/h]	10	1951	587	65	0
	Pedestrian Volume [ped/h]	0	0	0	0	0

Intersection Level Of Service Report	
#5: Sycamore Canyon Boulevard (NS) / Box Spring Boulevard (EW)	
Control Type:	Signalized
Analysis Method:	HCM2010
Analysis Period:	15 minutes
Delay (sec / veh):	
Level Of Service:	
Volume to Capacity (v/c):	
14.3	
B	
0.742	

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

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

Phasing & Timing	
Control Type	Signal Group
Auxiliary Signal Groups	
Lead / Lag	
Minimum Green [s]	
Maximum Green [s]	
Amber [s]	
All red [s]	
Split [s]	
Vehicle Extension [s]	
Walk [s]	
Pedestrian Clearance [s]	
I1, Start-Up Lost Time [s]	
I2, Clearance Lost Time [s]	
Minimum Recall	
Maximum Recall	
Pedestrian Recall	
Detector Location [ft]	
Detector Length [ft]	
I, Upstream Filtering Factor	

Intersection Level Of Service Report	
#5: Sycamore Canyon Boulevard (NS) / Box Spring Boulevard (EW)	
Control Type:	Signalized
Analysis Method:	HCM2010
Analysis Period:	15 minutes
Delay (sec / veh):	
Level Of Service:	
Volume to Capacity (v/c):	
14.3	
B	
0.742	

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

Volumes	
Name	
Base Volume Input [veh/h]	
Base Volume Adjustment Factor	
Heavy Vehicles Percentage [%]	
Growth Rate	
In-Process Volume [veh/h]	
Site-Generated Trips [veh/h]	
Diverted Trips [veh/h]	
Pass-by Trips [veh/h]	
Existing Site Adjustment Volume [veh/h]	
Other Volume [veh/h]	
Right-Turn on Red Volume [veh/h]	
Total Hourly Volume [veh/h]	
Peak Hour Factor	
Other Adjustment Factor	
Total 15-Minute Volume [veh/h]	
Total Analysis Volume [veh/h]	
Presence of On-Street Parking	
On-Street Parking Maneuver Rate [1/h]	
Local Bus Stopping Rate [1/h]	
Pedestrian Volume [ped/h]	
Bicycle Volume [bicycles/h]	

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	2.00	2.00	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_l, 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)_l Volume / Saturation Flow Rate	0.00	0.46	0.46	0.09	0.11	0.11	0.00	0.00	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	230	178	152
d1, Uniform Delay [s]	0.00	9.02	9.05	30.41	2.77	2.77	0.00	30.84	0.00
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	3.93	4.03	7.05	0.22	0.22	0.00	0.24	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
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

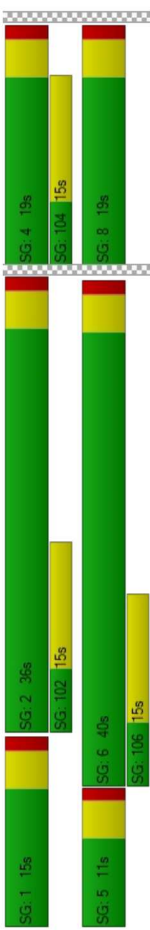
X, volume / capacity	0.00	0.73	0.73	0.79	0.14	0.14	0.00	0.11	0.00	0.75
d, Delay for Lane Group [s/veh]	0.00	12.95	13.08	37.46	2.99	2.99	0.00	31.07	0.00	38.23
Lane Group LOS	A	B	B	D	A	A	A	C	A	D
Critical Lane Group	no	no	yes	yes	no	no	no	no	no	yes
50th-Percentile Queue Length [veh]	0.00	7.19	7.21	2.75	0.44	0.44	0.00	0.34	0.00	2.03
50th-Percentile Queue Length [ft]	0.00	179.67	180.32	68.81	11.11	11.11	0.00	8.46	0.00	50.82
95th-Percentile Queue Length [veh]	0.00	11.58	11.62	4.95	0.80	0.80	0.00	0.61	0.00	3.66
95th-Percentile Queue Length [ft]	0.00	289.58	290.43	123.85	20.00	20.00	0.00	15.23	0.00	91.48

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	13.01	13.08	37.46	2.99	2.99	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	C	A	D
d_A, Approach Delay [s/veh]		13.01			12.64			0.00				37.07	
Approach LOS		E			B			A				D	
d_I, Intersection Delay [s/veh]						14.27							
Intersection LOS						B							
Intersection V/C						0.742							

Sequence

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



#6: Sycamore Canyon Boulevard (NS) / Sierra Ridge Drive (EW)

Signalized HCM2010 15 minutes

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

Delay (sec / veh): 12.7
Level Of Service: B
Volume to Capacity (v/c): 0.599

Intersection Setup									
Name	Northbound			Southbound			Eastbound		
Approach	Left-Through-Right			Left-Through-Right			Left-Through-Right		
Lane Configuration	Left-Through-Right			Left-Through-Right			Left-Through-Right		
Turning Movement	Left-Through-Right			Left-Through-Right			Left-Through-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		
Grade [%]	0.00			0.00			0.00		
Crosswalk	yes			no			yes		

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]	132	0	0	4	12	55			
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	0			
Total Hourly Volume [veh/h]	283	1604	332	74	42	283			
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]	80	456	94	21	12	0			
Total Analysis Volume [veh/h]	322	1823	377	84	48	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			

Intersection Settings

Located in CBD

Signal Coordination Group

Cycle Length [s]

Coordination Type

Actuation Type

Offset [s]

Offset Reference

Permissive Mode

Lost time [s]

no

-

105

Time of Day Pattern Coordinated

Fixed time

0.0

LeadGreen

SingleBand

12.00

Phasing & Timing									
Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Split	Split	Split	Split
Signal Group	5	2	6	0	0	3	0	0	0
Auxiliary Signal Groups									
Lead / Lag	Lead	-	-	-	-	Lead	-	-	-
Minimum Green [s]	7	7	7	0	0	7	0	0	0
Maximum Green [s]	30	30	30	0	0	30	0	0	0
Amber [s]	3.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0
All red [s]	1.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0
Split [s]	40	88	46	0	0	19	0	0	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0
Walk [s]	0	5	5	0	0	5	0	0	0
Pedestrian Clearance [s]	0	10	10	0	0	10	0	0	0
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	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
Maximum Recall	no	no	no	no	no	no	no	no	no
Pedestrian Recall	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
Detector Length [ft]	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

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]		36	82	42	42	15	15	15
g / C, Green / Cycle		0.34	0.78	0.40	0.40	0.14	0.14	0.14
(v / s)_l Volume / Saturation Flow Rate		0.18	0.50	0.12	0.13	0.03	0.00	0.00
s, saturation flow rate [veh/h]		1810	3618	1900	1785	1810	1810	1815
c, Capacity [veh/h]		620	2825	760	714	259	231	231
d1, Uniform Delay [s]		27.58	5.08	21.51	21.70	39.62	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]		3.09	1.15	1.03	1.20	1.58	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

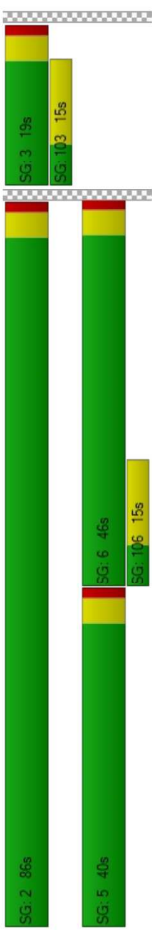
X, volume / capacity		0.52	0.65	0.30	0.32	0.19	0.00	0.00
d, Delay for Lane Group [s/veh]		30.67	6.23	22.54	22.90	41.20	0.00	0.00
Lane Group LOS		C	A	C	C	D	A	A
Critical Lane Group		no	yes	no	no	yes	no	no
50th-Percentile Queue Length [veh]		6.64	5.64	3.87	3.93	1.17	0.00	0.00
50th-Percentile Queue Length [ft]		166.08	141.00	96.81	98.14	29.26	0.00	0.00
95th-Percentile Queue Length [veh]		10.87	9.53	6.97	7.07	2.11	0.00	0.00
95th-Percentile Queue Length [ft]		271.75	238.37	174.26	176.65	52.67	0.00	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.67	6.23	22.68	22.90	41.20	0.00
Movement LOS	C	A	C	C	D	A
d_A, Approach Delay [s/veh]	9.90		22.72		41.20	
Approach LOS	A		C		D	
d_I, Intersection Delay [s/veh]			12.69			
Intersection LOS			B			
Intersection V/C			0.599			

Sequence

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



Intersection Level Of Service Report

#7: Sycamore Canyon Boulevard (NS) / Eastridge Avenue (EW)
Signalized
HCM2010
15 minutes
Control Type: Delay (sec / veh): 40.9
Analysis Method: HCM2010 D
Analysis Period: Volume to Capacity (v/c): 0.640

Intersection Setup

Name	Northbound				Southbound				Eastbound				Westbound			
Approach	זאנרר				זאנרר				זאנרר				זאנרר			
Lane Configuration	Left	Thru	Right		Left	Thru	Right		Left	Thru	Right		Left	Thru	Right	
Turning Movement																
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	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	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	100.00	100.00	100.00	100.00
Speed [mph]	45.00				45.00				45.00				45.00			
Grade [%]	0.40				0.00				0.00				0.00			
Crosswalk	yes				yes				yes				no			

Volumes

Name	155	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	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	27	0	44	11	0	0	0	0	0	0	105
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	68	0	0	30	0	0	77	0	0	60
Total Hourly Volume [veh/h]	155	1152	69	121	134	14	60	94	0	136	182	601
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.3000	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	1.0000
Total 15-Minute Volume [veh/h]	43	320	19	34	37	4	17	26	0	38	51	167
Total Analysis Volume [veh/h]	172	1280	77	134	149	16	67	104	0	151	202	668
Presence of On-Street Parking	no		no	no	no	no	no	no	no	no	no	no
On-Street Parking Maneuver Rate [h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [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]	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]	16.00

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			2.7			3.6						1.4
Lead / Lag	Lead			Lead			Lead			Lead		
Minimum Green [s]	7	7	7	7	7	7	7	7	7	7	7	7
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [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
All red [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
Split [s]	22	28	28	21	27	11	23	0	23	35	35	35
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	10	10	0	10	10	0	10	0	0	10	10
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]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
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

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
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	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00
g_i, Effective Green Time [s]		7	36	47	17	46	56	6	19	19	7	20	41
g / C, Green / Cycle		0.07	0.38	0.49	0.18	0.48	0.59	0.07	0.20	0.20	0.07	0.21	0.43
(v / s)_l Volume / Saturation Flow Rate		0.05	0.35	0.05	0.04	0.04	0.01	0.02	0.02	0.00	0.04	0.06	0.41
s, saturation flow rate [veh/h]		3514	3618	1615	3514	3618	1615	3514	5176	1615	3514	3618	1615
c, Capacity [veh/h]		263	1357	796	629	1734	948	230	1045	328	285	767	689
d1, Uniform Delay [s]		42.76	28.70	12.83	33.29	13.43	8.18	42.28	30.87	0.00	42.42	31.25	26.05
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]		2.76	14.16	0.24	0.17	0.10	0.01	0.89	0.04	0.00	1.92	0.18	24.70
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

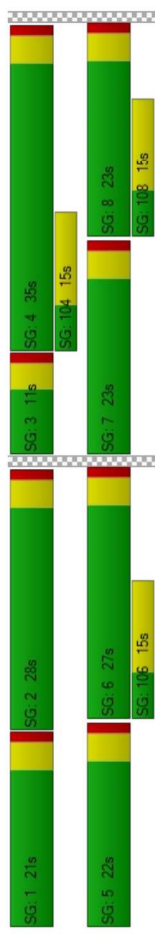
X, volume / capacity		0.66	0.94	0.10	0.21	0.09	0.02	0.29	0.10	0.00	0.57	0.26	0.96
d, Delay for Lane Group [s/veh]		45.52	42.87	13.08	33.46	13.53	8.19	42.97	30.91	0.00	44.34	31.43	50.74
Lane Group LOS		D	D	B	C	B	A	D	C	A	D	C	D
Critical Lane Group		no	yes	no	no	no	no	yes	no	no	no	no	yes
50th-Percentile Queue Length [veh]		1.99	15.47	0.65	1.28	0.81	0.12	0.74	0.62	0.00	1.72	1.86	17.78
50th-Percentile Queue Length [ft]		49.71	386.76	21.24	31.89	20.30	3.00	18.56	15.55	0.00	42.90	46.56	444.51
95th-Percentile Queue Length [veh]		3.58	21.92	1.53	2.30	1.46	0.22	1.34	1.12	0.00	3.09	3.35	24.70
95th-Percentile Queue Length [ft]		89.48	546.02	38.24	57.40	36.54	5.40	33.41	27.99	0.00	77.23	83.81	617.40

Movement, Approach, & Intersection Results

d_i, M, Delay for Movement [s/veh]		45.52	42.87	13.08	33.46	13.53	8.19	42.97	30.91	0.00	44.34	31.43	50.74
Movement LOS		D	D	B	C	B	A	D	C	A	D	C	D
d_A, Approach Delay [s/veh]			41.66			22.17			35.64			45.98	
Approach LOS			D			C			D			D	
d_I, Intersection Delay [s/veh]							40.85						
Intersection LOS							D						
Intersection V/C							0.640						

Sequence

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



Control Type:
Analysis Method:
Analysis Period:

#8: Box Springs Boulevard (NS) / Eastridge Avenue (EW)
Signalized
HCM2010
15 minutes

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

31.5
C
0.569

Intersection Setup													
Name		Northbound			Southbound			Eastbound			Westbound		
Approach		Left			Thru			Left			Thru		
Lane Configuration		Left			Thru			Left			Thru		
Turning Movement		Left			Thru			Left			Thru		
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		

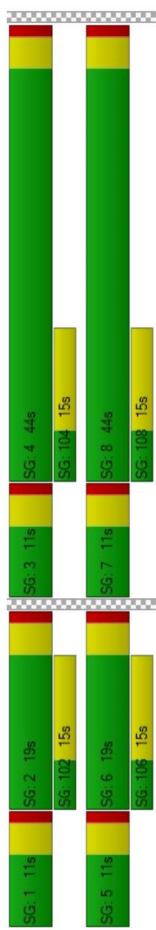
Volumes													
Name		11	11	7	40	5	6	62	272	9	52	817	377
Base Volume Input [veh/h]		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Base Volume Adjustment Factor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Vehicles Percentage [%]		1.00	1.00	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	44	0	0	105	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	52	0	0	0	0	0	0	11	0	0
Total Hourly Volume [veh/h]		11	11	0	40	5	6	62	316	0	52	922	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	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	1.0000
Total 15-Minute Volume [veh/h]		3	3	0	11	1	2	17	86	0	14	250	102
Total Analysis Volume [veh/h]		12	12	0	43	5	7	67	343	0	56	1000	409
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]		85											
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		5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups													
Lead / Lag		Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]		7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]		30	30	0	30	30	0	30	30	0	30	30	0
Amber [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
All red [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
Split [s]		11	19	0	11	19	0	11	44	0	11	44	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]	44.95	23.29	0.00	42.18	21.23	21.29	42.59	15.12	0.00	42.22	33.38	36.18	
Movement LOS	D	C	A	D	C	C	D	B	A	D	C	D	
d_A Approach Delay [s/veh]	34.12		37.62		19.61		34.50						
Approach LOS	C		D		B		C						
d_I Intersection Delay [s/veh]	31.46												
Intersection LOS	C												
Intersection V/C	0.569												

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



Lane Group Calculations													
Lane Group		L	C	R	L	C	L	C	R	L	C	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
I1.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
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
g.I. Effective Green Time [s]		2	22	22	5	25	25	6	37	37	5	36	36
g / C. Green / Cycle		0.02	0.26	0.26	0.05	0.30	0.30	0.07	0.43	0.43	0.06	0.43	0.43
(v / s).I Volume / Saturation Flow Rate		0.01	0.01	0.00	0.02	0.00	0.04	0.04	0.09	0.00	0.03	0.38	0.39
s. saturation flow rate [veh/h]		1810	1900	1615	1810	1900	1615	1810	3618	1615	1810	1900	1717
c. Capacity [veh/h]		40	501	426	97	560	476	119	1569	700	111	815	736
d1. Uniform Delay [s]		40.90	23.20	0.00	39.01	21.20	21.23	38.50	15.06	0.00	38.66	22.54	22.90
k. delay calibration		0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.31	0.32	0.32
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
d2. Incremental Delay [s]		4.05	0.09	0.00	3.18	0.03	0.06	4.09	0.07	0.00	3.56	9.82	13.28
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	0.44	0.01	0.56	0.22	0.00	0.51	0.90	0.92	
d. Delay for Lane Group [s/veh]		44.95	23.29	0.00	42.18	21.23	21.29	42.59	15.12	0.00	42.22	32.36	36.18
Lane Group LOS		D	C	A	D	C	C	D	B	A	D	C	D
Critical Lane Group		no	yes	no	yes	no	no	yes	no	no	no	no	yes
50th-Percentile Queue Length [veh]		0.28	0.18	0.00	0.91	0.07	0.10	1.42	1.87	0.00	1.18	14.02	13.82
50th-Percentile Queue Length [ft]		7.03	4.48	0.00	22.83	1.75	2.48	35.56	46.80	0.00	29.62	350.39	345.46
95th-Percentile Queue Length [veh]		0.51	0.32	0.00	1.64	0.13	0.18	2.56	3.37	0.00	2.13	20.16	19.91
95th-Percentile Queue Length [ft]		12.66	8.06	0.00	41.10	3.15	4.47	64.00	84.25	0.00	53.31	503.88	497.87

Intersection Level Of Service Report

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

Control Type: Delay (sec / veh): 23.8
Analysis Method: HCM2010 C
Analysis Period: 15 minutes Level Of Service: 0.599
Volume to Capacity (v/c):

Intersection Setup

Name	Northbound			Southbound			Eastbound			Westbound		
Approach	זדרר			זדרר			זדרר			זדרר		
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			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]	31	0	0	0	0	58	25	7	12	0	16	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	159	0	0	102	0	0	280
Total Hourly Volume [veh/h]	503	0	50	160	0	203	159	115	0	311	509	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]	135	0	13	43	0	55	43	31	0	84	137	0
Total Analysis Volume [veh/h]	541	0	54	172	0	218	171	124	0	334	547	0
Presence of On-Street Parking	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]	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

Phasing & Timing

Control Type	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss
Signal Group	3	0	0	7	0	0	5	2	0	1	6	0
Auxiliary Signal Groups	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	0	0	7	0	0	7	7	0	7	7	0
Maximum Green [s]	30	0	0	30	0	0	30	30	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	0	0	22	0	0	16	15	0	23	22	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	0	0	5	0	0	5	0	0
Pedestrian Clearance [s]	10	0	0	10	0	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
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	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

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
I1_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]		16	16	16	16	7	11	11	8	12	12
g / C, Green / Cycle		0.26	0.26	0.26	0.26	0.12	0.18	0.18	0.14	0.20	0.20
(v / s)_I Volume / Saturation Flow Rate		0.19	0.02	0.06	0.13	0.09	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]		757	752	757	425	223	653	292	487	709	316
d1, Uniform Delay [s]		22.18	16.61	19.06	18.84	25.48	20.86	0.00	24.60	22.85	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]		1.28	0.04	0.15	0.96	5.48	0.14	0.00	1.72	1.82	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

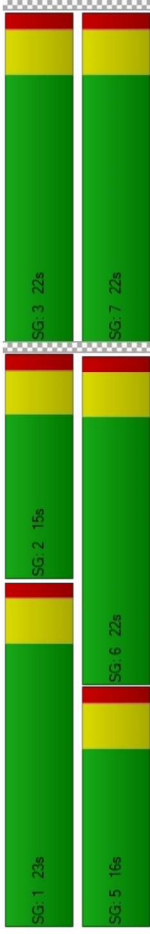
X, volume / capacity		0.71	0.07	0.23	0.51	0.77	0.19	0.00	0.69	0.77	0.00
d, Delay for Lane Group [s/veh]		23.46	16.65	19.22	19.80	30.96	21.00	0.00	26.33	24.67	0.00
Lane Group LOS		C	B	B	B	C	C	A	C	C	A
Critical Lane Group		yes	no	no	no	yes	no	no	no	yes	no
50th-Percentile Queue Length [veh]		3.25	0.24	0.87	2.31	2.43	0.66	0.00	2.11	3.35	0.00
50th-Percentile Queue Length [ft]		81.30	6.10	21.69	57.71	60.65	16.52	0.00	52.72	83.73	0.00
95th-Percentile Queue Length [veh]		5.85	0.44	1.56	4.16	4.37	1.19	0.00	3.80	6.03	0.00
95th-Percentile Queue Length [ft]		146.34	10.97	39.05	103.88	109.18	29.73	0.00	94.89	150.71	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	23.46	0.00	16.65	19.22	0.00	13.80	30.96	21.00	0.00	26.33	24.67	0.00
Movement LOS	C		B	B		B	C	C	A	C	C	A
d_A, Approach Delay [s/veh]		22.84			19.54			26.77			25.30	
Approach LOS		C			B			C			C	
d_I, Intersection Delay [s/veh]						23.79						
Intersection LOS						C						
Intersection V/C						0.599						

Sequence

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



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): 19.6
Level Of Service: B
Volume to Capacity (v/c): 0.378

Intersection Setup

Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Approach	TTTT			TTTT			TTTT			TTTT		
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			60.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	no			yes			yes			yes		

Volumes

Name	431	659	0	0	171	284	83	6	3	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	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]	9	4	0	0	2	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]	440	663	0	0	173	284	83	6	3	0	0	0
Total Hourly Volume [veh/h]	0.9650	0.9650	0.9200	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650	0.9200	0.9200	0.9200
Peak Hour 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
Other Adjustment Factor	114	172	0	0	45	74	22	2	1	0	0	0
Total 15-Minute Volume [veh/h]	456	667	0	0	179	294	86	6	3	0	0	0
Total Analysis Volume [veh/h]	no				no		no		no			
Presence of On-Street Parking	0	0	0	0	0	0	0	0	0	0	0	0
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]	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	Split	Split	Permiss	Permiss
Signal Group	3	8	0	0	4	0	2	0	0
Auxiliary Signal Groups									
Lead / Lag	Lead								
Minimum Green [s]	7	7	0	0	7	0	7	0	0
Maximum Green [s]	30	30	0	0	30	0	30	0	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	1.0	0.0	0.0
Split [s]	20	41	0	0	21	0	19	0	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	5	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	10	0	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	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	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
Detector Length [ft]	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

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
I1_p, Permitted Start-Up Lost Time [s]		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
g_i, Effective Green Time [s]		10	26	11	11	26	26
g / C, Green / Cycle		0.17	0.43	0.19	0.19	0.44	0.44
(v / s)_I Volume / Saturation Flow Rate		0.13	0.19	0.14	0.15	0.03	0.03
s, saturation flow rate [veh/h]		3514	3618	1712	1615	1810	1807
c, Capacity [veh/h]		603	1551	326	308	792	791
d1, Uniform Delay [s]		23.65	12.08	22.81	23.03	9.74	9.74
k, delay calibration		0.11	0.11	0.11	0.11	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		1.96	0.20	3.07	4.05	0.14	0.15
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

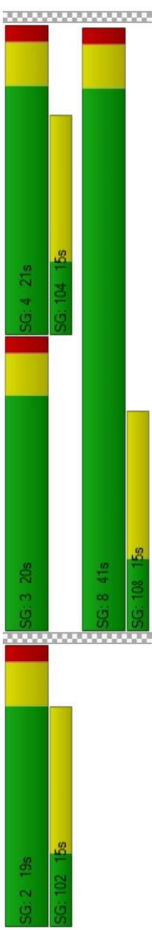
X, volume / capacity		0.76	0.44	0.73	0.77	0.06	0.06
d, Delay for Lane Group [s/veh]		25.61	12.28	25.88	27.08	9.88	9.88
Lane Group LOS		C	B	C	C	A	A
Critical Lane Group		yes	no	no	yes	no	yes
50th-Percentile Queue Length [veh]		2.85	2.58	3.00	3.10	0.28	0.28
50th-Percentile Queue Length [ft]		71.27	64.44	75.12	77.48	7.01	7.01
95th-Percentile Queue Length [veh]		5.13	4.64	5.41	5.58	0.51	0.50
95th-Percentile Queue Length [ft]		128.29	116.00	135.22	138.46	12.63	12.62

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	25.61	12.28	0.00	0.00	0.00	25.88	25.88	9.88	9.88	9.88	9.88	0.00	0.00	0.00
Movement LOS	C	E				C	C	A	A	A	A			
d_A, Approach Delay [s/veh]		17.60				26.48				9.88			0.00	
Approach LOS		E				C				A			A	
d_I, Intersection Delay [s/veh]							19.63							
Intersection LOS							B							
Intersection V/C							0.378							

Sequence

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



Intersection Level Of Service Report

#2: Sycamore Canyon Boulevard (NS) / Fair Isle Drive (EW)
Signalized
HCM2010
15 minutes
Control Type: Delay (sec / veh): 26.0
Analysis Method: C
Analysis Period: Level Of Service: 0.771
Volume to Capacity (v/c):

Intersection Setup

Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
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	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 [%]	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	2	2	0	0	4	8	13	0	4	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	161	0	0	106	0	0	0
Total Hourly Volume [veh/h]	22	85	97	106	80	0	218	212	556	323	345	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	26	28	21	0	58	57	149	87	92	9
Total Analysis Volume [veh/h]	24	91	104	114	86	0	234	227	596	346	370	38
Presence of On-Street Parking	no	no	no	no	no	no	no	no	no	no	no	no
On-Street Parking Maneuver Rate [h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [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
Signal Group	3	8	0	7	4	0	5	2	0	6
Auxiliary Signal Groups	Lead	-	-	Lead	-	-	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]	15	19	0	11	15	0	21	28	0	12
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	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	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
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
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	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

Lane Group Calculations

Lane Group		L	C	C	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
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
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
g_i, Effective Green Time [s]		3	7	7	6	10	10	11	33	33	8	30
g / C, Green / Cycle		0.04	0.10	0.10	0.09	0.15	0.15	0.16	0.47	0.47	0.11	0.43
(v / s)_l Volume / Saturation Flow Rate		0.01	0.05	0.06	0.06	0.02	0.00	0.13	0.06	0.37	0.10	0.22
s, saturation flow rate [veh/h]		1810	1900	1615	1810	3618	1615	1810	3618	1615	3514	1869
c, Capacity [veh/h]		71	189	161	162	541	242	283	1694	756	402	796
d1, Uniform Delay [s]		32.75	29.80	30.33	30.98	25.92	0.00	26.59	10.56	15.68	30.46	14.76
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
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
d2, Incremental Delay [s]		2.78	1.89	4.31	5.54	0.14	0.00	6.02	0.16	8.15	5.53	2.35
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
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
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

Lane Group Results

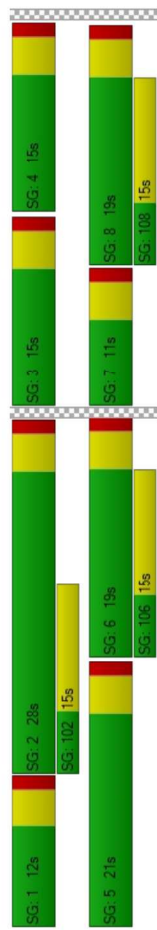
X, volume / capacity		0.34	0.48	0.65	0.71	0.16	0.00	0.83	0.13	0.79	0.86	0.51
d, Delay for Lane Group [s/veh]		35.53	31.70	34.64	36.52	26.06	0.00	34.61	10.72	23.83	35.99	17.11
Lane Group LOS		D	C	C	D	C	A	C	B	C	D	B
Critical Lane Group		no	no	yes	yes	no	no	no	no	yes	yes	no
50th-Percentile Queue Length [veh]		0.42	1.43	1.74	1.97	0.58	0.00	3.92	0.86	8.09	2.93	4.47
50th-Percentile Queue Length [ft]		10.57	35.84	43.61	49.24	14.54	0.00	98.12	21.41	202.31	73.23	111.80
95th-Percentile Queue Length [veh]		0.76	2.59	3.14	3.55	1.05	0.00	7.06	1.54	12.76	5.27	7.94
95th-Percentile Queue Length [ft]		19.03	64.52	78.50	88.63	26.17	0.00	176.62	38.55	318.94	131.82	198.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]		35.53	31.70	34.64	36.52	26.06	0.00	34.61	10.72	23.83	35.99	17.11
Movement LOS		D	C	C	D	C	A	C	B	C	D	B
d_A, Approach Delay [s/veh]			33.52			32.02			23.40			25.77
Approach LOS			C			C			C			C
d_I, Intersection Delay [s/veh]						25.97						
Intersection LOS						C						
Intersection V/C						0.771						

Sequence

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



#3: Sycamore Canyon Boulevard (NS) / I-215 Southbound Ramps (EW)

Control Type: Signalized
Analysis Method: HCM2010
Analysis Period: 15 minutes
Delay (sec / veh): 12.1
Level Of Service: B
Volume to Capacity (v/c): 0.428

Intersection Level Of Service Report

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	Split	Split	Permissive	Permissive	Protected	Permissive
Signal Group	8	0	2	0	1	6
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	7	0	7	0	7	7
Maximum Green [s]	30	0	30	0	30	30
Amber [s]	3.0	0.0	3.0	0.0	3.0	3.0
All red [s]	1.0	0.0	1.0	0.0	1.0	1.0
Split [s]	30	0	19	0	11	30
Vehicle Extension [s]	3.0	0.0	3.0	0.0	3.0	3.0
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	10	0	10	0	0	10
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	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
Detector Length [ft]	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

Intersection Setup

Name	Southwestbound				Northwestbound				Southeastbound			
Approach	T				I				T			
Lane Configuration												
Turning Movement	Left	Right	Thru	Right	Left	Thru	Right	Left	Left	Thru	Right	Thru
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	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 [%]	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]	4	0	25	0	0	8
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	79	0	0	0	0
Total Hourly Volume [veh/h]	155	157	802	146	156	388
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]	42	42	217	39	43	105
Total Analysis Volume [veh/h]	168	170	867	158	171	419
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

Lane Group Calculations

Lane Group		C	R	C	C	L	C
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]		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
g,I, Effective Green Time [s]		8	8	33	33	7	44
g / C, Green / Cycle		0.14	0.14	0.55	0.55	0.11	0.73
(v / s)_I Volume / Saturation Flow Rate		0.10	0.10	0.19	0.19	0.05	0.22
s, saturation flow rate [veh/h]		1798	1615	3618	1757	3514	1900
c, Capacity [veh/h]		254	228	1985	964	386	1378
d1, Uniform Delay [s]		24.54	24.57	7.53	7.58	24.98	2.90
k, delay calibration		0.11	0.11	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		3.45	3.94	0.48	1.02	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

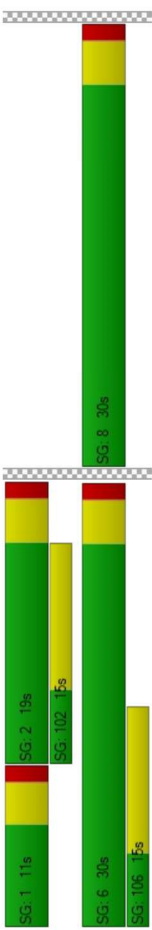
X, volume / capacity	0.70	0.70	0.34	0.35	0.44	0.30
d, Delay for Lane Group [s/veh]	27.99	28.51	8.01	8.60	25.78	3.03
Lane Group LOS		C	A	A	C	A
Critical Lane Group		no	yes	no	yes	no
50th-Percentile Queue Length [veh]	2.36	2.17	1.80	1.95	1.06	0.59
50th-Percentile Queue Length [ft]	58.95	54.21	44.88	48.73	26.39	14.72
95th-Percentile Queue Length [veh]	4.24	3.90	3.23	3.51	1.90	1.06
95th-Percentile Queue Length [ft]	106.12	97.58	80.79	87.72	47.50	26.49

Movement, Approach, & Intersection Results

d,M, Delay for Movement [s/veh]	27.99	28.51	8.13	8.60	25.78	3.03
Movement LOS		C	A	A	C	A
d,A, Approach Delay [s/veh]	28.24		8.21		9.62	
Approach LOS		C	A		A	
d,I, Intersection Delay [s/veh]			12.10			
Intersection LOS			B			
Intersection V/C			0.428			

Sequence

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



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

Control Type: Two-way stop
Analysis Method: HCM2010
Analysis Period: 15 minutes
Delay (sec / veh): 12.1
Level Of Service: B
Volume to Capacity (v/c): 0.002

Intersection Setup

Name	Northbound				Southbound				Eastbound			
Approach												
Lane Configuration	Left Thru Right				Left Thru Right				Left Thru Right			
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	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			
Grade [%]	0.00				0.00				0.00			
Crosswalk	no				no				no			

Volumes

Name	1	899	486	3	0	0	1
Base Volume Input [veh/h]	1,000	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	0.00
Heavy Vehicles Percentage [%]	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Rate	0	0	0	0	0	0	0
In-Process Volume [veh/h]	0	25	2	10	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	924	488	13	0	0	1
Peak Hour Factor	0.8340	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	1.0000
Total 15-Minute Volume [veh/h]	0	277	146	4	0	0	0
Total Analysis Volume [veh/h]	1	1108	585	16	0	0	1
Pedestrian Volume [ped/h]	0	0	0	0	0	0	0

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	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00
d.M. Delay for Movement [s/veh]	8.65	0.00	0.00	0.00	0.00	0.00	0.00	12.08
Movement LOS	A	A	A	A	A	A	A	B
95th-Percentile Queue Length [veh]	29.47	29.47	29.47	0.00	0.00	0.00	0.00	0.01
95th-Percentile Queue Length [ft]	736.77	736.77	736.77	0.00	0.00	0.00	0.00	0.15
d.A. Approach Delay [s/veh]	0.01	0.01	0.01	0.00	0.00	0.00	0.00	12.08
Approach LOS	F	F	F	A	A	A	A	B
d.I. Intersection Delay [s/veh]				0.01	0.01	0.01	0.01	
Intersection LOS				B	B	B	B	

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

Intersection Level Of Service Report

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

Delay (sec / veh): 12.0
Level Of Service: B
Volume to Capacity (v/c): 0.456

Intersection Setup

Name	Northbound				Southbound				Eastbound				Westbound			
Approach	Left/Thru/Right				Left/Thru/Right				Left/Thru/Right				Left/Thru/Right			
Lane Configuration	Left/Thru/Right				Left/Thru/Right				Left/Thru/Right				Left/Thru/Right			
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	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	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	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]	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	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	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	25	0	0	2	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]	1	557	7	54	439	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	177	2	16	130	0	13	0	5	5	0	57
Total Analysis Volume [veh/h]	1	707	8	64	520	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 [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
Pedestrian Volume [bicycles/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]	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	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	0	4	0	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	7	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0	30	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	3.0	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	1.0	0.0	1.0	0.0
Split [s]	11	21	0	11	21	0	0	28	0	0	28	0	28	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	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0	10	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	2.0	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	2.0	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	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	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	1.00	1.00

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
I1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	2.00	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
g_i, Effective Green Time [s]	0	33	33	5	37	37	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
(v / s)_I Volume / Saturation Flow Rate	0.00	0.19	0.19	0.04	0.14	0.14	0.05	0.01	0.00
s, saturation flow rate [veh/h]	1810	1900	1853	1810	1900	1900	1398	1413	1900
c, Capacity [veh/h]	7	1039	1035	140	1178	1178	349	271	334
d1, Uniform Delay [s]	29.79	7.59	7.59	26.49	5.01	5.01	21.76	24.29	0.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	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
d2, Incremental Delay [s]	9.82	0.91	0.91	2.34	0.43	0.43	0.30	0.11	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
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

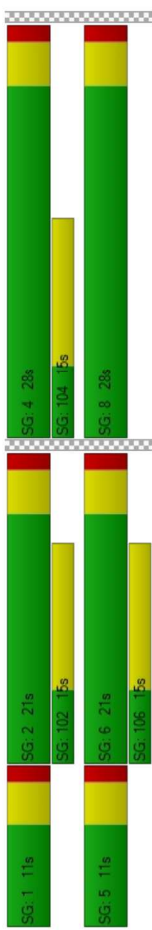
X, volume / capacity	0.15	0.34	0.34	0.46	0.22	0.22	0.21	0.07	0.00
d, Delay for Lane Group [s/veh]	39.62	8.50	8.51	28.82	5.44	5.44	22.06	24.40	0.00
Lane Group LOS	D	A	A	C	A	A	C	C	A
Critical Lane Group	no	no	yes	yes	no	no	no	no	yes
50th-Percentile Queue Length [veh]	0.03	2.01	2.01	0.87	0.97	0.97	0.84	0.24	0.00
50th-Percentile Queue Length [ft]	0.79	50.37	50.21	21.87	24.15	24.15	20.89	5.96	0.00
95th-Percentile Queue Length [veh]	0.06	3.63	3.62	1.57	1.74	1.74	1.50	0.43	0.00
95th-Percentile Queue Length [ft]	1.41	90.67	90.39	39.37	43.47	43.47	37.60	10.74	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.62	8.50	8.51	28.82	5.44	5.44	22.06	22.06	22.06	24.40	0.00	28.95
Movement LOS	D	A	A	C	A	A	C	C	C	C	A	C
d_A, Approach Delay [s/veh]		8.55			8.01		22.06				28.58	
Approach LOS		A			A		C				C	
d_I, Intersection Delay [s/veh]							12.03					
Intersection LOS							B					
Intersection V/C							0.456					

Sequence

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



#6: Sycamore Canyon Boulevard (NS) / Sierra Ridge Drive (EW)

Control Type: Specialized
Analysis Method: HCM2010
Analysis Period: 15 minutes
Delay (sec / veh): 13.9
Level Of Service: B
Volume to Capacity (v/c): 0.384

Intersection Setup

Name	Northbound				Southbound				Eastbound			
Approach	Left				Thru				Right			
Lane Configuration	111				111				111			
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	yes				no				yes			

Volumes

Name	78	532	461	29	70	96
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]	71	0	0	2	25	154
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]	149	532	461	31	95	101
Total Hourly Volume [veh/h]	0.9040	0.9040	0.9040	0.9040	0.9040	0.9040
Other Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Total 15-Minute Volume [veh/h]	41	147	127	9	26	28
Total Analysis Volume [veh/h]	165	588	510	34	105	112
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

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			

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	0	3	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	7	7	7	0	7	0
Maximum Green [s]	30	30	30	0	30	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	17	41	24	0	19	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
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
Detector Length [ft]	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

Lane Group Calculations

Lane Group	L	C	C	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
I1_p, Permitted Start-Up Lost Time [s]	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
g.I, Effective Green Time [s]	13	37	20	20	15	15
g / C, Green / Cycle	0.22	0.62	0.33	0.33	0.25	0.25
(v / s)_I Volume / Saturation Flow Rate	0.09	0.16	0.14	0.15	0.06	0.07
s, saturation flow rate [veh/h]	1810	3618	1900	1859	1810	1615
c, Capacity [veh/h]	392	2231	633	620	452	404
d1, Uniform Delay [s]	20.26	5.26	15.56	15.62	17.91	18.13
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.29	0.29	2.12	2.25	1.20	1.70
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

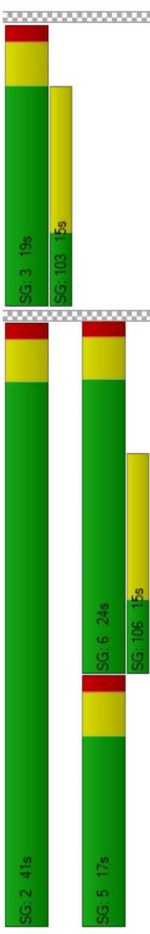
X, volume / capacity	0.42	0.26	0.43	0.44	0.23	0.28
d, Delay for Lane Group [s/veh]	23.55	5.55	17.68	17.87	19.11	19.84
Lane Group LOS	C	A	B	B	B	B
Critical Lane Group	yes	no	no	yes	no	yes
50th-Percentile Queue Length [veh]	2.08	1.08	2.77	2.79	1.15	1.27
50th-Percentile Queue Length [ft]	52.05	27.02	69.22	69.80	28.66	31.66
95th-Percentile Queue Length [veh]	3.75	1.95	4.98	5.03	2.06	2.28
95th-Percentile Queue Length [ft]	93.68	48.63	124.59	125.64	51.60	56.98

Movement, Approach, & Intersection Results

d.M, Delay for Movement [s/veh]	23.55	5.55	17.77	17.87	19.11	19.84
Movement LOS	C	A	B	B	B	B
d.A, Approach Delay [s/veh]	9.50		17.78		19.49	
Approach LOS	A		B		B	
d.I, Intersection Delay [s/veh]			13.90			
Intersection LOS			B			
Intersection V/C			0.384			

Sequence

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



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

Control Type: Signalized
Analysis Method: HCM2010
Analysis Period: 15 minutes
Delay (sec / veh): 24.3
Level Of Service: C
Volume to Capacity (v/c): 0.569

Intersection Setup

Name	Northbound				Southbound				Eastbound				Westbound			
Approach	זרדר				זרדר				זרדר				זרדר			
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	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	100.00	100.00	100.00	100.00
Pocket Length [ft]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Speed [mph]	45.00				45.00				45.00				45.00			
Grade [%]	0.00				0.00				0.00				0.00			
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	14	0	123	31	0	0	0	0	0	0	57
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	240	0	0	41	0	0	72	0	0	220
Total Hourly Volume [veh/h]	42	242	0	440	384	0	83	177	0	481	100	62
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	71	0	130	113	0	24	52	0	142	30	18
Total Analysis Volume [veh/h]	50	266	0	519	453	0	98	209	0	568	118	73
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	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
Pedestrian Volume [bicycles/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

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	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			2.7			3.6						1.4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	7	7	7	7	7	7	0	7	7	7
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	11	15	15	15	19	19	11	19	0	16	24	24
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	10	10	0	10	10	0	10	0	0	10	10
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
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

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
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	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]		4	19	35	11	26	36	6	7	7	12	13	28
g / C, Green / Cycle		0.06	0.29	0.54	0.17	0.40	0.55	0.09	0.11	0.11	0.18	0.20	0.43
(v / s)_l Volume / Saturation Flow Rate		0.01	0.08	0.00	0.15	0.13	0.00	0.03	0.04	0.00	0.16	0.03	0.05
s, saturation flow rate [veh/h]		3514	3618	1615	3514	3618	1615	3514	5176	1615	3514	3618	1615
c, Capacity [veh/h]		227	1059	870	595	1437	886	315	555	173	649	731	699
d1, Uniform Delay [s]		28.84	17.65	0.00	26.32	13.49	0.00	27.71	27.00	0.00	25.77	21.38	10.95
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
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]		0.48	0.63	0.00	4.18	0.58	0.00	0.56	0.42	0.00	3.84	0.10	0.06
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

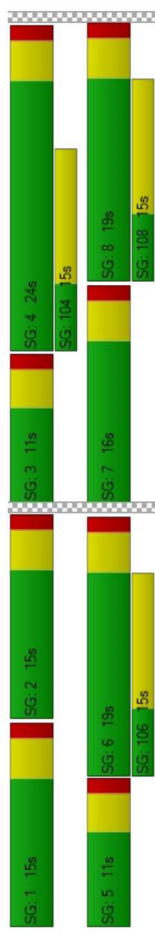
X, volume / capacity		0.22	0.27	0.00	0.87	0.32	0.00	0.31	0.38	0.00	0.88	0.16	0.10
d, Delay for Lane Group [s/veh]		29.32	18.28	0.00	30.50	14.07	0.00	28.26	27.42	0.00	29.71	21.49	11.01
Lane Group LOS		C	B	A	C	B	A	C	C	A	C	C	B
Critical Lane Group		no	yes	no	yes	no	no	no	yes	no	yes	no	no
50th-Percentile Queue Length [veh]		0.35	1.52	0.00	3.83	2.00	0.00	0.67	0.93	0.00	4.13	0.67	0.52
50th-Percentile Queue Length [ft]		8.83	37.97	0.00	95.67	50.08	0.00	16.83	23.36	0.00	103.36	16.81	13.10
95th-Percentile Queue Length [veh]		0.64	2.73	0.00	6.89	3.61	0.00	1.21	1.88	0.00	7.44	1.21	0.94
95th-Percentile Queue Length [ft]		15.89	66.34	0.00	172.20	90.14	0.00	30.30	42.05	0.00	186.05	30.26	23.58

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]		29.32	18.28	0.00	30.50	14.07	0.00	28.26	27.42	0.00	29.71	21.49	11.01
Movement LOS		C	E	A	C	B	A	C	C	A	C	C	B
d_A, Approach Delay [s/veh]			19.92			22.84			27.69			26.64	
Approach LOS			E			C			C			C	
d_I, Intersection Delay [s/veh]							24.27						
Intersection LOS							C						
Intersection V/C							0.569						

Sequence

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



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): 28.8
Level Of Service: C
Volume to Capacity (v/c): 0.509

Intersection Setup

Name	Northbound				Southbound				Eastbound				Westbound			
Approach	Left				Thru				Right				Left			
Lane Configuration	Left				Thru				Right				Left			
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	12	5	1	175	6	15	20	637	3	24	741	56
Base Volume Input [veh/h]	1,000	1,000	1,000	1,000	1,000	1,000	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	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	123	0	0	57	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	24	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	5	0	175	6	15	20	760	0	24	798	56
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	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	1.0000
Total 15-Minute Volume [veh/h]	3	3	0	49	2	4	6	214	0	7	225	16
Total Analysis Volume [veh/h]	14	10	0	198	7	17	23	858	0	27	901	63
Presence of On-Street Parking	no	no	no	no	no	no	no	no	no	no	no	no
On-Street Parking Maneuver Rate [h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [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]	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	4
Auxiliary Signal Groups										
Lead / Lag	Lead	-	-	Lead	-	-	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	22
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
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	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

Lane Group Calculations

Lane Group	L	C	R	L	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
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
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
g_i, Effective Green Time [s]	2	19	19	9	26	26	2	19	19	3	19
g / C, Green / Cycle	0.02	0.29	0.29	0.13	0.40	0.40	0.04	0.29	0.29	0.04	0.29
(v / s)_l Volume / Saturation Flow Rate	0.01	0.01	0.00	0.11	0.00	0.01	0.01	0.24	0.00	0.01	0.26
s, saturation flow rate [veh/h]	1810	1900	1615	1810	1900	1615	1810	3618	1615	1810	1900
c, Capacity [veh/h]	47	549	467	242	754	641	66	1044	466	77	558
d1, Uniform Delay [s]	31.08	16.51	0.00	27.40	11.87	11.95	30.48	21.56	0.00	30.24	21.82
k, delay calibration	0.11	0.50	0.50	0.22	0.50	0.50	0.11	0.11	0.11	0.11	0.25
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
d2 Incremental Delay [s]	3.51	0.06	0.00	13.02	0.02	0.08	2.87	1.88	0.00	2.70	9.60
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
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
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

Lane Group Results

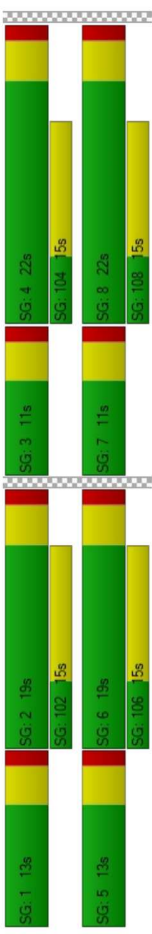
X, volume / capacity	0.30	0.02	0.00	0.82	0.01	0.03	0.34	0.82	0.00	0.35	0.87
d, Delay for Lane Group [s/veh]	34.60	16.57	0.00	40.42	11.89	12.03	33.35	23.24	0.00	32.94	31.62
Lane Group LOS	C	B	A	D	B	B	C	C	A	C	C
Critical Lane Group	no	yes	no	yes	no	no	yes	no	no	no	yes
50th-Percentile Queue Length [veh]	0.24	0.10	0.00	3.56	0.06	0.14	0.38	5.46	0.00	0.43	7.51
50th-Percentile Queue Length [ft]	6.09	2.56	0.00	88.98	1.40	3.48	9.41	136.47	0.00	10.85	187.78
95th-Percentile Queue Length [veh]	0.44	0.18	0.00	6.41	0.10	0.25	0.68	9.29	0.00	0.78	12.01
95th-Percentile Queue Length [ft]	10.97	4.61	0.00	160.17	2.52	6.26	16.94	232.27	0.00	19.53	300.15

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	34.60	16.57	0.00	40.42	11.89	12.03	33.35	23.24	0.00	32.94	31.51	31.62
Movement LOS	C	E	A	D	B	B	C	C	A	C	C	C
d_A, Approach Delay [s/veh]		27.09			37.35		23.50				31.56	
Approach LOS		C			D		C				C	
d_I, Intersection Delay [s/veh]						28.76						
Intersection LOS						C						
Intersection V/C						0.509						

Sequence

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



Intersection Level Of Service Report

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

Control Type: Delay (sec / veh): 23.3
Analysis Method: HCM2010 C
Analysis Period: 15 minutes Level Of Service: 0.703
Volume to Capacity (v/c):

Intersection Setup

Name	Northbound				Southbound				Eastbound				Westbound			
Approach	זדרר				זדרר				זדרר				זדרר			
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]	0	0	0		0	0	0		0	0	0		0	0	0	
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	no	no	no		no	no	no		no	no	no		no	no	no	

Volumes

Name	125	0	561	0	472	0	456	0	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	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	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	1.00
Growth Rate	0	0	0	0	0	0	0	0	0	0	0	0	0
In-Process Volume [veh/h]	18	0	0	0	0	32	68	17	38	0	7	0	0
Site-Generated Trips [veh/h]	0	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	0
Pass-by Trips [veh/h]	0	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	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	308	0	0	0	156	0	0	0	0	0	327
Total Hourly Volume [veh/h]	143	0	253	0	472	0	332	0	313	0	616	257	0
Peak Hour Factor	0.9490	0.9490	0.9490	0.9490	0.9490	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	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	0	67	0	124	0	87	0	82	0	162	68	0
Total Analysis Volume [veh/h]	151	0	267	0	497	0	350	0	330	0	649	271	0
Presence of On-Street Parking	no	no	no	no	no	no	no	no	no	no	no	no	no
On-Street Parking Maneuver Rate [h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [h]	0	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	0
Bicycle Volume [bicycles/h]	0	0	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

Phasing & Timing

Control Type	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss	Protecte	Permiss
Signal Group	3	0	0	7	0	0	5	2	0	1	6	0
Auxiliary Signal Groups	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	0	0	7	0	0	7	7	0	7	7	0
Maximum Green [s]	30	0	0	30	0	0	30	30	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	24	0	0	24	0	0	21	15	0	21	15	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	0	0	5	5	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	0	0	10	10	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
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	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

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
I1_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]		16	16	16	16	13	9	9	14	10	10
g / C, Green / Cycle		0.26	0.26	0.26	0.26	0.22	0.16	0.16	0.24	0.17	0.17
(v / s)_I Volume / Saturation Flow Rate		0.05	0.09	0.18	0.22	0.18	0.11	0.00	0.18	0.07	0.00
s, saturation flow rate [veh/h]		2796	2859	2796	1615	1810	3618	1615	3514	3618	1615
c, Capacity [veh/h]		760	748	780	422	398	566	253	835	630	281
d1, Uniform Delay [s]		18.51	18.04	21.30	20.88	22.33	24.10	0.00	21.38	22.11	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]		0.12	0.29	0.87	4.22	4.48	1.82	0.00	1.59	0.46	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

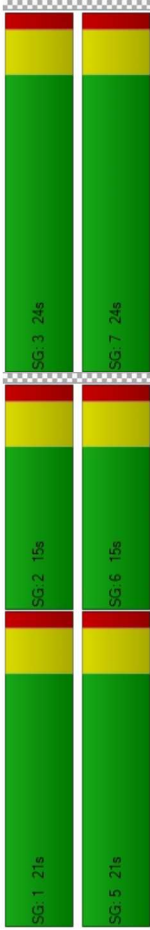
X, volume / capacity		0.19	0.36	0.64	0.83	0.83	0.73	0.00	0.78	0.43	0.00
d, Delay for Lane Group [s/veh]		18.63	18.33	22.17	25.10	26.81	25.91	0.00	22.87	22.58	0.00
Lane Group LOS		B	B	C	C	C	C	A	C	C	A
Critical Lane Group		no	no	no	yes	no	yes	no	yes	no	no
50th-Percentile Queue Length [veh]		0.75	1.32	2.87	4.41	4.31	2.58	0.00	3.83	1.54	0.00
50th-Percentile Queue Length [ft]		18.65	32.98	71.74	110.18	107.76	64.62	0.00	95.67	38.38	0.00
95th-Percentile Queue Length [veh]		1.34	2.37	5.17	7.85	7.72	4.65	0.00	6.89	2.76	0.00
95th-Percentile Queue Length [ft]		33.56	59.37	128.14	196.26	192.88	116.32	0.00	172.20	69.08	0.00

Movement, Approach, & Intersection Results

d,M, Delay for Movement [s/veh]	18.63	0.00	18.33	22.17	0.00	25.10	26.81	25.91	0.00	22.87	22.58	0.00
Movement LOS	B		B	C		C	C	C	A	C	C	A
d_A, Approach Delay [s/veh]		18.44		23.38				26.31			22.86	
Approach LOS		E		C				C			C	
d_I, Intersection Delay [s/veh]						23.25						
Intersection LOS						C						
Intersection V/C						0.703						

Sequence

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



Albert A. Webb Associates
3788 McGray Street
Riverside, CA 92506

Phone: (951) 686-1070 Fax: (951) 788-4256
E-mail:

Diverge Analysis

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

Freeway Data

Type of analysis: Diverge
Number of lanes in freeway: 3
Free-flow speed on freeway: 65.3 mph
Volume on freeway: 4586 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: 659 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: 348 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)	4586	659	348
Peak-hour factor, PHF	0.95	0.95	0.95
Peak 15-min volume, v15	1207	173	92
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)
 $P =$ 0.602 Using Equation 5
 $V = V + (V - V) P = 3294$ pc/h
12 R F R FD

Capacity Checks

	Actual 4996	Maximum 7059	LOS F? No
$V = V$			
F_i			
$V = V - V$	4278	7059	No
F_o			
R	718	2100	No
V_3 or V_4	1702 pc/h	(Equation 13-14 or 13-17)	
I_s	V_3 or V_4	No	
I_s	V_3 or V_4	No	
I_s	V_3 or V_4	No	
If yes, $V = 3294$	12	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

Flow Entering Diverge Influence Area
Actual 3294 Max Desirable 4400 Violation? No

V_{12} Level of service determination (if not F)

Density, $D = 4.252 + 0.0086 \frac{V_{12}}{R} - 0.009 \frac{L}{D} = 30.9$ 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, $S_R = 68.9$ mph
Space mean speed for all vehicles, $S_0 = 61.6$ mph

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Diverge Analysis

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

Freeway Data

Type of analysis: Diverge
Number of lanes in freeway: 3
Free-flow speed on freeway: 65.3 mph
Volume on freeway: 5322 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: 669 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: 550 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)	5322	669	550
Peak-hour factor, PHF	0.95	0.95	0.95
Peak 15-min volume, V15	1401	176	145
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
 $V = V + (V - V) P = 3677$ pc/h
12 R F R FD

Capacity Checks

	Actual	Maximum	LOS F?
$V = V$	5798	7059	No
$F_i = V - V$	5069	7059	No
$F_o = F - R$	729	2100	No
V_R or V_{av34}	2121 pc/h	(Equation 13-14 or 13-17)	

Is V_3 or $V_{av34} > 2700$ pc/h? No

Is V_3 or $V_{av34} > 1.5 V_{12} / 2$ No

If yes, $V_{12A} = 3677$ (Equation 13-15, 13-16, 13-18, or 13-19)

Flow Entering Diverge Influence Area
Actual 3677 Max Desirable 4400 Violation? No

Level of service determination (if not F)

Density, $D = 4.252 + 0.0086 V_{12} - 0.009 L_D = 34.2$ pc/mi/ln

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

Speed Estimation

Intermediate speed variable, $D = 0.299$

Space mean speed in ramp influence area, $S = 58.3$ mph

Space mean speed in outer lanes, $S_R = 67.3$ mph

Space mean speed for all vehicles, $S_O = 61.3$ 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: EPI
Jurisdiction: EPI
Analysis Year: EPI
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: 348 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: 659 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	348	659
Peak-hour factor, PHF	0.95	0.95	0.95
Peak 15-min volume, v15	1033	92	173
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 215NB-02A-Merge.txt 4278 379 718 pcph

Estimation of V12 Merge Areas
L = 1444.92 (Equation 13-6 or 13-7)
EQ
P = 0.592 Using Equation 1
FM
V = V (P) = 2534 pc/h
12 F FM

Capacity Checks

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

Flow Entering Merge Influence Area

Actual 2913 Max Desirable 4600 Violation? No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734 V_R + 0.0078 V_{12} - 0.00627 L_A = 24.7$ pc/mi/ln
Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, $M = 0.340$
Space mean speed in ramp influence area, $S_R = 57.4$ mph
Space mean speed in outer lanes, $S_0 = 60.8$ mph
Space mean speed for all vehicles, $S = 58.6$ 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: EPI
Jurisdiction: EPI
Analysis Year: EPI
Description:

Freeway Data

Type of analysis: Merge
Number of lanes in freeway: 3
Free-flow speed on freeway: 65.3 mph
Volume on freeway: 4653 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: 550 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: 669 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)	4653	550	669
Peak-hour factor, PHF	0.95	0.95	0.95
Peak 15-min volume, V15	1224	145	176
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 215NB-02P-Merge.txt 5069 599 729 pcph

Estimation of V12 Merge Areas

$L = 1661.27$ (Equation 13-6 or 13-7)
EQ
 $P = 0.592$ Using Equation 1
FM
 $V = V(P) = 3003$ pc/h
12 F FM

Capacity Checks

V	FO	Actual	Maximum	LOS F?
V or V	3	5668	7059	No
V or V	3	2066	2700	(Equation 13-14 or 13-17)
IS	av34	>	2700	pc/h
IS	av34	>	1.5	v/2
IS	av34	>	1.5	v/2
If yes, V	12A	=	3003	(Equation 13-15, 13-16, 13-18, or 13-19)

Flow Entering Merge Influence Area

Actual 3602
Max Desirable 4600
Violation? No

Level of Service Determination (if not F)

Density, $D = 5.475 + 0.00734 V_R + 0.0078 V_{12} - 0.00627 L_A = 30.0$ pc/mi/ln
Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, $M = 0.411$
Space mean speed in ramp influence area, $S_R = 55.7$ mph
Space mean speed in outer lanes, $S_O = 59.7$ mph
Space mean speed for all vehicles, $S = 57.1$ 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: Fair Isle On
Junction: EPI
Jurisdiction: EPI
Analysis Year: EPI
Description:

Freeway Data

Type of analysis: Merge
Number of lanes in freeway: 4
Free-flow speed on freeway: 66.8 mph
Volume on freeway: 5819 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: 1337 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)	5819	1337	101
Peak-hour factor, PHF	0.95	0.95	0.95
Peak 15-min volume, v15	1531	352	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

Flow rate, vp 215NB-03A-Merge.txt 6340 1457 110 pcph

Estimation of V12 Merge Areas

$L =$ (Equation 13-6 or 13-7)
 $P =$ 0.036 Using Equation 4
 $F =$ 12
 $V = V (P) = 226$ pc/h
 $F =$ 12

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}	7797	9472	No
$V_{3 \text{ or } V_{av34}}$	3057 pc/h	(Equation 13-14 or 13-17)	
IS $V_{3 \text{ or } V_{av34}} > 2700$ pc/h?	Yes		
IS $V_{3 \text{ or } V_{av34}} > 1.5 V_{12}/2$	Yes		
If yes, $V_{12A} = 2536$		(Equation 13-15, 13-16, 13-18, or 13-19)	

Flow Entering Merge Influence Area

Actual	Max Desirable	Violation?
3993	4600	No

Level of Service Determination (if not F)

Density, $D = 5.475 + 0.00734 V_R + 0.0078 V_{12} - 0.00627 L_A = 32.8$ pc/mi/ln
Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, $M = 0.481$
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, $S = 58.0$ 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: EPI
Jurisdiction: EPI
Analysis Year: EPI
Description:

Freeway Data

Type of analysis: Merge
Number of lanes in freeway: 4
Free-flow speed on freeway: 66.8 mph
Volume on freeway: 6897 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: 680 vph
Length of first accel/decel lane: 510 ft
Length of second accel/decel lane: ft

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)	6897	680	91
Peak-hour factor, PHF	0.95	0.95	0.95
Peak 15-min volume, v15	1815	179	24
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 215NB-03P-Merge.txt 7514 741 99 pcph

Estimation of V12 Merge Areas

$L =$ (Equation 13-6 or 13-7)
 $P =$ 0.125 Using Equation 4
 $F =$ 12
 $V = V (P) = 941$ pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}	8255	9472	No
$V_{3 \text{ or } V_{av34}}$	3286 pc/h	(Equation 13-14 or 13-17)	
IS $V_{3 \text{ or } V_{av34}} > 2700$ pc/h?	Yes		
IS $V_{3 \text{ or } V_{av34}} > 1.5 V_{12}/2$	Yes		
If yes, $V_{12A} = 3005$	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

Actual 3746 Max Desirable 4600 Violation? No

Level of Service Determination (if not F)

Density, $D = 5.475 + 0.00734 V_R + 0.0078 V_{12} - 0.00627 L_A = 31.2$ pc/mi/ln
Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, $M = 0.435$
Space mean speed in ramp influence area, $S_R = 56.0$ mph
Space mean speed in outer lanes, $S_0 = 60.5$ mph
Space mean speed for all vehicles, $S = 58.4$ 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: EPI
Jurisdiction: EPI
Analysis Year: EPI
Description:

Flow Inputs and Adjustments

Volume, V	4540	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, V15	1195	V
Trucks and buses	7	%
Recreational vehicles	0	%
Terrain type:	Level	%
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	989	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	
FFS or BFFS	75.4	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	989	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	13.2	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: EPI
Jurisdiction: EPI
Analysis Year: EPI
Description:

Flow Inputs and Adjustments

Volume, V	6771	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	1782	v
Trucks and buses	7	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses, PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, FHV	0.966	
Driver population factor, fp	1.00	
Flow rate, vp	1475	pc/h/ln

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	
FFS or BFFS	75.4	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	1475	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:

Fax:

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: EPI
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 pc/h/ln
Freeway maximum capacity, CIFL 2350
Terrain type Level
Grade 0.00 %
Length 0.00 mi

Conversion to pc/h Under Base Conditions

Volume Components
VFF 4263 VRF 976 VFR 330 VRR 75
Peak hour factor, PHF 0.95 0.95 0.95 0.95 veh/h
Peak 15-min volume, V15 1122 257 87 20
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 360 82 pc/h
Volume ratio, VR 0.231

Configuration Characteristics

Number of maneuver lanes, NWL 3 ln
Interchange density, ID 3.0 int/mi
Minimum RF lane changes, LCRF 1 lc/pc
Minimum RR lane changes, LCRR 0 lc/pc
Minimum weaving lane changes, LCMIN 1063 lc/h
weaving lane changes, LCW 2145 lc/h
Non-weaving vehicle index, INW 2363
Non-weaving lane change, LCNW 2743 lc/h
Total lane changes, LCALL 4888 lc/h

Weaving and Non-weaving Speeds

weaving intensity factor, w 0.790
Average weaving speed, SW 42.4 mi/h
Average non-weaving speed, SNW 50.4 mi/h

Weaving segment speed, S 48.3 mi/h
Weaving segment density, D 25.3 pc/mi/ln
Level of service, LOS C
Weaving segment v/c ratio 0.565
Weaving segment flow rate, v 5942 veh/h
Weaving segment capacity, cw 10507 veh/h

Limitations on Weaving Segments

If limit reached, see note.

Weaving length (ft) Minimum 300 Actual 1000 Note a,b
Density-based capacity, Maximum 3294 Analyzed
CIWL (pc/h/ln) Maximum 2350 2175 c
v/c ratio Maximum 1.00 Analyzed 0.565 d

Notes: a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.

b. 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."

c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.

d. Volumes exceed the weaving segment capacity. The level of service is F.

Phone:
E-mail:

Fax:

Operational Analysis

Analyst: Albert A. Webb Associates
Date Performed: 7/14/2015
Analysis Time Period: PM Peak Hour
Freeway/Dir of Travel: I-215 SB
Weaving Location: N of Eastridge Off
Analysis Year: EPI
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 pc/h/ln
Freeway maximum capacity, CIFL 2350
Terrain type Level
Grade 0.00 %
Length 0.00 mi

Conversion to pc/h Under Base Conditions

	VFE	VFF	VFR	VRR
Volume, V	4643	924	748	148
Peak hour factor, PHF	0.95	0.95	0.95	0.95
Peak 15-min volume, V15	1222	243	197	39
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	815	161
Volume ratio, VR	0.259			

Configuration Characteristics

	ln
Number of maneuver lanes, NWL	3
Interchange density, ID	5.0
Minimum RF lane changes, LCRF	1
Minimum RR lane changes, LCRR	0
Minimum weaving lane changes, LCMW	1007
weaving lane changes, LCW	2089
Non-weaving vehicle index, INW	2610
Non-weaving lane change, LCNW	2853
Total lane changes, LCALL	4942

Weaving and Non-weaving Speeds

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

Weaving segment speed, S 47.7 mi/h
Weaving segment density, D 29.5 pc/mi/ln
Level of service, LOS D
Weaving segment v/c ratio 0.654
Weaving segment flow rate, v 6804 veh/h
Weaving segment capacity, cw 10401 veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	3580	1000	a, b
Density-based capacity, CIWL (pc/h/ln)		Maximum 2350	Analyzed 2153	c
v/c ratio		Maximum 1.00	Analyzed 0.654	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: Eastridge On
Jurisdiction: EPI
Analysis Year: EPI
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: 380 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: 405 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	380	405
Peak-hour factor, PHF	0.95	0.95	0.95
Peak 15-min volume, V15	1104	100	107
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 215SB-06A-Merge.txt 414 441 pcph
4570

Estimation of V12 Merge Areas

$L = 1670.30$ (Equation 13-6 or 13-7)
 $P = 0.602$ Using Equation 1
 $V = V$ (P) = 2752 pc/h
12 F FM

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}	4984	7104	No
$V_{3 \text{ or } V_{av34}}$	1818 pc/h	(Equation 13-14 or 13-17)	
IS $V_{3 \text{ or } V_{av34}} > 2700$ pc/h?	No		
IS $V_{3 \text{ or } V_{av34}} > 1.5 V_{12}/2$	No		
If yes, $V_{12A} = 2752$	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

Actual 3166
Max Desirable 4600
Violation? No

Level of Service Determination (if not F)

Density, $D = 5.475 + 0.00734 V_R + 0.0078 V_{12} - 0.00627 L_A = 24.5$ pc/mi/ln
Level of service for ramp-freeway 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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Merge 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: Eastridge On
Jurisdiction: EPI
Analysis Year: EPI
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: 835 vph
Length of first accel/decel lane: 880 ft
Length of second accel/decel lane: ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist? Yes
Volume on adjacent Ramp: 896 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	835	896
Peak-hour factor, PHF	0.95	0.95	0.95
Peak 15-min volume, V15	1184	220	236
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 215SB-06P-Merge.txt 910 976 pcph
4900

Estimation of V12 Merge Areas

$L = 1847.06$ (Equation 13-6 or 13-7)
 $P = 0.602$ Using Equation 1
 $V = V$ (P) = 2950 pc/h
12 F FM

Capacity Checks

V	FO	Actual	Maximum	LOS F?
3	3	5810	7104	No
3	3	1950 pc/h	(Equation 13-14 or 13-17)	
3	3	> 2700 pc/h?	No	
3	3	> 1.5 v/2	Yes	
3	3	> 2950	(Equation 13-15, 13-16, 13-18, or 13-19)	

Flow Entering Merge Influence Area

Actual 3860 Max Desirable 4600 Violation? No

Level of Service Determination (if not F)

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

Speed Estimation

Intermediate speed variable, $M = 0.418$
Space mean speed in ramp influence area, $S_R = 56.4$ mph
Space mean speed in outer lanes, $S_0 = 61.6$ mph
Space mean speed for all vehicles, $S = 58.1$ mph

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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: Eastridge Off
Jurisdiction: EPI
Analysis Year: EPI
Description:

Freeway Data
Type of analysis: Diverge
Number of lanes in freeway: 3
Free-flow speed on freeway: 65.3 mph
Volume on freeway: 4586 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: 659 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: 348
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)	4586	659	348
Peak-hour factor, PHF	0.95	0.95	0.95
Peak 15-min volume, V15	1207	173	92
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)

$P =$ 0.602 Using Equation 5

$V = V + (V - V) P = 3294$ pc/h

$V = V + (V - V) P = 3294$ pc/h

Capacity Checks

$V = V$ Actual 4996 Maximum 7059 LOS F? No

$V = V - V$ Fi F 4278 7059 No

$V = V - V$ FO F R 718 2100 No

$V = V$ R or V 1702 pc/h (Equation 13-14 or 13-17)

$V = V$ or V 3 av34 > 2700 pc/h? No

$V = V$ or V 3 av34 > 1.5 v /2 No

If yes, v = 3294 12A (Equation 13-15, 13-16, 13-18, or 13-19)

Flow Entering Diverge Influence Area
Actual 3294 Max Desirable 4400 Violation? No

Level of service determination (if not F)

Density, $D = 4.252 + 0.0086 V - 0.009 L = 30.9$ 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, $S = 68.9$ mph

Space mean speed for all vehicles, $S = 61.6$ mph

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Diverge Analysis

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

Freeway Data

Type of analysis: Diverge
Number of lanes in freeway: 3
Free-flow speed on freeway: 65.3 mph
Volume on freeway: 5322 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: 669 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: 550 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)	5322	669	550
Peak-hour factor, PHF	0.95	0.95	0.95
Peak 15-min volume, V15	1401	176	145
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

Flow rate, vp 215NB-01P-Diverge.txt 5798 729 599 pcph

Estimation of V12 Diverge Areas

$L =$ (Equation 13-12 or 13-13)

$P =$ 0.582 Using Equation 5

$V = V + (V - V) P = 3677$ pc/h

12 R F R FD

Capacity Checks

$V = V$ Actual 5798 Maximum 7059 LOS F? No

$V = V - V$ Fi F 5069 7059 No

$V = V - V$ FO F R 729 2100 No

$V = V$ R or V 3 av34 2121 pc/h (Equation 13-14 or 13-17)
Is V or V > 2700 pc/h? No

Is V or V > 1.5 V /2 No

Is V or V > 1.5 V /2 No

If yes, $V = 3677$ 12A (Equation 13-15, 13-16, 13-18, or 13-19)

Flow Entering Diverge Influence Area
Actual 3677 Max Desirable 4400 Violation? No

Level of service determination (if not F)

Density, $D = 4.252 + 0.0086 V - 0.009 L = 34.2$ pc/mi/ln

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

Speed Estimation

Intermediate speed variable, $D = 0.299$

Space mean speed in ramp influence area, $S = 58.3$ 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: EPI
Jurisdiction: EPI
Analysis Year: EPI
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: 348 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: 659 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	348	659
Peak-hour factor, PHF	0.95	0.95	0.95
Peak 15-min volume, v15	1033	92	173
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 215NB-02A-Merge.txt 4278 379 718 pcph

Estimation of V12 Merge Areas
 $L = 1444.92$ (Equation 13-6 or 13-7)
 $P = 0.592$ Using Equation 1
 $V = V$ (P) = 2534 pc/h
 12 F FM

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}	4657	7059	No
V_3 or V_{av34}	1744 pc/h	(Equation 13-14 or 13-17)	
I_S	> 2700 pc/h?	No	
I_S	> 1.5 $V_3/2$	Yes	
If yes, V_{12A}	= 2534	(Equation 13-15, 13-16, 13-18, or 13-19)	

Flow Entering Merge Inflow Area
 Actual 2913 Max Desirable 4600 Violation? No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734 V_R + 0.0078 V_{12} - 0.00627 L_A = 24.7$ pc/mi/ln
 Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, $M = 0.340$
 Space mean speed in ramp influence area, $S_R = 57.4$ mph
 Space mean speed in outer lanes, $S_0 = 60.8$ mph
 Space mean speed for all vehicles, $S = 58.6$ 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: EPI
Jurisdiction: EPI
Analysis Year: EPI
Description:

Freeway Data

Type of analysis: Merge
Number of lanes in freeway: 3
Free-flow speed on freeway: 65.3 mph
Volume on freeway: 4653 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: 550 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: 669 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)	4653	550	669
Peak-hour factor, PHF	0.95	0.95	0.95
Peak 15-min volume, v15	1224	145	176
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 215NB-02P-Merge.txt 599 729 pcph

Estimation of V12 Merge Areas
L = 1661.27 (Equation 13-6 or 13-7)
EQ
P = 0.592 Using Equation 1
FM
V = V (P) = 3003 pc/h
12 F FM

Capacity Checks

V	FO	Actual	Maximum	LOS F?
V or V	av34	2066 pc/h	7059	No
V or V	av34	> 2700 pc/h?	(Equation 13-14 or 13-17)	No
V or V	av34	> 1.5 v /2	Yes	Yes
V or V	av34	12	(Equation 13-15, 13-16, 13-18, or 13-19)	12A

Flow Entering Merge Influence Area

V	Actual	Max Desirable	Violation?
12A	3602	4600	No

Level of Service Determination (if not F)

Density, $D = 5.475 + 0.00734 V_R + 0.0078 V_{12} - 0.00627 L_A = 30.0$ pc/mi/ln
Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, $M = 0.411$
Space mean speed in ramp influence area, $S_R = 55.7$ mph
Space mean speed in outer lanes, $S_O = 59.7$ mph
Space mean speed for all vehicles, $S = 57.1$ 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: Fair Isle On
Junction: EPI
Jurisdiction: EPI
Analysis Year: EPI
Description:

Freeway Data

Type of analysis: Merge
Number of lanes in freeway: 4
Free-flow speed on freeway: 66.8 mph
Volume on freeway: 5819 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: 1337 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)	5819	1337	101
Peak-hour factor, PHF	0.95	0.95	0.95
Peak 15-min volume, v15	1531	352	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

Flow rate, vp 215NB-03A-Merge.txt 6340 1457 110 pcph

Estimation of V12 Merge Areas

$L =$ (Equation 13-6 or 13-7)
 $P =$ 0.036 Using Equation 4
 $F =$ 12
 $V = V (P) = 226$ pc/h
 $F =$ 12

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}	7797	9472	No
$V_{3 \text{ or } V_{av34}}$	3057 pc/h	(Equation 13-14 or 13-17)	
IS $V_{3 \text{ or } V_{av34}} > 2700$ pc/h?	Yes		
IS $V_{3 \text{ or } V_{av34}} > 1.5 V_{12}/2$	Yes		
If yes, $V_{12A} = 2536$	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

Actual 3993 Max Desirable 4600 Violation? No

Level of Service Determination (if not F)

Density, $D = 5.475 + 0.00734 V_R + 0.0078 V_{12} - 0.00627 L_A = 32.8$ pc/mi/ln
Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, $M = 0.481$
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, $S = 58.0$ 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:	EPI
Jurisdiction:	
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	6897 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	680 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)	6897 680 91 vph
Peak-hour factor, PHF	0.95 0.95 0.95
Peak 15-min volume, V15	1815 179 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

Flow rate, vp	215NB-03P-Merge.txt	7514	741	99	pcph
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Estimation of V12 Merge Areas

$L =$ (Equation 13-6 or 13-7)
 $P =$ 0.125 Using Equation 4
 $F =$ 12
 $V = V (P) = 941$ pc/h
 $F =$ 12

Capacity Checks	
	Actual Maximum LOS F?
V_{FO}	8255 9472 No
V_3 or V_{av34}	3286 pc/h (Equation 13-14 or 13-17)
Is V_3 or $V_{av34} > 2700$ pc/h?	Yes
Is V_3 or $V_{av34} > 1.5 V_2 / 2$	Yes
If yes, $V_3 = 3005$	(Equation 13-15, 13-16, 13-18, or 13-19)
12A	

Flow Entering Merge Influence Area	
Actual	Max Desirable Violation?
3746	4600 No
Level of Service Determination (if not F)	

Density, $D = 5.475 + 0.00734 V_R + 0.0078 V_{12} - 0.00627 L_A = 31.2$ pc/mi/ln

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

Speed Estimation	
Intermediate speed variable,	$M = 0.435$
Space mean speed in ramp influence area,	$S_R = 56.0$ mph
Space mean speed in outer lanes,	$S_0 = 60.5$ mph
Space mean speed for all vehicles,	$S = 58.4$ mph

HCS 2010: Basic Freeway Segments Release 6.60

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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: EPI
Jurisdiction: EPI
Analysis Year: EPI
Description:

Flow Inputs and Adjustments

Volume, V	4540	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, V15	1195	V
Trucks and buses	7	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses, PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, FHV	0.966	
Driver population factor, fp	1.00	
Flow rate, vp	989	pc/h/ln

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	
FFS or BFFS	75.4	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	989	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	13.2	pc/mi/ln
Level of service, LOS	B	

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

HCS 2010: Basic Freeway Segments Release 6.60

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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: EPI
Jurisdiction: EPI
Analysis Year: EPI
Description:

Flow Inputs and Adjustments

Volume, V	6771	veh/h
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v15	1782	v
Trucks and buses	7	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses, PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, FHV	0.966	
Driver population factor, fp	1.00	
Flow rate, vp	1475	pc/h/ln

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	
FFS or BFFS	75.4	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	1475	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:

Fax:

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: EPI
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 pc/h/ln
Freeway maximum capacity, CIFL 2350
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 976 330 75 veh/h
Peak hour factor, PHF 0.95 0.95 0.95 0.95
Peak 15-min volume, V15 1122 257 87 20
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 360 82 pc/h
Volume ratio, VR 0.231

Configuration Characteristics

Number of maneuver lanes, NWL 3 ln
Interchange density, ID 3.0 int/mi
Minimum RF lane changes, LCRF 1 lc/pc
Minimum RR lane changes, LCRR 0 lc/pc
Minimum weaving lane changes, LCMIN 1063 lc/h
weaving lane changes, LCW 2145 lc/h
Non-weaving vehicle index, INW 2363
Non-weaving lane change, LCNW 2743 lc/h
Total lane changes, LCALL 4888 lc/h

Weaving and Non-weaving Speeds

weaving intensity factor, W 0.790
Average weaving speed, SW 42.4 mi/h
Average non-weaving speed, SNW 50.4 mi/h

Weaving segment speed, S 48.3 mi/h
Weaving segment density, D 25.3 pc/mi/ln
Level of service, LOS C
Weaving segment v/c ratio 0.565
Weaving segment flow rate, v 5942 veh/h
Weaving segment capacity, cw 10507 veh/h

Limitations on Weaving Segments

If limit reached, see note.

Weaving length (ft) Minimum 300 Actual 1000 Note a,b
Density-based capacity, Maximum 3294 Analyzed
CIWL (pc/h/ln) Maximum 2350 2175 c
v/c ratio Maximum 1.00 Analyzed 0.565 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:

Fax:

Operational Analysis

Analyst: Albert A. Webb Associates
Date Performed: 7/14/2015
Analysis Time Period: PM Peak Hour
Freeway/Dir of Travel: I-215 SB
Weaving Location: N of Eastridge Off
Analysis Year: EPI
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 pc/h/ln
Freeway maximum capacity, CIFL 2350
Terrain type Level
Grade 0.00 %
Length 0.00 mi

Conversion to pc/h Under Base Conditions

Volume Components
VFE VRF VFR VRR
4643 924 748 148
Peak hour factor, PHF 0.95 0.95 0.95 0.95
Peak 15-min volume, V15 1222 243 197 39
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 815 161 pc/h
Volume ratio, VR 0.259

Configuration Characteristics

Number of maneuver lanes, NWL 3
Interchange density, ID 5.0
Minimum RF lane changes, LCRF 1
Minimum RR lane changes, LCRR 0
Minimum weaving lane changes, LCMIN 1007
weaving lane changes, LCW 2089
Non-weaving vehicle index, INW 2610
Non-weaving lane change, LCNW 2853
Total lane changes, LCALL 4942
lc/h
lc/h
lc/h
lc/h

Weaving and Non-weaving Speeds

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

Weaving segment speed, S 47.7 mi/h
Weaving segment density, D 29.5 pc/mi/ln
Level of service, LOS D
Weaving segment v/c ratio 0.654
Weaving segment flow rate, v 6804 veh/h
Weaving segment capacity, cw 10401 veh/h

Limitations on Weaving Segments

If limit reached, see note.

Weaving length (ft) Minimum 300 Actual 1000
Density-based capacity, Maximum 3580
CIFL (pc/h/ln) Maximum 2350 Analyzed 2153
v/c ratio Maximum 1.00 Analyzed 0.654
Note a, b
c
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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Phone: (951) 686-1070 Fax: (951) 788-1256
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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: Eastridge On
Jurisdiction: EPI
Analysis Year: EPI
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: 380 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: 405 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	380	405
Peak-hour factor, PHF	0.95	0.95	0.95
Peak 15-min volume, V15	1104	100	107
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
215SB-06A-Merge.txt
4570 414 441 pcph

Estimation of V12 Merge Areas

$L = 1670.30$ (Equation 13-6 or 13-7)
 $P = 0.602$ Using Equation 1
 $V = V$ (P) = 2752 pc/h
12 F FM

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}	4984	7104	No
$V_{3 \text{ or } V_{av34}}$	1818 pc/h	(Equation 13-14 or 13-17)	
IS $V_{3 \text{ or } V_{av34}} > 2700$ pc/h?	No		
IS $V_{3 \text{ or } V_{av34}} > 1.5 V_{12}/2$	No		
If yes, $V_{12A} = 2752$	(Equation 13-15, 13-16, 13-18, or 13-19)		

Flow Entering Merge Influence Area

Actual 3166
Max Desirable 4600
Violation? No

Level of Service Determination (if not F)

Density, $D = 5.475 + 0.00734 V_R + 0.0078 V_{12} - 0.00627 L_A = 24.5$ pc/mi/ln
Level of service for ramp-freeway 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

Albert A. Webb Associates
3788 McCray Street
Riverside, CA 92506

Phone: (951) 686-1070 Fax: (951) 788-1256
E-mail:

Merge 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: Eastridge On
Jurisdiction: EPI
Analysis Year: EPI
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: 835 vph
Length of first accel/decel lane: 880 ft
Length of second accel/decel lane: ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist? Yes
Volume on adjacent Ramp: 896 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	835	896
Peak-hour factor, PHF	0.95	0.95	0.95
Peak 15-min volume, V15	1184	220	236
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 215SB-06P-Merge.txt 910 976 pcph
4900

Estimation of V12 Merge Areas

$L = 1847.06$ (Equation 13-6 or 13-7)
 $P = 0.602$ Using Equation 1
 $V = V$ (P) = 2950 pc/h
12 F FM

Capacity Checks

V	Actual	Maximum	LOS F?
5810	7104	No	
1950 pc/h	(Equation 13-14 or 13-17)		
V or V_{av34}	> 2700 pc/h?	No	
V or V_{av34}	> 1.5 $V/2$	Yes	
V or V_{av34}	12	(Equation 13-15, 13-16, 13-18, or 13-19)	
If yes, V_{12A}			

Flow Entering Merge Influence Area

Actual 3860
Max Desirable 4600
Violation? No

Level of Service Determination (if not F)

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

Speed Estimation

Intermediate speed variable, $M = 0.418$
Space mean speed in ramp influence area, $S_R = 56.4$ mph
Space mean speed in outer lanes, $S_0 = 61.6$ mph
Space mean speed for all vehicles, $S = 58.1$ mph